

# **Australian Managed Funds: Investment Strategies and Property Allocation**

**A thesis submitted in fulfilment of  
the requirements for the degree of  
Doctor of Philosophy**

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# **DECLARATION**

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, that ethics procedures and guidelines have been followed.

Wejendra Reddy

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## ABBREVIATIONS AND ACRONYMS

ABS	Australian Bureau of Statistics
Altern'ves	Alternatives Assets
APRA	Australian Prudential Regulation Authority
A-REITs	Australian Real Estate Investment Trusts
ASX	Australian Securities Exchange
ATO	Australian Taxation Office
AU	Australian
AUD	Australian Dollar
Aust eq	Australian Equities
Aust fixed	Australian Fixed Income Securities
Austrade	Australian Trade Commission
AVCAL	Australian Private Equity & Venture Capital Association Limited
CAPM	Capital Asset Pricing Model
CBA	Commonwealth Bank of Australia
DAA	Dynamic Asset Allocation
Direct Prop	Direct Property
GFC	Global Financial Crisis (2007)
Int eq	International Equities
Int fixed	International Fixed Income Securities
IPD	Investment Property Databank
IPF	Investment Property Forum
IREI	Institutional Real Estate Inc.
Listed Prop	Listed Property
MSCI	Morgan Stanley Capital International Inc.
MPT	Modern Portfolio Theory



PCA	Property Council of Australia
QUAN/quant	Quantitative
QUAL/qual	Qualitative
RBA	Reserve Bank of Australia
SAA	Strategic Asset Allocation
S&P	Standard & Poor's
TAA	Tactical Asset Allocation
USA/US	United States of America
UK	United Kingdom

## ABSTRACT

The Australian managed funds industry is the largest and fastest growing investment sector in Australia. Underpinned by the Australian government's compulsory superannuation policy, the industry has grown nearly ninefold from A\$171 billion in 1988 to A\$2.0 trillion in 2012 (ABS 2013a). Even with this phenomenal growth rate, according to APRA (2013b; 2007, p.57), the level of allocation to property asset class in institutional portfolios has remained constant in recent decades, restricted at 10% or lower. While several overseas studies (Craft 2001; Hoesli, Lekander & Witkiewicz 2003; Worzala & Bajtelsmit 1997) have suggested property allocations within a range of 10-30%, comprehensive empirical evidence on Australian institutional property asset allocation strategies and decision-making process is underdeveloped.

The focus of this research is to identify the important steps and considerations that influence Australian fund manager's property allocation decisions, and to suggest ways to improve institutional allocation decisions towards property investments, which traditionally offers stable, income focused returns. This is important for funding the retirement of Australia's growing and aging population, and to combat the continued effects of the recent Global Financial Crisis on the equities and bond markets.

Research was undertaken using a mixed method (qualitative and quantitative) approach. First an in-depth industry survey was conducted of all major groups in the Australian managed funds industry including superannuation funds, investment managed funds, property funds and asset consultants. The evaluation of the 79 survey respondents indicated that property allocation is a complex system of interdependent decisions given its distinctive investment characteristics when compared to alternative assets. Australian fund manager's property allocation decision-making process is an interactive, sequential and continuous process involving multiple decision-makers (internal and external) complete with feedback loops. It involves a combination of quantitative analysis (mainly efficient frontier) and qualitative overlay (mainly judgement, or 'gut-feeling', and experience).

In addition, the research provided evidence that the property allocation decision-making process varies depending on the size and type of managed fund. Large managed funds generally employ an in-house property team and have the capacity to run more sophisticated models and simulations. In contrast, small managed funds mainly depend on asset consultant advice to formulate their property asset allocation decisions. Funds with a greater level of property expertise (3+ staff) have a greater exposure to property (A\$1.6-A\$3.2 billion) and are likely to invest actively in both direct and indirect property. Funds with fewer than three property staff had a nominal average property investment of A\$0.4 billion and are likely to invest mainly in securitised property.

Although fund managers were generally comfortable with the current level of property allocation (10%), about one third expects their allocation target to move within 11-15% in the next five years (invested predominantly in direct/ unlisted property). The results demonstrate a shift in Australian fund manager's strategies, driven mainly by the funds' need to adapt to the continuing uncertainty in global financial market conditions. However, the

majority (60%) of institutions surveyed stated that strategic policy is the dominant property allocation strategy. Shorter term strategies, in particular dynamic asset allocation, are becoming more prominent for several leading funds.

The findings from the survey were developed further through a series of quantitative research analyses. In particular, the performance of the A\$302 billion industry superannuation funds' strategic balanced portfolio was compared against ten different investment strategies to examine how property allocation changes with different asset allocation models. The selected passive and active asset allocation models are set within the standard Modern Portfolio Theory framework, using Australian government 10 year bonds as the risk-free rate. The individual asset and portfolio performances were compared using the Sharpe ratio.

The analysis used 17 years (1995-2011) of quarterly data covering seven benchmark asset classes, namely: Australian equities, international equities, Australian fixed income, international fixed income, property, cash and alternatives. Property provided the second highest risk-adjusted return profile (0.21) behind the alternative asset class (0.44). However, when the property allocation components (direct property and listed property) were analysed separately, direct property (index including unlisted property) was the best performing asset class on a risk-adjusted return basis (0.72). Despite the performance of listed property (A-REITs) being tightly linked to the Australian equities market, the research provides evidence that including A-REITs in the direct property portfolio provides a much better performance (0.21) than including A-REITs in the Australian equities portfolio (0.13).

The results show that the eleven different asset allocation models perform as well as the industry fund conventional Strategic approach and in many instances property allocation is found to be under-allocated on a return optimisation basis. The various portfolio risk-adjusted returns ranged from 0.10 (Traditional) to 0.86 (Tactical – No Constraints) compared to the industry fund Strategic portfolio (0.14). In many instances the direct property allocation is significantly higher than listed property. Depending on the asset allocation model, when included within a multi-asset portfolio, property improves the portfolio risk-adjusted return profile range by 2% to 28%.

For an Australian superannuation balanced fund, the empirical results show that there is scope to increase the property allocation level from its current 10% to 26%. Upon excluding unconstrained strategies, the recommended allocation to property for industry funds is 17% (12% direct and 5% listed). This high allocation is backed by improved risk-adjusted return performance. This knowledge will be beneficial for funds currently reprofiling investment portfolios to achieve stable risk-adjusted returns.

This research contributes to both practical and academic fields as it offers a methodological approach to how institutional allocation to property assets can be improved. First, the industry survey identifies and documents current institutional property allocation strategies and decision-making practices. The conceptual frameworks developed from the survey will enhance academic theory in the area of property allocation decision-making.

Furthermore, the research provides small fund managers and industry practitioners with a platform from which to improve their own property allocation processes.

The eleven different asset allocation models developed to evaluate the property allocation component in industry superannuation funds' balanced portfolio will attract fund managers to explore alternative strategies (passive and active) where risk-adjusted returns can be improved, compared to the common Strategic approach with increased allocation to property assets. The research contributes to the transfer of broader finance and investment market theories and practice to the property discipline and so provides flow on support to the continued growth of the Australian property market.

## CHAPTER ONE: INTRODUCTION

*History shows property is a distinctly different asset class compared to equities and bonds which provides the strongest justification for holding it within a multi-asset portfolio. (Baum & Hartzell 2012, p. 12)*

### 1.1 Research Background

In Australia, managed funds are professionally managed pooled investment vehicles offered to investors as unit trusts and include pension funds (known locally as superannuation funds). The managed funds industry has grown by a compounded annual rate of 12% since the early 1990s to A\$2.0 trillion in 2012, backed mainly by the Australian government's mandated compulsory retirement saving scheme. Consequently, in the past decade investments in the Australian property market also increased from A\$100 billion in 2000 to almost A\$300 billion in 2011 (ABS 2013a; PCA 2011, p. 6). However, the proportion allocated to the property asset class in institutional portfolios remains unchanged, at 10% or lower (Newell 2008; Rowland 2010). Many in the property profession have seen this allocation as a subjective measure. This can be attributed to the property asset allocation principles and frameworks employed by individual fund managers, although this has not been tested in the Australian market for industry superannuation funds. As part of this research, asset allocation modelling can support this property allocation level.

Asset allocation has long been recognised as the greatest single determinant of an investment fund's performance (Brinson, Hood & Beebower 1986; Sharpe 1992). Therefore, fund managers dedicate a significant amount of capital and resources to developing appropriate asset allocation policies. Fund managers are responsible for allocating investors' subscribed funds across different investment sectors to best meet fund members' investment objectives. Australian fund managers' conventional strategic default balanced investment portfolio generally consists of five major components, namely: equities (Australian and international), fixed income (Australian and international), property, alternatives, and cash.

Managed funds generally set long-term asset investment objectives and guidelines, commonly referred to as a strategic asset allocation (SAA) policy. Generally, the SAA is based on set modelling parameters that follow Modern Portfolio Theory (MPT), as first outlined by Harry Markowitz. Funds regularly adjust the allocation to the asset classes to optimise performance and maximise risk-adjusted return outcomes. Fund managers (mainly active managers) also attempt to earn additional return above the SAA policy by switching to shorter term (tactical and dynamic) policies (Darst 2003; eds Fabozzi & Markowitz 2011a; Sharpe et al. 2007).

Property as an asset class plays an important role in institutional investment portfolios in Australia. According to Higgins (2007, p.15), institutional investment represents approximately 40% of the Australian core property market. Managed funds including superannuation funds are the dominant institutional investors in the Australian property market. They hold interest in commercial property, both directly and indirectly, via exposure to property funds or through mandates and partnerships with other investment management funds. Institutional investors have access to more than 1,000 different property funds across Australian real estate investment trusts (A-REITs), property securities funds, and unlisted funds such as wholesale property funds and property syndicates (PCA 2009).

Typically, institutional investors have used their property allocations to improve portfolio performance by adding an uncorrelated asset class (MacGregor & Nanthakumaran 1992). Combined with its comparatively good returns, real estate's low volatility (even after adjusting for the effects of valuation smoothing) emphasises its attractive risk and return characteristics to investors (Bond et al. 2007a). Despite the benefits, overseas asset allocation studies by Brown and Schuck (1996), Craft (2001), Hoesli, Lekander and Witkiewicz (2003) and Worzala and Bajtelsmit (1997) have concluded invariably that property is significantly under-represented in the typical investment portfolio. These studies recommend that the optimal weight for property in mixed-asset portfolios should be within the 10-30% range, and that such an allocation leads to a 15-25% reduction in the portfolio's risk level.

Newell, Acheampong and Worzala (2002) stated that there is a need for more Australian research to enhance the stature of property as an investment asset class, identifying in particular the role of property in a mixed-asset portfolio. This is a priority research topic for stakeholders in Australia. To improve allocation to property assets, it is essential to evaluate how institutions actually determine their property allocation component and the theory behind the decision-making process.

The property allocation decision-making process is performed at both the strategic and investment level. Strategic decision-making is where fund managers, such as superannuation fund managers, determine the proportion of allocation to property in a mixed-asset portfolio. The property investment decisions deals with how property managers invest this allocated proportion in different sectors and geographic markets. The review of the research literature highlights several studies that evaluate the importance of property in Australian institutional portfolios (for example: Armytage 2002; De Francesco 2005; Newell, Stevenson & Rowland 1993; Rowland & Kish 2000; Schuck & Howard 2005). In addition, Parker (2010, 2013) has investigated REITs and unlisted property funds investment decision-making processes. However, research on strategic property allocation decision-making process – that is, how fund managers determine the proportion of allocation to property in multi-asset portfolios – is lacking in Australia.

The allocation of resources to property poses several challenges to institutional investors as choices about investment vehicles have expanded, in particular, over the past two decades with the rise of REITs and unlisted property funds and property syndicates (Dhar & Goetzmann 2005). Worzala and Bajtelsmit (1997) noted that the decision-making process may differ for unlisted property and REITs based on how fund managers classify

REITs (that is, as property assets or public equity). Their study found that the decision-making process may also differ depending on the size and type of fund, making generalisations across managed funds inappropriate.

Geltner et al. (1995) found that although both listed and direct property are essentially similar, in a multi-asset portfolio neither form of property is a perfect substitute for the other. Although both property investments are backed by the same physical real estate physical assets, their return and risk profiles are distinct. A-REITs are listed and traded on the Australian Stock Exchange (ASX). Similar to common stock, the A-REITs returns are driven mainly by financial and capital market variables and market sentiment. In contrast, direct property returns are underpinned by fundamental macroeconomic factors (such as employment growth) and retail trade and financial market influences such as the bond rate (De Francesco 2005; Higgins & Ng 2009; Newell 2006).

Several leading studies (Craft 2001; De Wit 1996; Farragher & Savage 2008; Rowland 2010) have concluded that property asset allocation is typically made in the context of a mean-variance framework. An optimal portfolio of assets is selected by combining an efficient frontier (representing the risk and return characteristics of available portfolios) with a specification of the investor's preferences for risk and return. MPT provides a theoretical framework for this process. However, in practice, asset allocation decisions must be made in an environment of incomplete information (particularly physical assets), changing estimates of return, and shifting definitions of the acceptable investment risk. According to French (2001), while definitive inputs to the asset allocation model (historic data or predictive forecasts) are important, fund managers are also influenced by many other non-financial considerations, such as behavioural factors, judgement, intuition and market sentiment.

Dhar and Geotzmann (2005) and Hauss (2004) concluded that the overall logic of portfolio allocation to assets other than the stocks and bonds remains somewhat a mystery. Portfolio construction research with a property focus is limited in Australia. Past portfolio construction studies in Australia (such as: JLW Research 1989; Wallace 1992) has generally determined the optimal allocation to property using passive asset allocation strategies such as 'buy and hold' and the classical mean-variance optimisation formulation. MacKinnon and Al Zaman (2009) identified the need to examine the optimal holdings for property assets within more dynamic portfolios where the asset weighting can be continuously rebalanced. Leading Australian asset consultants Mercer (2011) and Watson Wyatt (2009) also noted that although SAA has traditionally been regarded as the decisive consideration, the 2007 Global Financial Crisis (GFC) has forced Australian fund managers to review long-term investment models, with a rethink towards shorter-term asset allocation strategies.

As repair of financial markets continues, the way institutional investors treat property as an asset class will continue to change. However, there is strong evidence from historical studies to suggest that allocation to property will remain important for Australian fund managers. According to PCA (2009, p.13), due to the declining stock market values following the GFC, the allocation to property assets is expected to increase to 10-15% for some superannuation funds. Leading industry superannuation fund managers, AustralianSuper and Unisuper, have recently announced increased appetite for property assets (Friemann 2012, p. 50; Hughes 2012, p. 47). In addition, market reports by JP Morgan Asset Management (2012) and Jones Lang LaSalle (2012)

anticipate institutional real assets allocation will increase to 25% in the next decade as fund managers reprofile investment portfolios in search of stable, risk-adjusted returns in the post-GFC era.

Australia's population has grown 126% since 1960, to 23.2 million people in 2012. It is projected to increase to between 30.9 and 42.5 million people by 2056 (ABS 2012a, pp. 238-239). In addition, demographic projections show that around 23-25% of the population will be in the 65+ years age group by 2056, compared to 13% in 2007 (ABS 2012a, pp. 238-239; ABS 2008, p. 2). In 2010, the Australian government announced a policy to increase superannuation contributions from the current 9% to 12% by 2020. This could result in the superannuation industry alone growing to AU\$3 trillion by 2019, and AU\$7 trillion by 2028 (Allen Consulting 2011; APRA 2013a, p. 6; Deloitte 2009). The need to generate continued retirement income for Australia's growing and aging population means that improved allocation to property assets will remain important for fund managers, particularly future growth in the large superannuation sector. For fund managers, designing and implementing effective asset allocation strategies would be key to how they effectively compete for a share of this market growth.

## **1.2 Research Aims and Objectives**

Given the continued changes in the investment and financial market, with the focus on future property allocation, the purpose of the research study is to identify whether Australian fund managers view property as a key investment, to determine how these institutions formulate their property allocation decisions, and to suggest ways to improve institutional allocation to property assets. The principal objectives of the research are:

- i. To examine and evaluate the literature on investment theory, investment management and property asset allocation concepts.
- ii. To identify and evaluate Australian managed funds industry investment data and strategies and property allocation trends.
- iii. To examine and evaluate the growth of the Australian property investment market and the key factors that affects its performance.
- iv. To identify key factors influencing Australian fund manager's property allocation decisions.
- v. To identify Australian fund manager's property asset allocation strategies and decision-making frameworks.
- vi. To identify and evaluate leading local and overseas investment techniques and strategies which includes an asset allocation to property.
- vii. To prepare and evaluate asset allocation models that optimises direct and listed property asset classes.
- viii. To suggest ways of improving institutional investor's asset allocation decisions towards property investments.

In summary, research objectives (i)-(iii) aim to provide literature on the concepts of funds management, investment strategies, property asset allocation and decision-making theory; objectives (iv)-(vi) aim to establish the current status of institutional investor strategic property asset allocation processes, strategies and decision-making frameworks in Australia; and objectives (vii)-(viii) are designed to test different asset allocation models aimed at improving Australian institutional investors' property allocation decisions.



### 1.3 Proposed Contributions to Knowledge

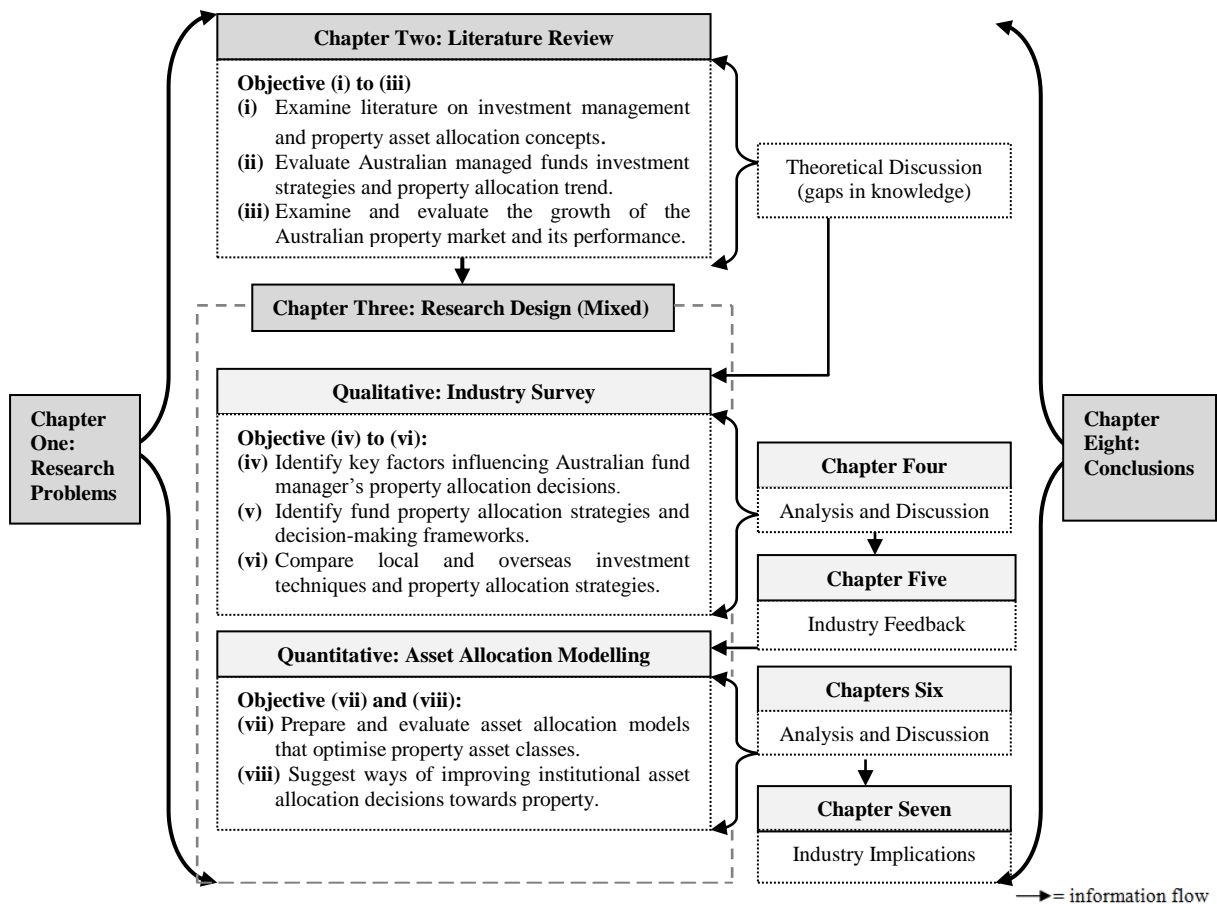
This research is anticipated to provide important contributions to knowledge in both practical and academic fields in the area of institutional property investment, investment management, portfolio construction, and risk management. The research will identify how institutional investors determine their optimal property allocation views and their perceptions of future property allocation trends. The research also aims to offer a methodological approach to how allocation to property assets can be improved using a series of passive and active asset allocation modelling strategies.

Although statistical information on the level of managed fund industry investments in property assets is widely available in Australia, research on property asset allocation strategies and decision-making processes is limited. Therefore, the conceptual frameworks and models developed from this research will help enhance academic theory and understanding in the area of property allocation decision theory. It is also anticipated that the research findings would assist and educate the investment community, particularly smaller fund managers to better understand institutional investment strategies and property allocation decisions. Overall, this research could provide a platform to improve Australian fund managers' asset allocation decisions towards property investments and provide flow on support to the continuing growth of the property investment sector.

### 1.4 Research Design and Framework

Based on the purpose and objectives, this research will be undertaken in three key phases with each phase focusing on a different research approach. Figure 1-1 illustrates the research framework.

Figure 1-1: Thesis Framework and Objectives



The thesis is built on grounded theory, market information sourced from an industry survey, and asset allocation modelling. A ‘sequential exploratory’ mixed methods design is used for the data collection and analysis. Teddlie and Tashakkori (2009) have explained that sequential exploratory designs involve a first phase of qualitative data collection and analysis, followed by a second phase of quantitative data collection and analysis that builds on the results of the first phase. The reason for collecting the qualitative data first is to generate information on Australian managed funds industry strategic property asset allocation decision-making processes, strategies and models. In turn, these data are used to support the research themes that are tested during the subsequent quantitative analysis phase. The type of sequential exploratory mixed methods design used in this research equally privileges both the qualitative and quantitative phases.

The main research phases of the thesis include:

- i. **Literature Review** – examines and evaluates literature on investment management, investment strategies, property asset allocation concepts and decision-making theory. The literature review will provide an overview of Australian managed funds’ investment strategies, market segments, and asset allocation trends. In addition, the literature review aims to chart the growth of the Australian property market and examines the key factors that affect its performance. Historical performance data on both the Australian managed funds industry and Australian property industry will be evaluated. The theoretical background and empirical data furnished by the literature review will create the platform for the exploratory survey and asset allocation model investigation.
- ii. **Industry Survey** – identifies and documents how Australian fund managers determine their optimal property allocation views, the use of different asset allocation strategies (strategic, tactical and dynamic), and decision-making frameworks that facilitate the property allocation process. The survey investigation will establish whether Australian fund managers follow similar frameworks to those identified in theory, or exhibit a decision-making approach distinct from that identified in theory. The results will form the basis for comparing the local and overseas property asset allocation strategies. In addition, the research seeks to establish if there have been changes in the Australian fund manager’s property allocation paradigm or philosophy due to the recent GFC.

The survey data was collected between May 2011 and August 2011 using a semi-structured questionnaire administered by mail. The survey was targeted at 130 institutions in Australia, including superannuation funds, investment management funds, property funds, and asset consultants. Previous Australian institutional surveys (Newell, Stevenson & Rowland 1993; Rowland & Kish, 2000) on subjects similar to the research topic have generally targeted sample sizes of 100 participants.

The research will expand the findings from the literature review and survey investigation through a series of quantitative research themes aimed at improving institutional asset allocation decisions towards property investments.

- iii. **Asset Allocation Modelling** – this research phase critically evaluates the performance of the A\$302 billion, not-for-profit industry superannuation fund’s conventional SAA balanced investment portfolio with ten alternative asset allocation models. In examining the different asset allocation techniques, the research evaluates how the property allocation changes with different asset allocation models, including the diversification benefits of direct and listed property. For the purpose of this research, direct property represents investments in direct commercial property assets and unlisted property funds. Listed property is representation of the Australian REITs.

The analysis is based on quarterly ex-post benchmark data covering the industry superannuation balanced fund seven asset classes over a 17 year period (1995-2011). All asset allocation models are proprietary developed and constructed using the Microsoft Excel program. The selected passive and active asset allocation models are set within the standard MPT framework using Australian government 10 year bonds as the risk-free rate. The individual asset and portfolio performances were compared using the Sharpe ratio. Table 1-1 details the eleven different asset allocation techniques.

**Table 1-1: Asset Allocation Models: Key Characteristics and Operational Features**

Asset Allocation Strategies	Model Characteristics
Strategic	Industry fund conventional long-term strategy.
Buy and Hold	Asset weighting remains constant for the investment horizon.
Traditional	Allocation restricted to equities, bonds and cash.
Optimal – No Constraints	Mean-variance optimization with no asset weight constraints.
Optimal – Weight Constrained	Mean-variance optimization with pre-defined weight parameters.
Turning Points	Allocation based on cyclical movement of GDP.
Equal Weighted	Equal weighting to all assets.
Tactical – No Constraints	Short-term asset rebalancing with no asset weight constraints.
Tactical – Weight Constrained	Short-term asset rebalancing with pre-defined weight parameters.
Dynamic – No Constraints	Medium term asset rebalancing with no asset weight constraints.
Dynamic – Weight Constrained	Medium term asset rebalancing with pre-defined weight parameters.

Source: Author; Reddy et al. (2013a).

Table 1-1 details the characteristics of selected asset allocation strategies. The Strategic allocation represents the industry superannuation funds’ balanced investment option – it is the funds’ conventional asset allocation model. The Buy and Hold, and Equal Weighted, strategies are passive techniques. The Optimal strategies seek the highest risk-adjusted returns, a technique known in the field of MPT as Markowitz mean-variance portfolio optimisation. The Traditional strategy is constrained to equities, bonds and cash. The Turning Points allocation is based on the cyclical movement of GDP. The Tactical strategies are based on risk parity and momentum investment technique. The mean-variance portfolio optimisation formulation is used to construct the Dynamic investment strategies on a medium term (three year rolling) timeframe.

The Dynamic strategies are evaluated separately to other asset allocation models. Except for the investment timeframe, Dynamic asset allocation (DAA) displays similar characteristics to the SAA policy and is often referred in the industry as dynamic strategic asset allocation, or DSAA. From a balanced investment option viewpoint, fund managers generally prefer SAA and DAA as these investment strategies provide allocation opportunities across a wider range of asset classes. By its very nature, property is an illiquid, long-term investment meaning that SAA and DAA are more suitable asset allocation policies.

The Optimal, Tactical and Dynamic strategies are modelled both on an unconstrained and constrained basis (asset weight and no short-selling constraints) similar to the industry fund Strategic portfolio. In evaluating the different techniques, this research provides a unique perspective on determining optimal allocation to property assets using active investment techniques such as SAA, tactical asset allocation (TAA) and DAA. Portfolio construction research on the property asset allocation component, particularly in the context of active asset allocation strategies, is limited in Australia. Chapter Six discusses in detail the different asset allocation model assumptions and formulations.

## **1.5 Research Limitations**

This research investigates Australian fund managers' investment strategies and property allocation decisions. There are limitations associated with this research, particularly the asset allocation modelling scope due mainly to availability of market data.

The eleven different asset allocation models used in this research to investigate the optimal allocation to property assets is limited to market data on industry superannuation funds' balanced investment option portfolio. Although industry funds are the largest institutional superannuation sector in Australia, the approach and methodology can be extended to other sectors such as retail funds and public sector funds. In addition, the constrained Optimal, Tactical and Dynamic models are limited to asset weight, no short selling and turnover parameters. Other institutional constraints that can be added to the portfolio optimisation problem include transaction costs, taxation, risk factor constraints, benchmark exposure, liquidity, and tracking error constraints.

The research is also constrained by the type of data used in the various asset allocation models. For the alternative asset class data series, the Australian managed fund industry appears to have a range of benchmark data series which seem incomplete compared to those included in the alternative asset class. The alternative index in this research is constructed from the commencement of selected Australian data series for infrastructure and utilities, hedge funds, private equity, and commodity prices based on an equal weighted formula that follows the UK model. However, it is appreciated that the definition of an alternative index and construction method may vary from fund to fund in Australia.

Finally, it is appreciated that there are limitations on the data collection and analysis timeframes. The analysis of the different asset allocation models is based purely on ex-post data. Given limitations on time, there was no scope to include forecasting components in the asset allocation models. The property data used to construct the different asset allocation models are raw and not de-smoothed property, which is in line with industry practice.

Given limitations on time, there was no scope to re-test and compare the results of the asset allocation models using de-smoothed property data.

In addition, although a wide cross-section of stakeholders (fund managers and asset consultants) was surveyed during the research, it is acknowledged that the analysis is reflective of respondent views at a particular point in time and may change. The number of institutions surveyed and the type of market data collected was constrained by time, administrative and financial limitations. Also, given the competitive nature of the managed funds environment, in examining data of similar funds it is expected that fund managers would have limited their response for reasons of confidentiality.

## 1.6 Thesis Layout and Structure

The thesis layout and structure is detailed in Figure 1-2. The description of the individual chapters is as follows.

**Chapter One** provides the reader with the background to the research, the research purpose and objectives. In addition, this chapter details the anticipated contribution to the body of knowledge, and limitations of the study. The research methodology, and the context in which it is applied, are also explained in this chapter.

**Chapter Two** examines and evaluates the literature on investment strategies, investment management, property asset allocation concepts and decision-making theory. The literature review is divided in four major sections. The *Investment Management* section presents the theory and concepts of investment management and provides an overview of the Australian managed funds, their investment strategies, asset allocation options, and benchmark measures. The *Property Asset Class* section charts the growth of the Australian property market, identifies institutional property allocation trend, details the different property investment options, and discusses the role of property in investment portfolios.

The *Asset Allocation and Portfolio Construction Theory* section provides an overview of the different asset allocation strategies, details the key elements in formulating the construction of a portfolio, and determines the applicability of MPT to the property allocation process. The *Property Asset Allocation Decision-Making* section evaluates literature on decision-making theory and its applicability to the property asset allocation process. In addition, this section identifies the typical Australian managed fund organisation structure, evaluates the role of key decision-makers and identifies the factors that are likely to influence their property allocation decisions.

**Chapter Three** outlines and justifies the research design and approach. The research philosophy and the rationale for the mixed method inquiry (survey and quantitative models) are discussed in this chapter.

**Chapter Four** presents the current status of property allocation strategies and decision-making frameworks for leading Australian fund managers and asset consultants. This chapter starts with discussion on the survey research method, and provides commentary on the survey questionnaire and information about survey respondents. The survey results are then presented in synthesised format using tables, graphs and flowcharts, and supported by extensive commentary and discussions in five major sections. The *Determining the Current Optimal Allocation to Property* section details the level and method of property allocation for the funds

surveyed. This selection also evaluates how Australian fund managers and asset consultants determine their optimal property allocation views.

The *Property Allocation Strategies* section details the fund managers and asset consultants use of strategic, tactical and dynamic policies for the property allocation process. This section also evaluates how fund managers perform the different asset allocation functions, including the asset consultant's influence in the decision-making process. The *Fund Manager and Asset Consultant Decision-Making Frameworks* section outlines the property allocation decision-making frameworks for the different fund managers (superannuation funds, investment management funds and property funds) and asset consultants. The *Factors Influencing Property Allocation Decisions* section lists the key quantitative and qualitative factors, industry benchmarks and tools that affect the fund manager and asset consultant property allocation decision-making process. Finally, the *Optimising Future Property Allocation Level* section discusses the respondent's perception on future property allocation trend.

**Chapter Five** provides discussion on industry panel comments, feedback, and recommendations from the survey results validation process. The survey results (Chapter Four) were presented to a panel of six leading fund managers and one asset consultant firm. A number of important industry panel recommendations were accepted and expanded as areas of further quantitative research, described in Chapter Six.

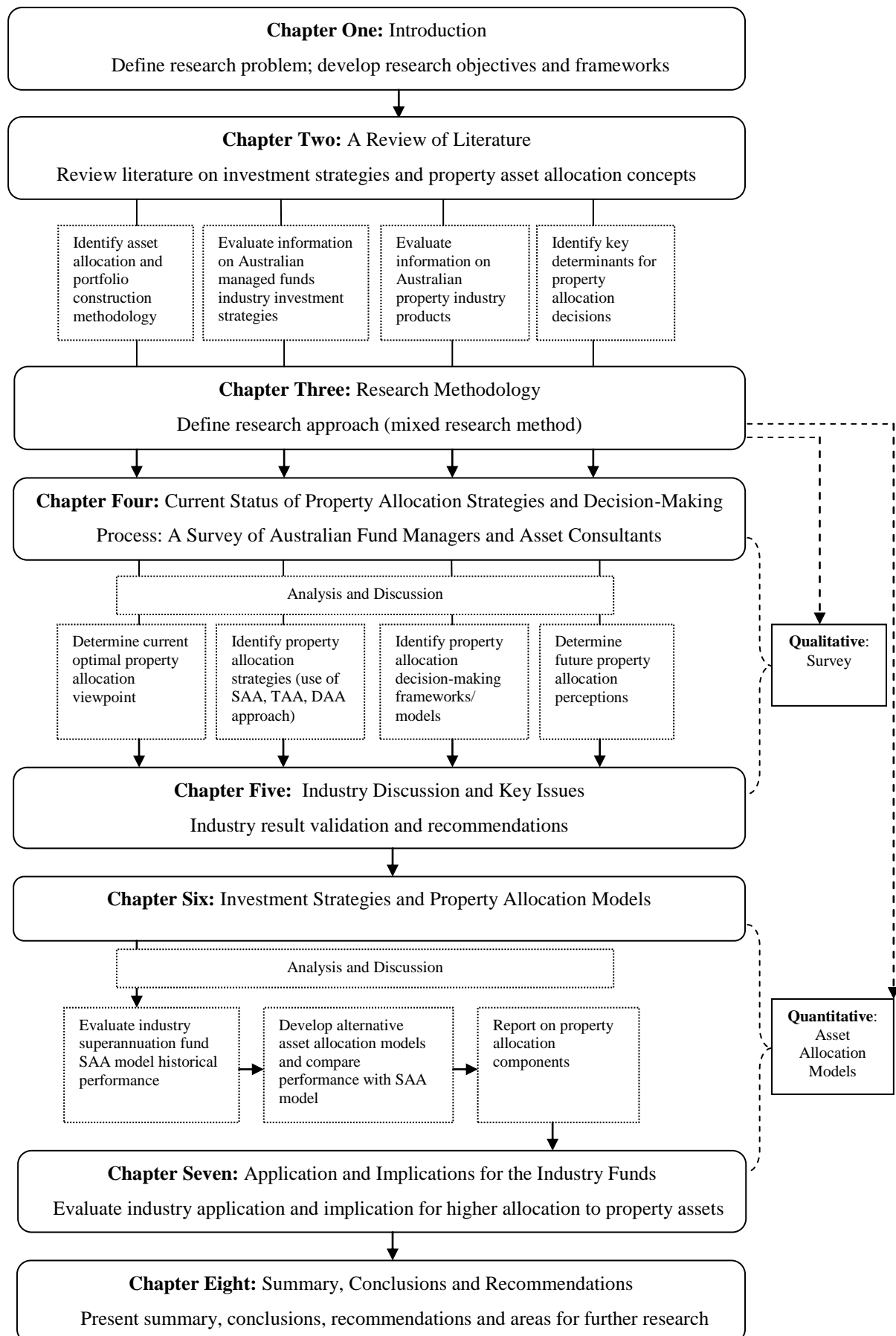
**Chapter Six** compares the performance of the Australian industry superannuation fund conventional strategic investment approach to ten alternative asset allocation strategies (constrained and unconstrained) alongside investigating the role of property in the associated investment models. This chapter starts with an overview of the data sources and the eleven asset allocation models, including the portfolio construction techniques and assumptions. The analysis and results are then discussed in four major sections. First, the *Historical Performance Analysis* section evaluates the industry superannuation fund's defined seven asset class historical performance over a 17 year timeframe (1995 to 2011). This is followed by asset allocation modelling investigation within three quantitative research themes.

The *Investment Strategies and Property Allocation* section compares the conventional SAA approach used by industry funds to eight alternative investment strategies. In particular, this sub-section focuses on the Strategic, Traditional, Buy and Hold, Equal Weighted, Optimal, Turning Points and Tactical models. The *Re-Profiling the Property Portfolio* section examines the diversification benefits of direct property and listed property separately within the different asset allocation models. Finally, the *Dynamic Asset Allocation Strategy and Property Allocation* section compares the performance of the industry fund SAA approach against two DAA models.

**Chapter Seven** investigates the industry application and implications of the recommended asset allocation model outputs.

**Chapter Eight** summarises the research findings and states the conclusions with reference to the objectives. The chapter also outlines the research implications for both theory and practice, offers recommendations, and provides areas for further study.

**Figure 1-2: Thesis Layout and Structure**



## 1.7 Publications and Presentations

As part of the thesis research, results from Chapters Four to Seven were published in journals (see Appendix 20) and also presented in international conferences, including doctoral colloquiums. In 2012, the research was recognised with the Best Paper/ Post-Graduate Scholarship Award at the 18th Pacific Rim Real Estate Society Conference in Australia. In 2014, the research was recognised with the PhD Best Presenter Award at the 20th Pacific Rim Real Estate Society Conference in New Zealand.

Citations for the **journal publications** include:

Reddy, W, Higgins, D, & Wakefield, R 2014, 'An investigation of property-related decision practice of Australian fund managers', *Journal of Property Investment & Finance*, vol. 32, no. 3, pp. 282-305.

Reddy, W 2013, 'Superannuation funds and property allocation strategies: what is the mix? direct property, listed property or both?', *Pacific Rim Property Research Journal*, vol. 19, no. 1, pp. 57-79.

Reddy, W, Higgins, D, Wist, M & Garimort, J 2013, 'Australian industry superannuation funds: investment strategies and property allocation', *Journal of Property Investment & Finance*, vol. 31, no. 5, pp. 462-480.

Reddy, W, Higgins, D, Wist, M & Garimort, J 2013, 'Investment strategies and property allocation for industry superannuation funds', *Australia and New Zealand Property Journal*, vol. 4, no. 4, pp. 372-375.

Reddy, W 2012, 'Determining the current optimal allocation to property: a survey of Australian fund managers', *Pacific Rim Property Research Journal*, vol. 18, no. 4, pp. 371-387.

Citations for **conference papers** include:

Reddy, W 2014, 'Dynamic asset allocation strategy and the role of property assets: a study of Australian industry superannuation funds', *Proceedings of the 20th Pacific Rim Real Estate Society Conference*, 19-22 January 2014, Christchurch, New Zealand.

Reddy, W 2013, 'Superannuation funds and property allocation strategies: what is the mix? direct property, listed property or both?', *Proceedings of the 18th Asian Real Estate Society Annual Conference*, 28 June – 01 July 2013, Kyoto, Japan.

Reddy, W, Higgins, D, Wist, M & Garimort, J 2013, 'Australian industry superannuation funds: investment strategies and property allocation', *Proceedings of the 19th Pacific Rim Real Estate Society Conference*, 13-16 January 2013, Melbourne, Australia.

Reddy, W 2012, 'Institutional property asset allocation strategies and decision-making frameworks: an Australian study', *Proceedings of the 28th American Real Estate Society Conference*, 17-21 April 2012, Florida, USA.



Reddy, W 2012 'Determining the current optimal allocation to property: a study of Australian fund managers', *Proceedings of the 18th Pacific Rim Real Estate Society Conference*, 15-18 January 2012, Adelaide, Australia.

Citations for **doctorial colloquium** presentations include:

Reddy, W 2014 'Australian managed funds: investment strategies and property allocation', PhD Colloquium, *20th Pacific Rim Real Estate Society Conference*, 19-22 January 2014, Christchurch, New Zealand.

Reddy, W 2013 'Fund managers and their property asset allocation decision-making process', PhD Colloquium, *19th Pacific Rim Real Estate Society Conference*, 13-16 January 2013, Melbourne, Australia.

Reddy, W 2012 'Fund managers and their property asset allocation decision-making process', PhD Colloquium, *18th Pacific Rim Real Estate Society Conference*, 15-18 January 2012, Adelaide, Australia.



## **CHAPTER TWO: A REVIEW OF LITERATURE – THE CONCEPT OF INVESTMENT STRATEGIES AND PROPERTY ASSET ALLOCATION**

### **2.1 Introduction**

The objective of this Chapter is to examine and evaluate the literature on investment strategies, property asset allocation concepts, and decision-making theory. The aim is to identify how Australian fund managers, who constitute the largest institutional investors in the Australian property industry, how they determine their asset allocation strategies and model their investment portfolios, and more importantly how these institutions determine their property asset allocation components in multi-asset investment portfolios.

Australia has one of the world's largest and fastest growing funds management market, underpinned by government mandated compulsory retirement saving scheme (superannuation) and a sophisticated financial regulatory environment. The investment and retirement savings of millions of Australians are invested in Australia's A\$2.0 trillion funds management industry (ABS 2013a). The significance of the Australian funds management industry to the development of property market in Australia is twofold:

- i. Australian fund managers such as superannuation funds and other pooled investment management funds are the dominant institutional investors in the Australian property market.
- ii. Unlisted property funds and listed property funds, which are the major conduit of institutional property investment, are part of the wider Australian funds management market via the unit trust and listed investment management sectors.

The continued flow of money, guaranteed by the Australian government's policy reforms, and the increase in general investment market knowledge of Australians, mean that the Australian funds management industry will become larger and even more sophisticated. The property market is expected to be a major beneficiary of this growth.

Property assets provide strong diversification potential when included in a mixed-asset portfolio. Combined with its comparatively good returns, property's low volatility (even after adjusting for the effects of valuation smoothing) emphasise its attractive risk and return characteristics to investors. Property assets generate regular income and long-term capital growth prospects. Apart from diversification benefits, inflation hedging has also been a good reason for investing in property. Despite these benefits, most institutional allocation to property in mixed-asset portfolios in Australia has remained primarily unchanged in recent decades, generally restricted to 10% or lower. Many in the property profession have seen this allocation as a subjective measure.

To improve allocation to property assets, it is essential to evaluate how institutional investors actually determine their property allocation component and the theory behind the decision-making process. Improved allocation to property is important due to Australia's growing and aging population and the continued volatility effects of the Global Financial Crisis (GFC) on the equities and bond markets. However, the allocation of resources to property also poses several challenges to institutional investors. Over the past two decades, choices about investment vehicles in particular have expanded with the rise of REITs and other unlisted property funds and syndicates. The literature review covers these issues under four sections:

- i. **Section 2.2: Investment Management** – presents the theory and concepts of investment management, an overview of the Australian funds managers, their investment styles and asset allocation options, and the role of asset consultants and other specialists in the investment management process.
- ii. **Section 2.3: Property Asset Class** – identifies the Australian property market development and asset allocation trend, details the different property investment options, and discusses the role of property in mixed-asset portfolios.
- iii. **Section 2.4: Asset Allocation and Portfolio Construction Theory** – provides an overview of the asset allocation process and strategies, portfolio construction and performance measures, and determines the applicability of Modern Portfolio Theory (MPT) to property asset allocation.
- iv. **Section 2.5: Property Asset Allocation Decision-making** – presents the decision-making theory and its applicability to the property asset allocation process, identifies the decision-makers and the factors that are likely to influence their property allocation decisions.

In summary, this Chapter examines and evaluates the literature on investment management, investment strategies, property asset allocation concepts, and decision-making theory.

## **2.2 Investment Management and Investment Strategies**

### **2.2.1 Investment Theory and Asset Allocation**

Investment is defined as the commitment of current funds in anticipation of future reward. Investment is a wealth generating activity, which is concerned with using assets that may be regarded as being real (such as land and building) or financial (such as securities, deposits, and debt instruments). Investors generally hold interest in real and financial assets either directly or indirectly. A direct investment is one in which an investor directly acquires a claim on a security or property. Indirect investment can be acquired through placing funds in investment companies (managed funds) which gives the investor a claim on a fraction of the entire portfolio or asset (Alexander, Sharpe & Bailey 2001; Bodie, Kane & Marcus 2008).

Generally, the return that investors receive from any investment has two primary components: current net income, and capital gains or losses. The risk for an investment is related to the uncertainty associated with the investor actually receiving these returns. Investment theory suggests that investors should diversify their investment portfolio to reduce total risk at a given level of return (Gitman et al. 2004; Hirt & Block 2012). This is easier said than done as institutional investors face a complex set of choices with respect to investment portfolio composition and management. MPT provides a theoretical framework for this process; however, in

practice, asset allocation decisions must be made in an environment of incomplete information, changing estimates of return, and shifting definitions of the acceptable investment risk.

For investors, asset allocation decisions refer to the appropriate asset mix and relative weighting of asset classes in an investment portfolio. Asset allocation is about setting minimum and maximum trade-offs to ensure sufficient representation, but not overconcentration, of various kinds of investments (Ragsdale & Rao 1994). Given the importance of asset allocation, the investment management industry dedicates significant amount of resources to developing and operating asset allocation policies. Gibson (2008) explained that asset allocation is not a new idea, citing evidence from a nearly 2,000 year old quotation from the Talmud:

‘Let every man divide his money into three parts, and invest a third in land, a third in business, and a third let him keep by him in reserve.’ (circa 1,200 BCE-500AD) (Gibson 2008, p. 1)

Gibson (2008) updates the ancient investing philosophy by defining ‘land’ as real estate investments, ‘business’ as common stocks, and ‘reserve’ as bonds. While this concept of division of assets still remains paramount, the dynamics of institutional portfolios has changed considerably today. A far wider range of traditional alternative investment vehicles is now available, such as hedge funds, commodities, infrastructure and other investment options, such as futures and derivative instruments. Investors can even consider investments in art and wine, and now carbon trading. What has also changed is how investors make their asset allocation decisions. In the past, asset allocation was described as a pedestrian and ad hoc process. Generally, institutional investors were advised to place 60% of their assets in stocks and 40% in bonds. Today, the asset allocation process is a far more rigorous exercise for institutional investors, involving the use of complex and sophisticated decision-making tools and techniques that have transformed the process (Lummer & Riepe 1994; Fabozzi 2009).

Asset allocation is now seen as a complex system of interdependent decisions that is divided into two broad categories: strategic (long-term) allocation, and tactical (short-term) allocation. Strategic asset allocation (SAA) is primarily concerned with partitioning investment capital into fixed percentages for allocation into different asset classes that best meet the long-term strategy of an investor. Tactical asset allocation (TAA) is concerned about the short-term gains by overweighting or underweighting certain asset classes or asset subclasses when values and returns appear to be out of line with economic fundamentals (Canto 2006; eds Maginn et al. 2007). The asset allocation strategies and process are discussed in detail in Section 2.4.

## **2.2.2 Financial Market Evolution and Asset Allocation**

The advancement in the field of financial theory and investment practices affect how investors approach the asset allocation process. The concept of asset allocation has evolved in the past century to meet changes in economic, regulatory and technological environments. Central to the asset allocation decision are the tradeoffs between the risks and returns of various investable assets. Bernstein (2007), in *Capital Ideas: The Improbable Origins of Modern Wall Street*, noted that the theories about how capital markets function, and how investors should manage their affairs, are latecomers in the history of ideas.

The most famous insight in the history of modern finance theory and investment practice is the publication of Harry Markowitz's 1952 'Portfolio Selection' paper in the *Journal of Finance*. In this groundbreaking work, Markowitz formalised the risk and return relationship between assets, known today as the mathematics of diversification. Markowitz emphasised two ancient dissertations – 'nothing ventured, nothing gained', but 'do not put all your eggs in one basket' (Bernstein 2007). Markowitz's work earned him the 1990 Nobel Prize in Economic Sciences. The advent of MPT concepts is synonymous with Markowitz. As a result of his work, investors today are far more keenly aware of risk, and better able to deal with it than in the past.

A portfolio is a collection of investments held by an individual investor or an institution. Investment portfolios are constructed and held as part of an investment strategy and for the purpose of diversification. Markowitz (1952, 1959) quantitatively explored the notion that diversification is not achieved merely through an increased number of investments, but by investing in a number of assets whose patterns of returns is distinct and different enough from one another to partially or wholly offset each other's returns and thus reduce overall portfolio volatility. Markowitz pioneered the mean-variance approach which has been used to determine the optimal portfolio allocation. An optimal portfolio of assets is selected by combining an efficient frontier with a specification of the investor's preferences for risk and return (Rachev, Stoyanov & Fabozzi 2008).

Furthermore, according to Darst (2003, pp. 46-47):

‘... the asset allocation process draws upon and ties into Markowitz's Modern Portfolio Theory by focusing on the effects that including, limiting, or excluding a specific asset class will have on the risk (volatility) and return characteristics of the portfolio as a whole’.

The MPT has evolved in the past 60 years with important contributions from various academics and practitioners. Tobin (1958) expanded Markowitz's work by adding a risk-free asset in the portfolio analysis process. Tobin's Separation Theorem was important in addressing the shortcomings in Markowitz's models. The next important advancement in asset allocation came from academics Sharpe (1964), Lintner (1965) and Mossin (1966) who expanded the work of Markowitz and Tobin into the general equilibrium model of risk and return, known today as the Capital Asset Pricing Model (CAPM). Sharpe (1964) proposed a theoretical relationship between expected return and risk based on a set of assumptions of individual behaviour and market conditions. The CAPM model became the foundation and the standard on which the risk-adjusted performance of professional portfolio managers is measured.

The combination of presumed informational efficiency with the ability to measure expected return led to the development of the Efficient Market Hypothesis (EMH). Fama (1965) and Samuelson (1965) classified fund management into active and passive management styles based on the EMH. The CAPM and EMH now provide useful asset allocation tools for the industry. In the late 1960s, the advancement of computers and information technology led to the expansion of a number of index businesses which now provide useful benchmark measures for the fund managers' approaches to asset allocation. Amidst these market changes, an interesting extension of the CAPM is the concept of Arbitrage Pricing Theory (APT), developed in 1976 by Stephen Ross. While CAPM specifies where asset prices will settle, it is silent about what produces those returns. The APT addresses the gaps

in CAPM by providing a method to measure how asset prices will respond to unexpected changes in economic factors such as inflation, interest rate patterns, economic activity (usually measured by GDP), credit spreads, and exchanges rates. Later, Roll and Ross (1995) used the APT approach to explain portfolio strategy decisions.

In 1990, Fischer Black and Robert Litterman of Goldman Sachs introduced the ‘Black-Litterman’ optimisation model to the world of finance. Essentially, the Black-Litterman model combines the CAPM and Markowitz’s mean-variance optimisation theory. Markowitz’s classical portfolio optimisation can result in severe overweighting for assets whose expected returns are overweighted or whose standard deviations are underestimated. Black and Litterman (1992) suggested that one method of dealing with the problems in Markowitz’s mean variance optimisation is to use a process of inverse optimisation or reverse optimisation. The result is an asset allocation model which is identical to that of a market portfolio. An important expansion on the CAPM in 1992 was the ‘Three-Factor Model’ developed by Eugene Fama and Kenneth French. The ‘Fama and French’ model states that sources of returns could be related to firm size as well as the investment style of the fund manager. The model added size and value factors to CAPM’s market risk factor.

The globalisation of investment markets in the mid-1990s provided investors with greater diversification options in new investible products, such as options, hedge funds, managed futures, and emerging market securities. Since the 1990s, academics and practitioners have made significant progress towards the concept of risk measurement. Advancements in computer technology have allowed finance professionals to develop more sophisticated market forecasting, risk management, and asset allocation tools. Fund managers have access to state-of-the art portfolio optimisation software which enables them to instantly calculate the optimal allocation for a portfolio of thousands of assets. The development of the ‘World Wide Web’ means that investors can easily obtain market data and other financial information on the Internet. In addition, gathering, processing and analysing vast volumes of data are possible by using sophisticated computer-based algorithms and quantitative techniques (eds Fabozzi & Markowitz 2011a; Francis & Kim 2013; Schneeweis, Crowder & Kazemi 2010).

The combination of the asset selection theory and asset pricing theory provides a framework to specify and measure investment risk, and to develop relationships between expected asset return and risk. MPT and one of its key concepts, Efficient Market Theory, deal with how market prices reflect and react to information. Several other concepts (such as Efficient Frontier, and Mean-Variance Optimisation) assist investors evaluate the trade-off between risk and return, and offer a means of achieving greater diversification benefits. Measures such as the CAPM, Sharpe ratio, beta and alpha, evaluate how an asset’s return compensates the investor for bearing risks. While Markowitz’s models continue to be the cornerstone for constructing modern institutional portfolios, the market collapse of 2007 and 2008 provides evidence that risk cannot be completely eliminated. Amid the market chaos, some commentators even asked: ‘Is diversification dead?’. This is normal as during times of panic, investors rush to exit the market. Since 2009, prices for various assets have rebounded and now much of asset allocation study is focused on portfolio rebalancing as an avenue of managing risk.

### 2.2.3 The Concept of Investment Management

Managed funds are professionally managed pooled investment entities that, in return for a fee, invest in a range of asset classes (such as cash, bonds, equities, property) to meet specific investment goals of institutional and individual investors (eds Maginn et al. 2007; Hanrahan 2007).

The term ‘fund management’ may refer to all forms of institutional investment as well as investment management for retail or private investors. Institutional investors include:

- i. Pension funds.
- ii. Depository institutions (commercial banks, savings and loan associations, and credit unions).
- iii. Insurance companies (life companies, property and casualty companies, and health companies).
- iv. Regulated investment companies (mutual funds).
- v. Endowments and foundations.
- vi. Treasury departments of corporations, municipal governments, and government agencies.

Source: Fabozzi & Markowitz 2011b, p. 4.

Fabozzi and Markowitz (2011b) state that institutional investors can be grouped in two broad categories: in the first category are institutions with ‘liability driven objectives’; and in the second category are those with ‘non-liability driven objectives’. Examples of non-liability driven institutional investors are private investment banks and mutual funds. An example of an institutional investor with contractually specified liabilities is pension funds (known in Australia as superannuation funds). Superannuation funds are liability driven investors – that is, the primary function of the fund manager is to fund members’ future pension benefits.

Investors in managed funds buy units in funds, similar to buying share ownership in a company. Managed funds make income distributions, paid at regular intervals (such as quarterly or as a yearly dividend). The income distribution is calculated based on the fund’s earnings which can include gains from regular operations, dividends from other share investments, rent from property, interest earned on bonds and short-term deposits, and any capital gains realised from the sale of the fund assets. In addition, managed fund investors can achieve capital growth (or loss) depending on the value of the fund’s unit when they exit the fund (Fabozzi 2009).

Managed funds provide some key benefits to both institutional and retail investors including:

- i. Specialist managers – investors gain access to experienced professional investment managers who are experts in various sectors of the investment market.
- ii. Diversification benefits – managed funds allow individuals and institutions to pool their funds with other investors and have greater accessibility to large number of assets across different markets and sectors. This level of portfolio diversification would be difficult for individual investors to achieve if they were to invest on their own.
- iii. Economies of scale – managed funds provide investors with greater economies of scale, such as volume discounts on brokerage and other fees. Generally, transaction costs incurred on large physical assets such as commercial property are lower through pooled investments than when investing individually.



- iv. Administrative services – fund managers provide an array of administrative and customer services to investors, such as taxation, and record keeping. Investors are free from much of the administrative detail that can be involved in directly investing in assets such as property and international shares.

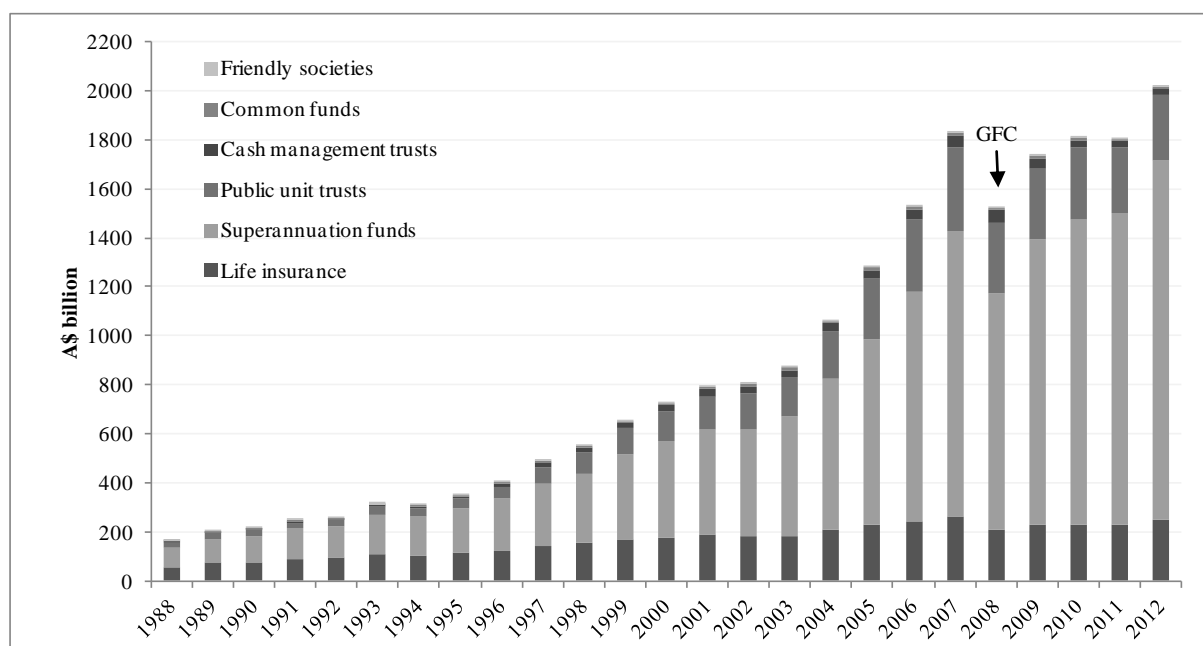
Source: Bodie, Kane & Marcus 2008.

Managed funds are governed by trust deeds, stating among other things the purpose and objectives of the institution and the benefits it provides. The beneficiaries of the fund, such as the participants in a defined benefit superannuation fund, are the main stakeholders in the managed fund. Trustees of fund management firms now hire investment consultants to help meet their fiduciary responsibilities, and to increase the probability that the fund's investment goals will be achieved. In many instances, using asset consultants limits the decision requirements on the fund managers. Although the decisions associated with asset allocation and asset selection are passed to the fund managers, the risks remain with the investors (Darst 2003; Robinson 2002).

## 2.2.4 Overview of the Australian Funds Management Industry

According to Austrade (2012), the Australian funds management industry is the largest in the Asia-Pacific region and the third largest in the world, behind the United States and Luxembourg (see Appendix 1). Given its size, the Australian funds management sector is 34% larger than the market capitalisation of the domestic equities market and represents approximately 128% of the country's nominal GDP. In the past 25 years, the amount of money invested in the Australian funds management industry has dramatically increased from A\$150 billion in the late 1980s to A\$2.0 trillion, as at December 2012. Australian fund management has grown at a rate of 10% per annum since 1992 and projected to reach A\$2.3 trillion by 2015. Figure 2-1 details the Australian managed fund industry's growth by sector from December 1988 to December 2012.

**Figure 2-1: Australian Managed Funds: 1988 – 2012**



Source: ABS 2013a.

Figure 2-1 illustrates that the Australian funds managed industry assets have increased by nearly ninefold, from A\$171 billion in 1988 to A\$2.0 trillion, as at December 2012. Much of this growth has been driven by direct reforms in the Australian superannuation industry in the mid-1980s and early 1990s. Superannuation funds are the largest contributor to Australian managed funds, representing 73% of the industry's assets under management as at December 2012. Including superannuation funds held in the statutory funds of life insurance offices, superannuation representation increased to 82%. Generally, the Australian funds management industry's growth has trended upwards, albeit with declines during the recent GFC period. Superannuation funds, life insurance offices, and unit trusts accounted for 98% by value of the Australian funds management industry's assets, as at December 2012. The remainder of the assets are invested in cash management trusts, common funds, and friendly societies.

Approximately 97% of the Australian funds management industry's investment pool is from domestic sources. In addition to using in-house investment management teams, it is common for larger funds to outsource investment functions to specialist managers. Table 2-1 breaks down the various investment styles of Australian managed funds.

**Table 2-1: Australian Fund Managers' Investment Methods**

<b>Funds</b>	<b>Assets invested through other specialist investment managers</b>	<b>Assets invested directly</b>	<b>Total assets of managed funds</b>
	<b>A\$ billion</b>	<b>A\$ billion</b>	<b>A\$ billion</b>
Life insurance	160.7	85.3	246.0
Superannuation funds	586.0	871.1	1,457.2
Public unit trusts	112.9	151.6	264.5
Cash management trusts	1.1	4.8	5.9
Common funds	4.0	3.8	7.8
Friendly societies	17.2	11.2	28.4
<b>Total</b>	<b>882.0</b>	<b>1,127.8</b>	<b>2,009.8</b>

Source: ABS 2013b, p. 9.

Table 2-1 illustrates that although the majority of Australian managed funds' assets are invested directly, large fund managers such as superannuation funds have a significant portion of their funds invested through specialist investment managers. Superannuation funds account for 66% of the assets invested, with A\$882 billion in the domestic investment management industry, followed by life insurance (18%), and public unit trusts (13%). In December 2012, 28% of superannuation fund assets were invested in individually managed mandates, 24% in wholesale funds, and 16% in life office funds (see Appendix 6). In terms of direct investments, superannuation funds are again the leaders, accounting for 77% of the A\$1.1 trillion direct investment in the Australian managed funds industry. In total, approximately 44% (A\$882 billion) of funds management industry assets are invested with specialist investment managers.

The Australian financial market has undergone significant structural changes due to regulatory arrangements enacted in 1977. As a result, the supervision of the Australian funds management industry is now organised

along functional rather than institutional lines (see Appendix 2). The main regulators of the Australian funds management industry are the Reserve Bank of Australia (RBA), Australian Prudential Regulation Authority (APRA), Australian Securities and Investment Commission (ASIC), Australian Transactions Reports and Analysis Centre (AUSTRAC), and the Australian Tax Office (ATO). The *Corporations Act 2001* is the primary legislation governing the managed funds industry in Australia. ASIC is the principle regulator of fund managers in Australia and is responsible for registering Australian managed investment schemes, for licensing fund managers, and for monitoring their compliance with Australia's financial services laws.

The Managed Investments Act 1998 (MIA) was based on recommendations by the Financial Systems Inquiry (Wallis Committee). It was the first in a range of government initiatives to streamline the Australian managed funds industry. Introducing the Single Responsible Entity, by replacing the separate roles of Trustee and Fund Manager, was the most significant change brought about by the MIA. As a result, Single Responsible Entity is now solely responsible for managing and operating the investment management vehicles. In May 2010, the Treasurer released the final report of the Australia's Future Tax System Review (the Henry Review). As part of its response to the Review, the government announced an increase in the required rate of superannuation guarantee contributions from 9% to 12% by 2019-20 (ATO 2013).

## **2.2.5 Funds Management Market Segments**

### **2.2.5.1 Superannuation Funds**

Superannuation as a form of savings has existed in Australia for more than a century and is an important source of retirement income arrangement for Australia's aging and growing population. Superannuation funds are savings vehicles used by employers and employees with the objective of providing members the benefit of future retirement income. As such, superannuation funds are liability managers. The primary focus of superannuation fund managers is reducing portfolio volatility or risk to fund the liability requirements (IREI 2010).

In the 1980s, it became clear to the Australian government that the country's demographic trends could not forever sustain a retirement income system reliant upon the taxpayer-funded pension schemes, and that Australians would need to set aside part of their current income to fund their own retirement. Australia's resident population, estimated to be 23 million people in March 2013, is projected to reach 43 million by 2056 and 62 million by 2101. The proportion of the population in older age groups has increased while the proportion in younger age group has declined. Australia's aging population is a result of increased life expectancy and sustained low fertility (ABS 2013c; ABS 2012a, pp. 238-239; ABS 2008, p. 2; APRA 2007).

Superannuation contributions became a compulsory requirement in July 1992, when the Australian government introduced the current superannuation guarantee system. Under the government's compulsory 'preservation' legislation, contributions to superannuation funds cannot be accessed until the member reaches the preservation age (55 years) and retires, or turns 65. The superannuation guarantee system requires employers to make tax-deductible superannuation contributions on behalf of their employees into a defined superannuation fund. The initial compulsory contribution rate was 3% and has since gradually increased to 9% over ten years (APRA 2013b, p. 5; Deloitte 2009).

The continued flow of money mean that superannuation industry assets under management have increased by almost five fold (or 471%) since June 1996 to AU\$1.5 trillion in December 2012, which makes Australia the fourth largest superannuation market in the world, behind United States, Japan and United Kingdom (see Appendix 3). The number of superannuation entities has also increased by almost 400% since the 1990s. Consequently Australian superannuation industry is ranked amongst the fastest growing in the world. The Australian superannuation 10 year annual compounded growth rate as at December 2012 was 18%, second only to Brazil at 20% (see Appendix 3). The Australian superannuation industry is projected to grow to AU\$2 trillion by 2014, AU\$3 trillion by 2019 and AU\$7 trillion by 2028 backed by Government initiative to increase the compulsory superannuation rate from 9% to 12% by 2020 (Allen Consulting 2011; APRA 2013a, p. 6; APRA 2013b, p. 5; Deloitte 2009).

At December 2012, the Australian superannuation industry consisted of 344 institutional funds and 496,038 small self-managed funds (DIY Funds). Prior to the superannuation guarantee system, most Australians' retirement savings were in defined benefit funds. However, now a vast majority of superannuation funds are in accumulation or defined contribution plans. According to the Towers Watson 'Global Pension Assets Study 2013' report (Towers Watson 2013a), globally there is an increasing shift in the direction of defined contribution funds. The need to offer members choice of investment options is now the central feature of superannuation funds both in Australia and overseas.

Generally, Australians have three superannuation investment options: not-for-profit funds, retail funds, and self-managed super funds (SMSFs). With the exception of SMSFs which are regulated by the ATO, all superannuation funds in Australia are regulated by APRA. Each superannuation fund type provides specific benefits. The Australian superannuation industry sectors include:

**i. Not-for-profit funds**

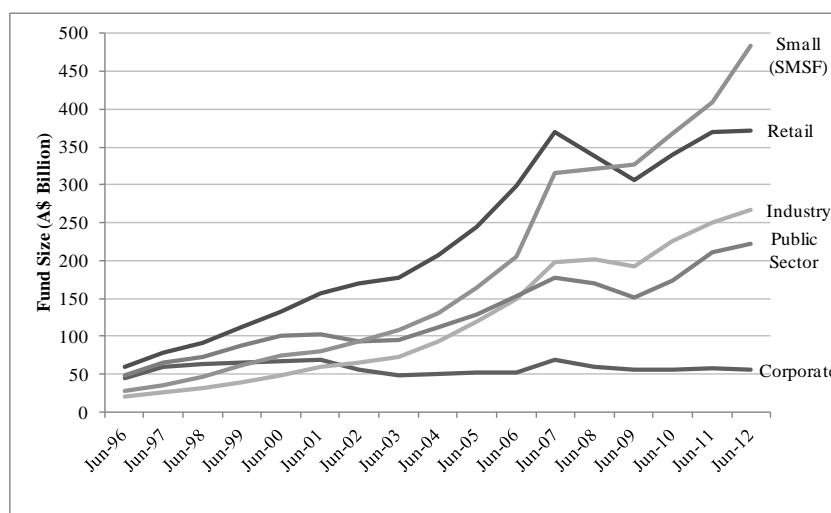
- a) *Corporate funds* – designed to benefit employees of a particular company or group of companies.
  - b) *Industry funds* – designed for employees working in a common industry or group of associated industries operated by parties to industrial awards (usually employer associations and/or unions).
  - c) *Public sector funds* – sponsored by federal or state government employer or government controlled business enterprises.
- ii. **Retail funds** – pooled superannuation products sold through intermediaries to the general public. This includes retail master trusts and other superannuation products offered by life insurance companies.
- iii. **Small funds or SMSFs** – funds where small groups of less than five individual members operate their own fund and all members are fund trustees or pay a professional trustee company to provide this service (APRA 2013a; Axiss Australia 2002; Rainmaker Group 2012).

The institutional sector, consisting of the not-for-profit funds (corporate funds, industry funds, public sector funds) and retail funds, make up 68% of the superannuation industry's A\$1.5 trillion of assets under management. As at December 2012, there were 56 industry funds, 119 corporate funds, 38 public sector funds and 131 retail funds. The not-for-profit superannuation funds are popular options for superannuants, given that the trustee company operating the fund does not seek to make any profit out of running the fund, and therefore

the funds often charge members quite low fees. With A\$302 billion under management, industry funds are the largest among Australia's institutional superannuation investment options (APRA 2013a, p. 6; APRA 2013b).

Figure 2-2 illustrates the Australian superannuation industry's asset value by sector for the past 17 years. Figure 2-2 highlights that SMSFs are the fastest growing superannuation funds in Australia with an annual average growth rate of 19% by value, followed by industry superannuation funds with an annual average growth rate of 18%. In June 1996, corporate and public sector funds represented approximately 40% of Australian superannuation assets, while industry funds and SMSFs accounted for 20% of the industry's assets. As at 30 June 2012, the positions had reversed, with corporate and public sector funds' holdings at 20%, while the combined industry and small funds accounted for 54% of the superannuation industry's assets.

**Figure 2-2: Australian Superannuation Industry Asset Value by Sector: 1996-2012**



Source: APRA 2013b, p. 40; APRA 2007, p. 37.

The strong growth in retail funds and SMSFs is associated with restructuring of the financial markets in recent decades, increased influence of financial planners, and greater awareness at the retail level of retirement income planning. Industry funds are the most popular institutional superannuation choice in the workforce. Industry funds are rapidly evolving. Their strong growth is underpinned by aggressive marketing backed by innovative investment models, and the increasing proportion of life insurance companies' business that is superannuation-based (APRA 2013b, pp. 34 & 50; Deloitte 2009).

Over recent years, a significant number of superannuation funds have merged with other funds, or rolled over their assets to other funds, creating large funds. This is more evident within not-for-profit funds, with the number of funds declining by nearly 60%, from 500 in December 2002 to 213 at December 2012. The top ten APRA regulated superannuation funds' assets represent approximately 22% (or A\$336 billion) of the Australian pension fund market (APRA 2013c).

Table 2-2 lists the leading APRA regulated Australian superannuation funds, as at June 2012. The leading APRA regulated superannuation as at June 2012 was AMP Superannuation Savings Trust, a retail superannuation fund

with \$51 billion of funds under management. By sector, five of the top ten ranked funds are from the retail sector. AustralianSuper is the highest ranked industry fund, and State Public Sector Superannuation Scheme is the highest ranked public sector fund, with net assets of A\$43 billion and A\$33 billion respectively, as at June 2012. Telstra Superannuation Scheme is the leading corporate fund with A\$11 billion assets under management.

**Table 2-2: Leading Australian Superannuation Funds by Net Asset Value: 30 June 2012**

Rank	Fund name	Fund Type	Net Assets (\$A Billion)	Market Share
1	AMP Superannuation Savings Trust	Retail	51.4	3.4%
2	AustralianSuper	Industry	43.0	2.8%
3	Colonial First State FirstChoice Superannuation Trust	Retail	41.0	2.7%
4	State Public Sector Superannuation Scheme	Public Sector	32.7	2.2%
5	The Universal Super Scheme (MLC)	Retail	32.2	2.1%
6	First State Superannuation Scheme	Public Sector	31.3	2.1%
7	Unisuper	Industry	29.0	1.9%
8	Retirement Wrap	Retail	28.6	1.9%
9	OnePath Masterfund (ANZ)	Retail	26.5	1.8%
10	Retail Employees Superannuation Trust	Industry	20.4	1.4%
<b>Total Superannuation Industry Asset Value</b>			<b>1,510</b>	

Source: APRA 2013c.

Published in 2012, the Pension & Investments/Watson Wyatt ‘Global 300 Pension Fund Survey’ report (P&I/Towers Watson 2012b) ranked 15 Australian superannuation funds amongst the top 300 globally, based on assets held (see Appendix 4). The Future Fund (which is not a superannuation fund, but included in the P&I/Towers Watson survey because it will be used to fund public sector pension liabilities) was the top ranked Australian fund at number 33. The second highest ranked Australian fund in the top 300 was AustralianSuper (68), an industry superannuation fund. Compared to top ten leading global pension funds, Australian superannuation funds are small in size. The assets under management of top ten leading pension funds range from US\$154 billion (Employees Provident Fund Malaysia) to US\$1,394.87 (Government Pension Investment Fund Japan). In comparison, asset under management for the top two Australian ranked funds were US\$74 billion (Future Fund) and US\$43 billion (AustralianSuper), as at 31 December 2011 (see Appendix 5).

The introduction of compulsory contributions is largely responsible for the increase in superannuation coverage of the Australian workforce from around 40% in mid-1980s to more than 95%, at December 2012. As Australians may have several superannuation accounts, the Australian superannuation fund member accounts total around 31.9 million at June 2012 (a 95% increase since 1996), with industry superannuation funds (11.7 million) and retail superannuation funds (15.4 million), making up the bulk of the member accounts (see Appendix 7). In addition, the Australian superannuation net contribution has nearly tripled since June 1996.

The net contribution represents fund flow from member accounts, employers, spouse contributions, and government co-contributions, plus rollovers, minus benefit payments. As at 30 June 2012, the superannuation industry’s net contribution was A\$54.8 billion, compared to A\$16.8 billion in June 1996. As a result, Australian

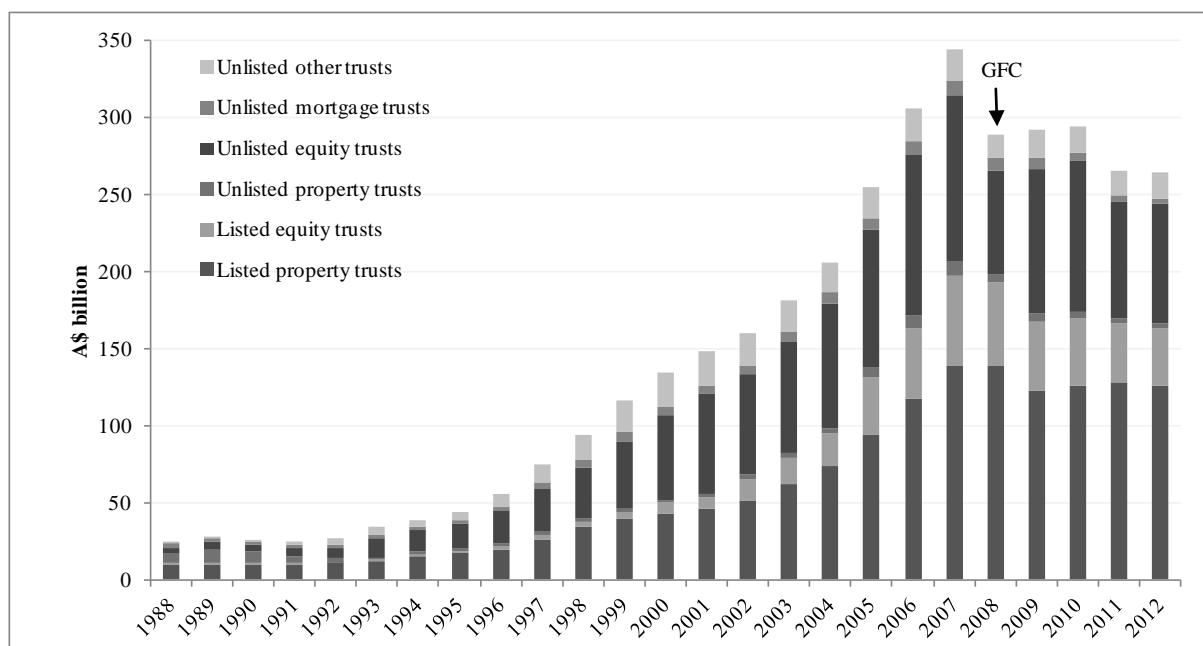
superannuation contributions to GDP increased from 20% in 1990s to 101% in 2012, joining the Netherlands, Switzerland, UK and US as countries where this ratio is higher than 100% of GDP (see Appendix 3). The increase in net contributions has also underpinned the growth of various investment management products and related service providers, including the Australian property fund industry.

### 2.2.5.2 Public Unit Trusts

Unit trusts are classified as a type of general managed investment fund that pools the money of a number of investors and provides those investors with rights to the benefits produced by the fund, but not the day-to-day control over the fund operations. Unit trusts were first offered to the public in London in 1868. Unit trusts emerged in Australia in 1936 when Australian Fixed Trusts established an equity fund known as ‘The First Australian Unit Trust’. The unit trust classification now includes listed property trusts, unlisted property trusts, listed investment companies, unlisted equity funds, and unlisted mortgage funds (FINSIA 2003; Hanrahan 2007).

Assets of unit trusts have increased significantly in recent decades, growing since 1992 by an average annual compound rate of 13% to approximately A\$267 billion, as at December 2012. Figure 2-3 details the growth of the Australian unit trust industry by investment sector from December 1988 to December 2012.

**Figure 2-3: Australian Unit Trust Industry Funds under Management by Sector: 1988-2012.**



Source: ABS 2013a.

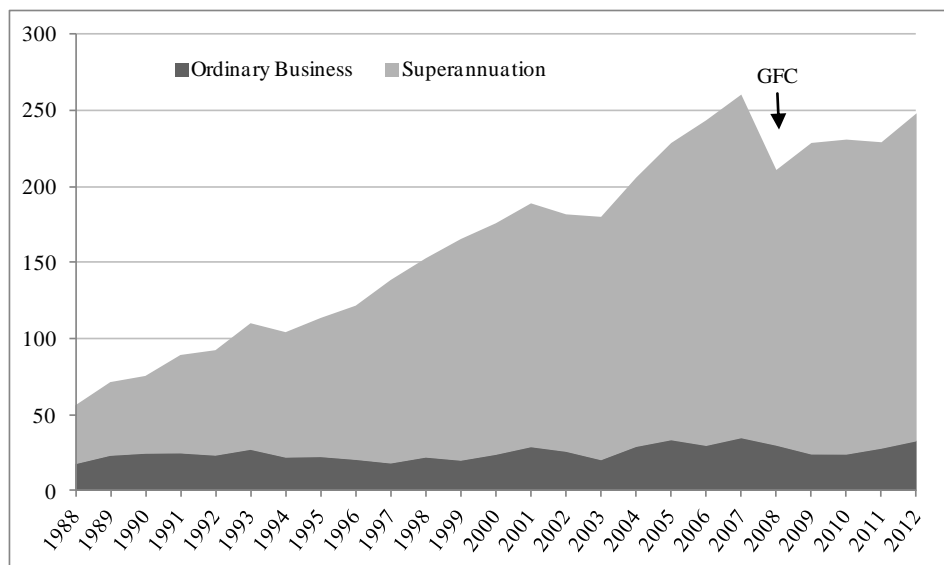
Listed property funds dominate the unit trust sector, representing approximately 50% of the assets by value, as at December 2012. In 25 years to December 2012, unit trust funds have recorded a nearly tenfold increase in funds under management. The key driver for this growth is the growing demand on the part of retail investors for liquid, affordable and professionally managed investment products. The history and growth of Australian property funds will be discussed in detail in Section 2.3.

### 2.2.5.3 Life Insurance Offices

Life insurance offices (also known as insurance bonds or life bonds) are generally 10-year life insurance policies that are backed by investments within a life insurance company statutory fund. In Australia, life insurance offices provide superannuation and related investment products via their own superannuation plans and master trusts. Most of the investment funds of life insurance offices are held in statutory funds, set up under Australian government legislation. They are similar to trust funds. The sector is regulated by APRA (Gallagher 2002).

It is common for life insurance offices' funds to offer a range of services to other superannuation funds including life insurance, investment management, and administrative services. Life insurance offices have increasingly become involved in providing superannuation products and services (Axiss Australia 2002). Approximately 70% of the Australian workforce with superannuation has life insurance included within their superannuation policies. Funds managed by the life insurance offices have nearly tripled since 1992 to A\$248 billion, as at December 2012, underpinned mainly by the strong growth in the Australian superannuation industry. The greater focus on the superannuation industry has led to an increase in superannuation-based business as a proportion of the total business of life insurance companies and administrative services (see Figure 2-4).

**Figure 2-4: Life Insurance Fund Business Operations: 1988-2012**



Source: ABS 2013a.

Figure 2-4 illustrates that the superannuation business segment accounted for 87% of life insurance office assets, as at December 2012. The proportion of life insurance office fund assets invested in ordinary business has declined from 31% in 1998 to 13% in December 2012. At June 2012, bank-owned life insurance companies (AMP Life Limited, MLC Limited and OnePath Life Limited/ANZ Bank) managed around 63% of Australian life insurance market assets (see Appendix 8).

### 2.2.5.4 Other Managed Funds

Cash management trusts account for 1% of the Australian funds management industry's asset under management. Cash management trusts pool the funds contributed by a range of individuals for investment by a



professional manager in mainly short-term facilities, such as interest bearing deposits. The interest earned, post deduction of management fees and other related costs, provides a return to individual investors by way of an income distribution. In Australia, the first cash management trust was lodged in 1980. Since then the sector has grown almost eightfold, from A\$3 billion in the 1980s to A\$29 billion, as at December 2012 (ABS 2013b).

The combined contribution of common funds and friendly societies to the Australian funds management industry's assets is valued as less than 1% (A\$14 billion). Common funds are operated by trustee companies under relevant State Trustee Companies Acts. Common funds have the same investment strategy and functions as cash management funds and public unit trusts. However, the key difference is in their operational features. Unlike cash management funds and public unit trusts, common funds do not issue units and may not issue prospectuses to investors.

Friendly societies emerged in the late 1970s, offering 10-year single premium 'Friendly Society Bond'. Friendly societies are not-for-profit organisations which are registered and regulated by APRA. They provide a range of services to their members, including investment management, health, funeral, educational and welfare benefits. As at June 2012, the industry consisted of 13 friendly societies managing 207 benefit funds. The growth in funds under management by friendly societies has generally remained unchanged since the 1980s, reported at A\$6 billion, as at December 2012 (ABS 2013b; APRA 2012b; FINSIA 2003).

## **2.2.6 Specialist Investment Managers**

The use of specialist investment managers and asset consultants is on the rise in Australia. Specialist investment managers and asset consultants are particularly useful to small sized institutional firms and retail funds that do not have the capacity and resources to employ large in-house research, investment and asset management teams. Superannuation funds, life insurance offices and public unit trusts are the major contributors to the growth of the domestic investment management industry in Australia.

### **2.2.6.1 Investment Management Funds**

Over the recent decades, an important feature of the funds management industry in Australia has been the increasing use of specialist investment managers. Superannuation funds are the largest investors in investment management funds (also known as diversified managed funds), with a majority of these investments made via partnerships and mandates (see Appendix 6). There are 131 institutional investment management firms operating in Australia. In addition, there are approximately 200 small hedge/boutique fund managers which operate as independent companies and service the wholesale market channel, generally concentrating on a relatively narrow range of assets. The Australian investment management market is dominated by the subsidiaries of large institutions, such as international financial groups, domestic banks, and life insurance companies. Approximately two thirds of Australian investment management fund assets under management are sourced from wholesale funds, with retail investors accounting for one third of the market (Austrade 2010b).

Australia's top ten investment management funds account for approximately 55% of the total A\$1.1 trillion industry asset value, as at December 2012. In terms of global positioning, 23 Australian investment management firms are ranked amongst the world's top 500 managed funds in the 2012 P&I/Towers Watson 'World 500: World's Largest Money Managers' report (P&I /Towers Watson 2012a). Macquarie Bank is the largest

Australian investment management fund with A\$267 billion in assets, followed by the Commonwealth Bank (A\$144 billion), AMP (A\$125 billion), NAB/MLC (A\$77 billion), Westpac/BT (A\$75 billion), and QIC (A\$62 billion). The 23 Australian investment managers ranked amongst the world's top 500 managed funds have an aggregate level of funds under management in excess of US\$1 trillion (see Appendix 9).

The Australian investment management industry is grouped into two broad categories: retail managed investments, and wholesale managed investments. Retail managed investments are those that are packaged and marketed to the general public through a prospectus or customer information brochure. Retail markets serve individuals, such as those managing their own superannuation (DIY funds) or investing in a master trust selected by their employer. Retail funds are available to investors with initial minimum investments as low as \$1,500-\$5,000, with subsequent investments as little as \$100 (RBA 2003).

Wholesale managed investments are usually targeted at institutional investors, such as superannuation funds, life insurance funds and promoters of retail managed investments. Investments in some wholesale funds are quite expensive, generally starting from a minimum of \$500,000. Wholesale managed investments are generally fund manager specific and can be administratively cumbersome. Compared to overseas fund management markets, there is a significant overlap in the retail and wholesale fund management markets in Australia. Approximately two thirds of all funds are managed by fund managers that service both the retail and wholesale markets (RBA 2003). Table 2-3 lists Australia's top ten wholesale and retail investment management funds.

**Table 2-3: Australia's Top 10 Wholesale and Retail Investment Management Funds: December 2010**

Rank	Wholesale Investment Manager	A\$ Billion	Market Share	Rank	Retail Investment Manager	A\$ Billion	Market Share
1	Macquarie Bank Group	87.5	9.3%	1	BT Financial Group	92.7	21.1%
2	State Street Global Advisors	78.9	8.3%	2	Commonwealth/Colonial Group	71.0	16.2%
3	Vanguard Investments Ltd	71.4	7.5%	3	National/MLC Group	52.7	12.0%
4	Commonwealth/Colonial Group	64.4	6.8%	4	AMP Group	51.8	11.8%
5	BlackRock	49.2	5.2%	5	ING/ANZ Group	39.3	9.0%
6	AMP Group	41.2	4.4%	6	AXA Australia/Alliance Bernstein	30.3	6.9%
7	AXA Australia/Alliance Bernstein	28.7	3.0%	7	Macquarie Bank Group	18.6	4.2%
8	PIMCO	27.9	3.0%	8	Platinum Asset Management	13.4	3.1%
9	National/MLC Group	26.8	2.8%	9	Challenger Financial Services Group	13.3	3.0%
10	IOOF Group	26.4	2.8%	10	Perpetual Ltd	6.8	1.5%
<b>Total Wholesale Investment Management Fund Assets</b>		<b>945.7</b>		<b>Total Retail Investment Management Fund Assets</b>		<b>439.0</b>	

Source: Austrade 2010b, p. 38.

As at December 2010, Macquarie Bank Group was the top ranked wholesale investment fund and BT Financial Group was the top ranked retail investment fund in Australia. The top ten wholesale funds account for approximately 53% of the total A\$946 billion wholesale investment management fund asset value. Some of these investment management funds are also listed and traded on Australian Securities Exchange (ASX), similar to common shares under the Listed Managed Investments (LMI) group. LMIs consist of listed property funds, known as A-REITs, listed investment companies and trusts which pool investor funds to invest in mandated markets, infrastructure funds, exchange traded products (EPTs), and absolute return funds. As at December 2012, the combined market capitalisation of LMIs was A\$155 billion across 219 funds (see Appendix 11). A-REITs is the largest LMI in Australia, accounting for 57% of the sector's market capitalisation value, followed by infrastructure funds (26%). Both A-REITs and infrastructure investments will be discussed in detail later.

### **2.2.6.2 Investment Management Fees**

The fee structures of retail and wholesale fund managers are different. The retail fund manager fee components generally include entry, exit and ongoing fees. In contrast, entry and exit fees are rarely used in the wholesale market. Generally, in Australia retail investment fund management fees range from 1.7% to 2.5% per annum. The management fees for wholesale funds are normally less than 1%, lower than retail funds given the economies of scale as larger balances are more profitable (RBA 2003). Mercer's '2012 Global Asset Manager Fee Survey' report (Mercer 2013) found that Australian wholesale fund managers follow an average fee level of 0.47%. In the global context, the Australian fund management fee structure is one of the cheapest, similar to the United Kingdom average (0.46%) and higher only to the charges of Canadian fund managers at 0.30% (Mercer 2013).

Following the GFC, there was a spate of negative earnings period. This meant that investors' focused firmly on fund management fees. The two most common fee structures used by Australian fund managers are:

- i. *Passive vs active structure* – active fund managers charge higher fees than passive managers. The higher fees charged by active managers reflect the cost involved in undertaking additional research to invest in assets more regularly, and the associated higher transaction costs due to shorter market turnover times. On average, the difference between active and passive management fees is 0.1%-0.5% depending on the investment asset class (RBA 2003). The 2012 P&I/Towers Watson 'World 500: World's Largest Money Managers' publication (P&I/Towers Watson 2012a) reports that since 2001, passive assets managed by the largest fund managers have grown by more than 12% annually. Around one third of Australian superannuation funds place some of their funds with a passive manager.
- ii. *Performance fee* – performance-based fees is related to the returns that the fund earns. The performance fee is generally based on a target return, which can be a benchmark index or a threshold above the benchmark. The choice of the benchmark is at the discretion of the fund manager. The performance fee structure is rarely used in the retail fund management segment. The use of performance-based fees was high in the late 1990s and early to mid 2000s, reflecting the significant increase in the Australian funds management industry's assets under management (RBA 2003). However, more recently the P&I/Towers Watson 'World 500: World's Largest Money Managers' publication (P&I/Towers Watson 2012a) has found that fund managers' performance fees are drying up as a result of falling investment markets.

Morningstar (2011) 'Best Practices in Management Fund Performance Fee' reports on a survey of 18 investment strategies in Australia and found that 78% of funds operate with a hurdle rate. Morningstar found that there is little consistency in how Australian fund managers structure and use the performance fee. The hurdle rate indicates the amount of outperformance the investment strategy must achieve relative to its benchmark before the performance fee is payable. The initial advantage of performance-based fees is that generally they are expressed as a share of the funds under management, and thus provide an added incentive for fund managers to maintain the overall fund size that yields an optimal return. However, portfolio adjustments are cumbersome and costly, particularly for large funds. In addition, recently some funds have become large, mainly through merger and acquisition activities. There are concerns that the growth of fund size may detract investors from the manager's returns.

### **2.2.7 Asset Consultants and other Specialist Monitors**

The rapid growth of the Australian funds management industry assets has resulted in institutions such as superannuation funds increasingly outsourcing their investment management functions. Therefore, the role of specialist monitors, who serve as 'gate-keepers' between the investment manager and institutional investors, has become more important in the marketplace. The three major market monitors/service providers in the Australian funds management industry include: master funds, asset consultants, and financial planners.

#### **2.2.7.1 Master Funds**

Master funds as an investment vehicle were introduced in Australia during the mid-1980s. Master funds are operated by financial institutions and provide individual investors with the opportunity to gain access to wholesale managed investments. Most master funds allow the consolidation of different investment products from a range of different fund managers under a single trust deed, thus providing investors access to a range of wholesale unit trusts and fund managers under one administrative umbrella. In the superannuation industry, master funds generally aggregate member contributions from a number of unrelated employers and allocate them to fund managers. Therefore, master funds can have a significant influence on how investors' contributions are allocated across different fund managers.

In recent years, a significant number of corporate superannuation funds have closed or rolled into master funds and industry superannuation funds. Although the number of funds available under discretionary funds has expanded in recent years, by specifying the list of investment management funds investors can choose from, master funds control the movement of funds towards the fund managers on their list. Under 'fund of funds' and feeder funds arrangements, master funds exert even more direct control on the distribution of investments across different asset classes and individual fund managers. Therefore, master funds are a concentrated sector in Australia, similar to assets consultants (RBA 2003).

#### **2.2.7.2 Asset Consultants**

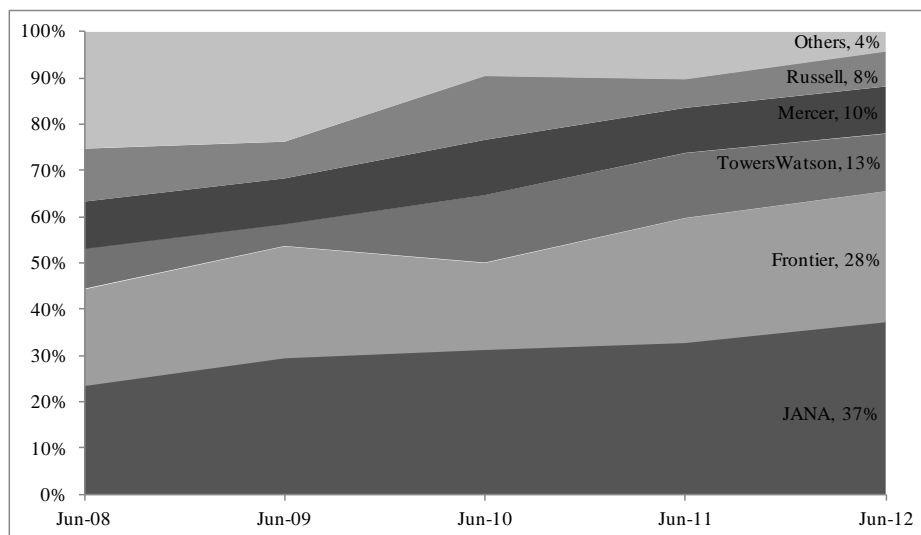
Investment consultants assist institutions to establish investment policies and procedures, conduct investment manager search and selection, manage service providers, perform ongoing due diligence on service providers and investment managers, replace investment managers, and manage investment performance reporting. Asset consultants also advise trustees on legal and taxation issues, asset transaction and asset allocation, and provide risk management assessments. Assets consultants are normally remunerated on a fixed fee-for-service basis.

Some asset consultants also operate their own fund of funds, moving funds between investment managers based on the assessment of the manager's likely future investment performance. Such practices have strengthened the influence of asset consultants on where institutional fund managers direct their investment capital (Desormeau 2012; RBA 2003).

In Australia, many asset consultants' clients are trustees responsible for administering superannuation funds. In fact, about 90% of Australian superannuation funds' wholesale investment mandates administered by specialist investment managers are based on asset consultant recommendations. From the fund trustee's perspective, the appointment of asset consultancy firms ensures that the fund complies with legislative requirements, and that the investments are based on expert and independent advice. Therefore, asset consultants are very influential in how superannuation funds determine the choice between different investment managers, and in the asset allocation policies the funds adopt (RBA 2003; Rainmaker Group 2013).

There were 18 asset consultancy firms operating in Australia, as at June 2012. JANA Investment Advisers Pty Limited is the largest, accounting for 37% of not-for-profit superannuation funds assets under advice. Frontier Investment Consulting Pty Ltd, Towers Watson, Mercer Australia and Russell Investment Management Ltd also hold significant market share in Australian superannuation funds' assets under advice. Figure 2-5 details the Australian asset consultancy market composition for the not-for-profit superannuation funds, from June 2008 to June 2012.

**Figure 2-5: Australian Asset Consultant Market Coverage: June 2008-June 2012**



Source: Rainmaker Group 2013.

In recent years, the asset consultancy industry in Australia has become more concentrated than the funds management industry. Rainmaker Group data show that the top five asset consultants accounted for 98% of funds under advice for the 214 corporate, public sector and industry superannuation funds, as at June 2012. This can be compared to the market coverage in 2008 when the top five asset consultants accounted for 75% of the not-for-profit superannuation funds under advice. An RBA (2003) report explained that the greater concentration

can be attributed to the fact that asset consultancy is a specialised service; therefore, there are potential economies of scale in information processing. However, the higher concentration also carries risks, such as lack of diversity in investment advice when one investment market or asset class is favoured over another. In addition, some asset consultants have a dual role: providing asset consultancy and being in competition with investment managers by operating ‘fund of funds’ type products can create potential conflicts of interest.

### **2.2.7.3 Financial Planners**

Financial planners provide advice to individual clients on specific managed investments that meet their needs and investment objectives. In Australia, around 60% of the retail funds invested with fund managers are sourced via financial planners. In June 2012, AMP Financial Planning was the leading dealer in Australia with A\$42 billion funds under advice and with the largest number of financial planners (1,633). Despite being closely aligned with fund managers and life insurance companies, the financial planning industry is less concentrated than the asset consultant or master funds industries (see Appendix 10).

## **2.2.8 Investment Styles**

The investment style of a fund manager largely depends on the fund’s investment objectives and guidelines. Fund managers generally classify these within three broad categories: 1) passive versus active investment styles, 2) top-down versus bottom-up investment styles, and 3) income versus growth investment styles. Gallagher (2002) explains that the choice of the investment style needs to be consistent with fund’s preferred time horizon and the risk profile of fund members. In addition, investment managers also distinguish themselves on the basis of social and/or ethical concerns, the management capability of their investment team, and their ability to implement methodical procedures consistent with the fund’s asset allocation strategy.

### **2.2.8.1 Passive versus Active**

Fabozzi (2007) explains that for active managers, the investment philosophy is founded on the belief that financial markets are inefficient and that the fund manager can outperform a market index by using specific information, knowledge and experience. In contrast, the passive fund manager relies on the assumption that financial markets are efficient and that return and risk are fully reflected in asset prices – while inefficiencies may exist, they cannot be exploited in an economically significant manner. Higgins (2010) illustrated how fund managers allocate assets between active and passive strategies. Table 2-4 details the investment styles and associated definitions.

**Table 2-4: Different Investment Styles**

<b>Investment Style</b>	<b>Characteristics</b>
<b>Passive</b>	A passive strategy seeks to reproduce as closely as possible an index by minimising the tracking error of the replicated index. Focus is on risk management to minimise fund deviation from the defined index.
<b>Active</b>	An active strategy seeks to outperform an index while staying within certain risk boundaries. Focus is on active decision-making in a small number of relatively large positions.

Source: Alford et al. 2003 (cited in Higgins 2010, p. 57).

Higgins (2010) explains that institutional investors can blend the different investment styles to improve the optimal allocation to a specific asset class. This depends on the institutional investor's assumptions about the ability of active managers to outperform their benchmark index, and by how much the active manager's information ratio exceeds that of passive managers.

Buy and hold asset allocation is an example of a passive investment strategy, in which the fund manager buys an initial mix of assets and holds the assets over the long-term investment period. Buy and hold strategies are 'do nothing' strategies as regardless of what happens to the relative values, no rebalancing is required (Perold & Sharpe 1988; Schmidt 2012). Another example of a passive investment strategy is the 'equal weighted' approach, which allocates equal weighting to all asset classes. This is one of the simplest asset allocation approaches, designed to achieve a diversified investment portfolio. The strategy completely ignores return and risk prospects, with all asset classes given the same weighting (Lee 2011).

TAA is an example of active investment strategy, in which assets in a portfolio are regularly adjusted (over-weighted or under-weighted) to benefit from short-term market movements (Stockton & Shtekhman 2010). Fabozzi and Markowitz (2011a) stated that between these extremes of active and passive strategies, several strategies have sprung up that have elements of both, such as the dynamic asset allocation (DAA) strategy. Perold and Sharpe (1988) found that the choice between a static investment approach (such as the 'buy and hold' approach) and an active investment strategy in which asset exposure is continuously rebalanced is generally based on the fund investor's investment circumstances and desires, risk tolerance and the nature of the fund's liabilities. All investment portfolios have goals of either meeting current needs (income or liquidity) and future needs (income and capital growth), or both. Norton (2012) explains that investors must match asset risk and expected returns with expected liability needs. For example, in the case of superannuation funds, their current liability is the need to finance current retirees, and future liabilities include individuals saving for retirement.

#### 2.2.8.2 Top Down versus Bottom Up

A fund manager's asset allocation decisions are defined as a logical process than can be followed in a 'bottom-up' or 'top-down' approach, depending on the investment style of the decision-maker (Figure 2-6).

**Figure 2-6: Asset Allocation Process**



Source: Sachsenmaier 2001 (cited in Hauss 2004).

The top-down approach is based on economic and capital market forecasts and implemented at a macro level. With the top-down approach, fund managers allocate portfolio assets in a manner that changes during the

economic cycle will deliver the best possible long-term returns for fund members. The bottom-up strategy considers the available investment universe on the basis of the individual fundamentals. Bottom-up fund managers are less concerned about the macroeconomics prospects; they focus mainly on factors such as the asset level performance (sector/ market) and how it compares against the performance of alternative investments in the market (Hauss 2004; Gallagher 2002).

### **2.2.8.3 Income versus Growth**

Fund managers may overweight the portfolio to income (or defensive) assets (such as property, or fixed income securities during falling economic market conditions), or overweight the portfolio to growth assets (such as equity during rising economic market conditions). Parker (2011) defines growth style investment management, in which the fund manager consistently focuses on constructing a portfolio comprising assets that have the potential to generate growing income, capital and/ or total return over an undefined period. In contrast, income style investment managers seek assets that are significantly mispriced and offer potential for abnormal total returns over a defined timeframe.

### **2.2.9 Investment Options**

Institutional fund managers such as the large superannuation funds offer several investment options which aim to meet member investment objectives. APRA (2012c) reported that retail superannuation funds offer members an average of around 260 investment options. The not-for-profit superannuation funds offer an average 7-10 investment options per fund. Fund managers broadly categorise the investment portfolios in three groups:

- i. *Growth portfolios* – generally overweighted in equities, with small allocations to direct property, infrastructure and cash. Growth portfolios are designed for investors who are seeking long-term returns.
- ii. *Balanced portfolios* – invest in a wide range of assets including equities, property, alternatives, cash and fixed income securities. Generally, about half of the portfolio assets are invested in equities. Balanced funds are designed for investors who prefer the medium to long-term time horizon.
- iii. *Conservative portfolios* – generally have higher allocation to fixed income securities and cash, with some allocation to equities, property and infrastructure. Conservative funds are suited to investors who seek capital stability and growth over a medium term horizon (APRA 2012c; Rainmaker Group 2012).

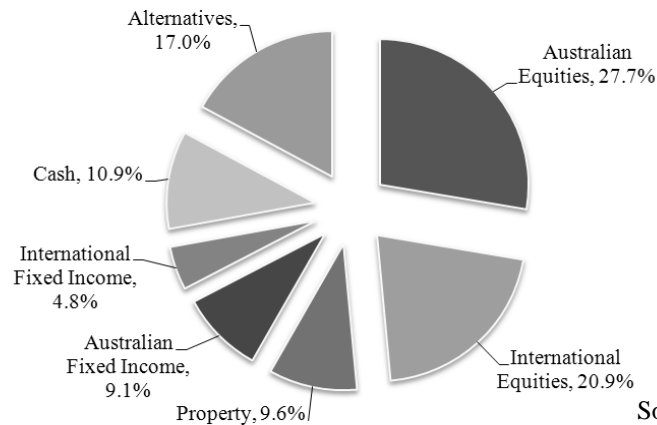
Generally, there are several versions of these options, such as high growth, sustainable balanced, socially responsible high growth, and conservative balanced. The choice of the portfolio design depends largely on member age, risk profile and investment preferences. For Australian superannuants, the balanced (or default) fund strategy is the most popular investment option as it offers stable income returns and capital growth derived from a diversified range of asset classes. Industry superannuation fund, which form the largest segment of institutional superannuation funds in Australia, holds 67% of their assets in the balanced fund strategy.

Figure 2-7 illustrates the aggregated balanced industry superannuation fund default option asset allocation, as at December 2011. Equities (Australian and international) is the dominant asset class, representing nearly 50% of the industry superannuation balanced fund portfolio, followed by alternatives (17%), fixed income securities (Australian and international) 14%, cash (11%), and property (10%). These asset allocation components do change over time as fund managers regularly rebalance investment portfolios to reflect prevailing market



conditions. For example, allocation to property ranged from 9%-11% in the 17 year period to December 2011, having peaked at 14.0% in September 1998, which corresponded with the push by REITs to offshore property investment. For industry superannuation funds, the lowest allocation to property was 8.7% at March 2010, during the recent GFC that led to major falls in REIT prices and property valuations.

**Figure 2-7: Industry Superannuation Balanced Fund Option Portfolio: December 2011**



Source: Rainmaker Group 2012.

This research examines the performance of industry superannuation balanced fund asset classes over a 17 year period (1995-2011); using quarterly benchmark data for each asset class (see Chapter Six). The asset classes and associated benchmark indexes are now defined in detail.

## 2.2.10 Asset Classes and Benchmarks

### 2.2.10.1 The 'Asset Class' Definition

Throughout this research, the term 'asset class' refers to categories of investment product. Asset classes are often described as a group of securities that exhibit similar risk and return characteristics and behaviour, share a common legal and regulatory structure, and react similarly to economic factors that influence the value of the asset classes (Focardi & Fabozzi 2004; eds Fabozzi & Markowitz 2011a). The criteria for determining what is or not an asset class are frequently ad hoc. Kritzman (1999, p. 79) explained that the definition of asset class is based on how fund managers treated a group of assets; that is, some investments take on the status of an asset class simply because the managers of these assets promote them as an asset class. According to Kritzman, fund managers believe that investors will be more inclined to allocate funds to their products if they are viewed as an asset class rather than just an investment strategy.

In recent years, researchers have developed several specifications of what constitutes a group of asset classes, which Norton (2012) lists as:

- i. Mutually exclusive – asset classes should be mutually exclusive and their correlation patterns must differ.
- ii. Wealth creation – the collection of asset classes should approximate the value of the market portfolio.
- iii. Portfolio effect – each asset class should have a beneficial portfolio effect (able to shift the efficient frontier up or to the left).

- iv. Homogeneity – assets within a class must be homogenous and no security should be in more than one class.
- v. Breadth and depth – the asset class needs to be large enough to offer liquidity when investors want to designate a significant part of their portfolio to it.

There is a tendency in some finance literature to classify assets in two broad categories: traditional assets and alternative assets. The traditional portfolio is a MPT strategy which was common prior to the 1980s when there were limited asset class options. It offers liquidity across the selected asset classes, such as equities, bonds and cash (Bernstein 2007). Other assets were referred to as ‘non-traditional’ asset classes or alternatives. However, several studies dispute this classification, particularly the inclusion of property in the alternatives band. Anson, Fabozzi and Jones (2011) and Bernstein (2007) argue that property is a distinct asset class that needs to occupy a separate allocation to the alternatives band. Fabozzi and Markowitz (2011a) explain that property as an asset class existed long before equities and bonds became available as investment choices. Therefore, equities and bonds became the ‘alternative’ to property instead of vice versa. Fabozzi and Markowitz (2011a) stated that as property is a fundamental asset class, it should be included within every diversified portfolio separate to alternatives.

#### **2.2.10.2 What is a Benchmark Index?**

An index is commonly used to describe aggregate market performance. An index is a portfolio of securities weighted in a predetermined manner to represent the investment performance of a designated asset class. The nature and purpose of indexes have evolved in the past century. When the Dow Jones Industrial Average (DJIA) was first launched in 1896, its only purpose was to measure the performance of 12 stocks in the US market. Now indexes are traded globally, constitute a much larger investible universe, and are available for all asset classes (Singal 2012).

Indexes are also used as a basis for investing. Indexed mutual funds and exchange-traded funds (ETFs) are examples of passive and active investment funds designed to track the performance of a benchmark index as closely as possible. In addition, market indexes are used to compare the performances of different fund managers. A fund manager’s ability to track and outperform the market index provides an important measure of their performance and associated remuneration (Christopherson, Carino, & Ferson 2009; Haight, Morrell, & Ross 2007; Singal 2012). Some common index providers include Standard & Poor’s (S&P), Dow Jones, Morgan Stanley Capital International (MSCI), Investment Property Databank (IPD), Financial Times Stock Exchange Group (FTSE), and Citigroup.

Hoesli and MacGregor (2000) explain that by calculating returns over a given time period, it is possible to calculate the mean returns, standard deviation and correlation coefficient between different asset classes, which primarily is the building block for developing institutional asset allocation strategies. However, it is important for users to properly understand the index construction methodology to ascertain the level of the index’s investment universe coverage. This is because the index could be constructed using the entire universe, or a subset or sample of the universe only. The decision on index sample size demonstrates the trade-off between accuracy, and the cost and availability of data.

### **2.2.10.3 Asset Class Segments and Performance Indexes**

This section provides an overview of asset classes and associated benchmarks available to Australian fund managers. In Australia, the most common group of asset classes include equities (Australian and international), property, fixed income securities (Australian and international), cash and alternatives. Because property assets are the main focus of this research, it will be discussed in detail separately in Section 2.4.

#### **2.2.10.3.1 Equities**

Equity or common stock is a title of ownership in a company normally listed on the stock exchange. It gives the shareholders the right to receive dividends (if declared by the company) and the opportunity for capital growth depending on the fundamentals of the underlying asset. There are a number of different types of shares that investors can own, including ordinary shares, preference shares, contributing, and partly paid shares. Investment in equities offers fund managers several advantages, such as high liquidity (that is, the ability to easily convert shares into cash). In addition, diversity can be obtained across a whole range of shares in different markets and subclasses, such as financial, resources, healthcare, industrial and material. Historically, total returns from equities have been higher than for other asset classes. However, equities are highly volatile investments and carry higher risk than most other assets.

##### **2.2.10.3.1.1 Australian Equities**

Australian equities refer to the ownership of publicly listed companies trading on the Australian Securities Exchange (ASX). Australian equities generally represent the largest portion of the Australian fund manager's investment portfolio. The ASX was created by the merger of the Australian Stock Exchange and the Sydney Futures Exchange in July 2006. It is one of the world's top ten listed exchange groups measured by market capitalisation. The Australian Stock Exchange Limited was initially formed in 1987 after government legislation enabled six independent state-based stock exchanges to amalgamate. As at December 2012, there were 2,188 companies (including 97 foreign companies) listed on the Australian Securities Exchange with a market capitalisation of A\$1.3 trillion (ASX 2013c). World Bank (2013) data show that the Australian stock market is small compared to large international equities markets such as United States (US\$15.6 trillion), Japan (US\$3.5 trillion), and China (US\$3.4 trillion).

The S&P/ASX 200 is the most widely used institutional benchmark indices in Australia. The S&P/ASX 200 price index was introduced in April 2000 and replaced the All Ordinaries Index as the primary measure for the Australian equities market. The S&P/ASX 200 index covers approximately 80% of Australian equity market capitalisation invested in the top 200 companies across ten sectors. Financials (excluding property) is the largest sector (35%), followed by materials (22%), and consumer staples at 8.6% (S&P Dow Jones 2013c, p. 2).

##### **2.2.10.3.1.2 International Equities**

Australian fund managers hold significant allocations in international equities to provide fund investors more diverse investment options. The global level of stock exchange market capitalisation was US\$57.4 trillion, as at August 2013 (WFE 2013). International equities are generally the second largest asset in institutional portfolios. For Australian investors, the most referenced global equities market index is the MSCI World ex Australia Index. The MSCI World ex Australia Index involves large and mid cap representation across 23 of 24 developed countries (excluding Australia). The index comprises 1,539 companies and covers approximately 85% of the

free-float adjusted market capitalisation in each country. By country, the US has the largest weight (56%), followed by UK (10%), Japan (9%), Canada (5%), and France (4%), with other developed countries making up the remaining 16% (MSCI 2013, pp. 1-2).

#### **2.2.10.3.2 Fixed Income Securities**

Fixed income securities (also known as bonds) are evidence of interest in debt instruments and are investments that provide a fixed interest rate for a fixed time period. These investments provide regular interest payments (*coupon* or interest on the loan) and redemption of security at maturity (also known as *par value* or principle). Unlike equities, which have a perpetual life, fixed income securities are redeemed on the specific date on which they mature. The original purchaser has the option of selling the securities in a secondary market to other fund managers. There are bonds that have coupon rates that increase over time, known as *step-up notes*. In addition, there are *zero-coupon bonds* which do not make periodic coupon payments but provide investors with interest payments at the maturity date.

Primarily purchased for their income earning potential, fixed interest securities can change in value as interest rates rise or fall. Investments in bonds are characterised by three risk factors: price risk, reinvestment risk, and credit risk. Price risk relate to changes in interest rate policies where an upward movement in interest rates can cause devaluation in the bond's value. The reinvestment risk relates to scenario where interest payments accrued from the bonds cannot be reinvested at the equivalent or higher interest rates. Credit risk is when the bond issuer defaults in meeting the coupon and/ or redemption payments at maturity (Anson, Fabozzi & Jones 2011; Gallagher 2002).

##### **2.2.10.3.2.1 Australian Fixed Income Securities**

The Australian fixed income securities market can be classified in three broad categories: government bonds, corporate bonds, and hybrid securities. Government bonds (also referred as Treasury bonds) are debt securities issued by a state government or the federal government. The maturity period for these bonds varies between two and ten years. The Australian 10-year Bond Index is generally used as the measure for the risk-free rate in the portfolio construction process (Gallagher 2002).

The Exchange-traded Australian Government Bonds (ASX code: AGBs) commenced trading on the ASX in March 2013. The exchange-traded Treasury bond indices are designed to provide investors a medium for conveniently investing in Australian Government bonds. Corporate bonds are issued by companies and can be both secured and unsecured; for example, vanilla style bonds and floating rate bonds. Hybrid securities are investments where the interest may be paid at regular intervals as either a percentage amount or fully franked, with the repayment of the loan amount being either paid back in cash or converted to ordinary shares.

The UBS Investment Bank and the Commonwealth Bank of Australia are the leading providers of fixed income benchmark indexes in Australia. The UBS Australian Composite Bond Indices, established in early 1990s, represent government, semi-government, and corporate bonds on all maturities. The Commonwealth Bank Bond Indices established in January 1977, are based on all Australian government securities on issue, including those held by the RBA (UBS 2013b; CBA 2013).

#### **2.2.10.3.2 International Fixed Income Securities**

International fixed income securities generally represent the smallest component of an institutional investment portfolio. These investments are typically made across foreign government issued or sovereign debt securities. When allocating resources to international fixed income securities, fund managers usually consider the global economic outlook, and in particular, interest rate movements, equity valuations, and the economic environment in large industrialised or developed countries. Gallagher (2002) noted that country and currency exposures, as well as duration management, represent the most significant factors influencing the international fixed income securities investment strategy adopted by fund managers.

The Citigroup World Government Bond Index (WGBI) is the leading global fixed income securities benchmark. The Citigroup WGBI is published by Citigroup Index LLC. The Citigroup WGBI includes 23 government bond markets across the Asia-Pacific, South America and Europe. The Asia-Pacific countries included are Australia, Japan, Malaysia and Singapore. The Citigroup WGBI is a market capitalisation weighted bond index. For inclusion in the index, the outstanding amount of a market's eligible issue must total at least US\$50 billion and be above the S&P and Moody's BBB- credit rating. The Citigroup WorldBIG Bond Index has the Citigroup WGBI as the core market, and also includes the corporate bond market from these countries (Citigroup 2012a, pp. 16 & 19).

#### **2.2.10.3.3 Cash**

The cash or money market involves short-term borrowings and lending for managing the cash in a portfolio. Fund managers can gain access to the money market through cash management trusts and short-term deposit instruments. The use of short-term money market securities ensures that fund managers have access to liquidity to meet redemption requests. In addition, cash investments are characterised by low volatility compared to investments such as equities, and provide fund managers with portfolio stability. To meet the fund's liquidity requirements, fund managers generally use a number of at-call money market and other short-term securities, such as treasury notes, bank accepted bills, bank term deposits, promissory notes, bills of exchange, bank bill futures, and options. The RBA Interbank Cash Rate represents the interest rate movements in the money market in Australia. Fund managers have access to 30 days, 90 days and 180 days for bank accepted bills, overnight index swaps, and treasury notes, on 1 month, 3 months and 6 months maturity. 90 Days Bank Accepted Bills are the most commonly used money market security in Australia, which also provides an effective risk-free rate measure in the portfolio construction process (Gallagher 2002; RBA 2013a).

#### **2.2.10.3.4 Alternatives**

Alternative assets, as the name suggests, are described as alternative investments within an existing asset class. REITs are sometimes classified as an alternative asset class by fund managers. Most alternative assets derive their value from either debt or equity markets. For example, hedge fund strategies involve the purchase and sale of either equity or debt instruments. In addition, hedge fund managers can invest in derivatives instruments whose value is derived from the equity or debt markets (Anson, Fabozzi & Jones 2011). For the purpose of this research, alternative assets include hedge funds, commodities, infrastructure funds, private equity, and venture capital funds.

Alternatives represent the third largest asset class in Australian institutional balanced investment portfolios. Large institutional fund managers can offer investors both unlisted and listed alternatives products, such as infrastructure funds, venture capital, and other forms of private equity. The alternatives sector in Australia is dominated by the infrastructure funds which represent approximately 50% of the industry's assets under management (APRA 2013b, p. 50; Austrade 2010b).

#### **2.2.10.3.4.1 Infrastructure**

Investments in infrastructure involve providing capital which enables the planning, development and operation of essential systems and services of the economy, such as transport networks that are used by companies and individuals to perform their ordinary activities more effectively. Generally, infrastructure investment is classified by the nature of the service which it is intended to provide. Infrastructure can be categorised as economic infrastructure (including transport, toll roads, airport, sea ports, rail, and bridges), energy and utilities (electricity, water, and gas), communications (mobile phone networks, telecommunication networks, and satellite systems) and social infrastructure (healthcare, education, and correctional facilities). Traditionally these infrastructure services were financed, built, owned and operated by federal, state and local governments. However, in recent decades, government spending on infrastructure has reduced significantly in most developed countries due to budgetary constraints. Governments now increasingly seek alternative funding options for infrastructure development and maintenance (Fraser-Sampson 2011; Newell & Peng 2008a; Newell & Peng 2008b).

Australia's infrastructure investment management industry is now one of the largest in the world, with total capital investment in excess of A\$60 billion, as at December 2012. Australian fund managers have a history of engaging in the infrastructure sector, beginning with the privatisation in the late 1980s and early 1990s that has resulted in extensive public-private-partnerships (PPPs) and private infrastructure financing. Infrastructure investments in Australia involve direct investments via specialised listed and unlisted funds. There were 18 listed infrastructure funds trading on the ASX, as at December 2012, valued at A\$41 billion. There are an estimated 12-15 unlisted infrastructure funds valued at A\$15 billion, as at December 2012. The largest institutional infrastructure managers in Australia are Macquarie Group, Industry Funds Management (IFM), and Colonial First State Asset Management (Austrade 2010a, p. 33; ASX 2012a, p. 1; Russell Investments 2012).

Australian infrastructure fund managers use a number of benchmark indices to assess the performance of funds they manage. These include the widely used UBS Australia Infrastructure & Utilities Index, IPD Australia Quarterly Unlisted Infrastructure Index, and the S&P/ASX Infrastructure Index. The UBS Australia Infrastructure & Utilities Index, launched in late 2005, is calculated by S&P and constitutes seven infrastructure subsectors. Toll roads (33%), integrated utilities (26%), and airports (14%) dominate the UBS Australia Infrastructure & Utilities Index weight.

The S&P/ASX Infrastructure Index was launched in 2009 and provides investors with liquid exposure to leading publicly-listed Australian infrastructure companies. The index is derived from the S&P/ASX 300 index and is mainly weighted in utilities and transportation. The IPD Australia Quarterly Unlisted Infrastructure Index is the first fund index to track the return performance of unlisted infrastructure funds domiciled within Australia. The IPD Australia Quarterly Unlisted Infrastructure Index comprises 20 funds valued at A\$27 billion, as at March

2013, comprising 65% domestic and 35% international allocation. Airports (29%), transportation (27%), power (12%), and water (10%), dominate the IPD Australia Quarterly Unlisted Infrastructure Index weight (IPD 2013a, pp. 1&2; S&P Dow Jones 2013a, p. 1; UBS 2013a, p. 1).

#### **2.2.10.3.4.2 Hedge Funds**

Hedge funds are described as privately organised investment vehicles that manage a concentrated portfolio of public and private securities and derivative instruments on those securities. Hedge fund investments are both short-term and long-term in nature. Hedge fund investments tend to focus on only one sector of the economy, or one segment of the market. The primary source of capital for hedge funds is a narrow niche of sophisticated, very wealthy individuals and large institutional investors (Anson, Fabozzi & Jones 2011).

The Australian hedge fund industry is the second largest in the Asia-Pacific region, behind Hong Kong, valued at A\$33.6 billion and invested across 85 investment managers. Platinum Asset Management is the largest hedge fund manager with A\$17.0 billion assets under management, followed by Kaiser Trading Group (A\$2.3 billion) and Boronia Capital (A\$1.7 billion). There were 11 listed hedge funds trading on the ASX as Absolute Return Funds under the LMIs and ETPs program with a market capitalisation of A\$374.2 million, as at December 2012 (ASX 2012a, p. 1; Austrade 2011, p. 3).

For Australian hedge fund managers, the Dow Jones Credit Suisse Hedge Fund Index (the "Broad Index") is the main benchmark measure. The Broad Index (formerly known as Tremont Hedge Fund Index) was launched in 1994 and is an asset weighted index. To be included in the Broad Index, constituents need to have a minimum of US\$50 million in assets under management. The index is separated into ten primary subcategories based on their investment strategy (Credit Suisse 2013).

#### **2.2.10.3.4.3 Private Equity and Venture Capital**

Private equity is a generic term that encompasses investments such as venture capital, leverage buyouts (LBOs), mezzanine financing, and distressed debt investing. Private equity investments and venture capital are vessels for companies to raise new equity capital to expand their operations. By definition, private equity is not publicly traded and therefore is classified as an illiquid investment. Private equity investments are long-term in nature (5-10 years), and therefore the investment process requires patient due diligence and hands on monitoring.

Venture capital is described as the supply of equity financing to start-up companies that do not have a sufficient track record to attract investments from traditional sources, such as the public market and lending institutions. Venture capitalists invest in high-risk, illiquid and unproven ideas by acquiring senior equity stakes while the firms are still privately held. The ultimate aim is to make significantly high returns (generally as high as 33% or more) to compensate for the high risk. LBOs are investments where the public companies repurchase all their outstanding shares and turn the company in a private firm. Mezzanine debt is often closely linked to the LBOs market and investing in this form of debt can result in a significant equity stake in a target company. Distressed debt involves purchasing the debt of companies that may have already defaulted on their debt, or may be on the brink of default or seeking bankruptcy protection (Anson, Fabozzi & Jones 2011).

Australian venture capital (VC) and private equity (PE) funds managed A\$29.1 billion in commitments, invested across 539 companies, as at June 2012. PE funds accounted for the bulk of the funds (A\$27.6 billion) invested in 289 companies. The 2013 edition of the 'Venture Capital and Private Equity Country Attractiveness Index', released by IESE Business School (IESE Business School 2013), ranked Australia as the world's sixth most attractive VC and PE market. Attributes highlighted in the global index rating were Australia's strong capital and labour markets, and ease of starting and running a business compared to other countries. The sector was severely affected by the GFC, with the level of funds raised in the VC and PE industry declining by almost 80% between June 2007 and June 2011 (AVCAL 2013a, pp. 1&2; AVCAL 2013b; AVCAL 2012b, p.3; IESE Business School 2013).

Australian Private Equity & Venture Capital Association Limited (AVCAL) partners with Cambridge Associates to produce the Australia Private Equity & Venture Capital Index, which was launched in 1997. In 2012, the Index comprised 18 Australian private equity and venture capital companies (Cambridge Associates 2013, p. 12).

#### **2.2.10.3.4.4 Commodities**

Commodities can be categorised as either consumable or transformable. Anson, Fabozzi and Jones (2011) explain that consumable commodity assets, such as corn, are used as either feedstock or food stock. Transformable commodities are products like crude oil which can be transformed into gasoline and other petroleum products. While commodities do have economic value, they do not provide a claim on ongoing streams of income as in investments like stocks and bonds. Compared to most other asset classes, commodity prices are determined by global supply and demand factors rather than regional or domestic economic imbalances. Investors gain access to commodity assets through direct investments, investing in shares in a commodity-related firm, futures contracts, commodity swaps/forward contracts, commodity-linked notes, or exchange-traded funds (also known as ETFs) (Anson, Fabozzi & Jones 2011).

Australia is a major global producer and exporter of commodity products and a significant source of agricultural production. In recent years, the importance of commodities in Australia's exports has increased significantly, driven largely by the rapid industrialisation of emerging economies in Asia. Two of the world's largest mining companies, Rio Tinto (RIO) and BHP Billiton (BHP), have long associations with Australia. The Australian Trade Commission's 'Australian Benchmark 2012 Report' highlights that Australia is the world's second largest producer of iron ore, and the third largest producer of bauxite and alumina, zinc, uranium and coal. In addition, Australia has the world's largest reserves in many strategic mineral commodities. The Australian agricultural sector is the world's second largest producer of sheep meat, chickpeas and wool, and the fifth largest producer of barley and cattle meat. The ASX offers a number of commodity based products, such as Commodity Contracts for Difference (CFDs), Grain Futures & Options facilities, Wool Futures and Options facilities, Energy & Environmental markets futures and options, and other commodity ETFs and ETCs which provide investors with direct exposure to the local and global commodities market (ASX 2013b; Austrade 2012, p. 10).

The RBA's Index of Commodity Prices is a key benchmark measure of the Australian commodities industry. The RBA's Index of Commodity Prices is a Laspeyres index, which means that the index is a weighted average of recent changes in commodity prices. The index includes the prices of 20 of Australia's key commodity



exports, which account for around 85% of primary commodity export earnings. The RBA's Index of Commodity Prices has three major segments: Rural Commodities (beef, wheat, wool, milk powder, rice etc), Base Metal (aluminium, zinc, lead, copper, nickel), and Other Resources (includes commodities such as gold, crude oil and iron ore). As at June 2013, Other Resources constituted 78% of the RBA's Index of Commodity Prices index, followed by Rural Commodities (13%), and Base Metal weighted at 9% (RBA 2013a; RBA 2009, pp. 1 & 5).

## **2.3 Property Asset Class Definition**

### **2.3.1 Defining Property**

Land and buildings are an ancient form investment that for centuries has played an important role in creating wealth or economic prosperity for investors. Holding interest in property has also served as a sign of power and economic wealth in both the primordial and modern worlds. Earlier economic systems such as feudalism were all based, in part, on the income derived from agrarian and urban holdings. The bundle of rights and economic benefits associated with owning property can be held and distributed in a number of ways. The development of stock trading by the Dutch and the English in the early 17th century introduced new ways to hold wealth. However, holding interest in land and buildings has remained important for both individual and institutional investors.

When private pension funds were first introduced in Europe and North America in the 19th century, fund managers were reluctant to include less liquid and management intensive assets such as property. With time, the definition of property in financial sense has broadened to include many new variations that were not readily available in last two decades. The result is that now, all institutional investors (whether directly or indirectly) hold commercial property assets in their investment portfolios. The property market represents the largest market in developed countries, estimated at 30-40% of the value of all the underlying physical capital (Hudson-Wilson, Fabozzi & Gordon 2003; Fabozzi, Shiller & Tunaru 2010, p. 8).

Although property has always been considered one of the major asset classes in an investment portfolio, it has a number of disadvantages, mainly illiquidity. Robinson (2002) explains that in the context of direct property investment, illiquidity is a major deterrent to investment and divestment decisions because of the time required to complete a transaction. In recent decades, the market has attempted to overcome the disadvantage by diversifying into a liquid and more easily tradable form of property investment by way of securitisation. The result is that property assets are now available in the form of both direct property investments and indirect (or securitised) property investments.

The dawn of securitisation has also resulted in the definition of property being broadened. Geltner et al. (2007) illustrated that investment can be divided into four capital market categories according to whether they are traded on the public or private markets and if they are either equity or debt assets. Higgins (2007) expanded the four quadrant investment definition to include property assets. Table 2-5 provides details of the four quadrant investment market and associated property investment products.

**Table 2-5: Four Quadrant Investment Market and Associated Property Investment Products**

	<b>Public Markets</b>	<b>Private Markets</b>
<b>Equity Assets</b>	Shares <ul style="list-style-type: none"> <li>- REITs</li> <li>- Securitised Property Funds</li> </ul>	Private Equities <ul style="list-style-type: none"> <li>- Direct Property</li> <li>- Unlisted Property (Wholesale Property Funds and Syndicates)</li> </ul>
<b>Debt Assets</b>	Traded Debt Securities <ul style="list-style-type: none"> <li>- Commercial Mortgage (CMBS)</li> <li>- Property Trust Bonds</li> <li>- Property Derivatives</li> </ul>	Bank Loans <ul style="list-style-type: none"> <li>- Whole Commercial Property Mortgages</li> <li>- Direct Lending</li> </ul>

Source: Higgins 2007, p. 13.

Private commercial real estate equity is held as individual assets or in property funds. Unlisted property funds and property syndicates are private market equity assets. Public real estate equity is structured as REITs. Equity investments offer investors exposure to the return on equity of property assets. The return is in one way or another tied to the income return in conjunction with the market's valuation of future cash flows. Private commercial real estate debts are held as either directly issued whole loans, or commercial mortgages held in funds.

Bank loans (property mortgages) are regarded as private market debt assets. The property debt market also includes other diverse public and private facilities such as the residential mortgage backed securities and home mortgages. Public commercial real estate debt is structured as Commercial Mortgage Backed Securities (CMBS) and property trust bonds. The debt instruments are more closely tied to the pricing of risk in relation to the risk-free rate of return from short-term government bonds, and the pricing of risk of debtor default (Higgins 2007; Hoesli & Lekander 2009).

When divided into a four quadrant investment market, property investment products can offer a different risk and return profile and deliver different diversification benefits. The choice of the type of property investment depends largely on the investor's risk/return preference, inflation hedging preference, and the need for reliable cash flow. For example, superannuation funds have fiduciary responsibilities to meet real liabilities, and insurance companies need products that can be matched against portfolios and families with wealth intended for future generations (Higgins 2007; Hudson-Wilson, Fabozzi & Gordon 2003; Rees 2007). While debt assets (commercial mortgages and property bonds) are discussed briefly later, this research focuses mainly on equity property assets.

## **2.3.2 Difference between Direct and Indirect Property Investment**

### **2.3.2.1 Direct Property**

Direct property investment is the traditional form of property investment. It is tangible and exposes investors to the physical real estate assets in a wide range of sectors, such as office building, retail shopping centres and industrial warehouses. Investments in direct property assets are unique to investing in other asset classes such as equities and fixed income securities. Investments such as shares are paper traded, while direct property

investments expose investors to the physical real estate asset. Direct property investment may include an investor buying vacant land and putting a building on it, with a view to its resale, or buying premises in poor condition, pulling them down and redeveloping the site. Investors select direct property for their portfolios due to its ability to generate regular income and long-term capital growth. Including direct property within multi-asset investment portfolios has the potential to reduce portfolio risk and deliver enhanced diversification benefits (De Francesco 2005; Renton 1992; Robinson 2002; Rowland 2010; Sirmans & Worzala 2003).

Direct property investments also have several disadvantages such as relatively low liquidity, high transaction costs, and a time-lag in reacting to market information. The need for hands on management, operating and maintaining the physical property in a satisfactory market position, is another major deterrent. In addition, the leasing activities associated with investment properties require significant management input (Baum & Hartzell 2012; Rowland 2010; Sirmans & Worzala 2003). There are a number of factors that create impediments for direct property's inclusion in an investment portfolio. These factors are related mainly to the very nature of direct property assets, as detailed below:

- i. Heterogeneity – each property is unique as a result of its location and improvement differences. Therefore, it is more difficult for vendors and purchasers to set and agree prices when compared to the share market.
- ii. Immobility – property assets are fixed geographically and therefore exposed to political and economic factors of the region.
- iii. Indivisibility – trading in property requires significant capital which restricts greater retail or individual participation when compared to the share market.
- iv. Depreciation – property is a real asset and wears out over time, suffering from physical deterioration and obsolescence, together creating depreciation.
- v. Lack of central market – the property market comprises a series of highly localised sub-markets whereas shares are traded in a central market place.
- vi. Time required to complete transactions (marketing, due diligence and settlement) – the time taken to properly market an investment property, negotiate a transaction, undertake due diligence and conveyancing, and complete settlement can take several months and incur high expense.

Source: Baum 2002; Baum & Hartzell 2012; Rowland 2010; Sirmans & Worzala 2003.

The capital market places a high value on the level of accessible information. Compared with other competing assets, underlying property as an asset class is placed at a distinct disadvantage due to the lack of readily available information. Property related disclosure and reporting requirements are low. The high management and transaction costs reduce the short-term investment returns for direct property investments. Institutional investors thus consider direct property as a viable long-term investment and seldom hold interest in direct property for less than 5 to 7 years. The sheer size of most quality property means that few retail or private investors can afford to invest in many quality properties. Therefore, many investors now seek real estate exposure through investments in indirect property vehicles, such as unlisted wholesale property funds, listed property vehicles (known as REITs), and property syndicates (Higgins 2007; Rowland 2010).

### 2.3.2.2 Indirect Property

Indirect property investment involves acquiring shares in listed and unlisted property funds which invest in direct properties, other securitised property funds, and to some extent investments in shares, bonds and cash. Rowland (2010) explains that property funds are distinct from other managed funds such as superannuation funds which may only hold an allocation to property in their portfolios. By definition, superannuation and other managed funds that own properties as a minor part of their investment portfolio are not 'property funds' but may be direct and indirect owners of properties.

Rowland and Kish (2000, p.104) defined a property fund as:

'an investment vehicle that specialise[s] in acquiring, developing and managing property investments on behalf of those contributing and earning a return based upon the performance of the properties'.

The key elements of property funds are the underlying property assets, beneficiaries who receive the benefit from the trust, and the manager and custodian (Single Responsible Entities) who are responsible for the performance and compliance of the fund. Property funds charge a fee to manage the portfolio of properties on behalf of unit-holders. Return for unit-holders are in the form of distributions (paid from rent and other profits from development and fund management) and capital gains (if the units increase in value). Units in property funds are traded both in secondary and listed markets, with the degree of liquidity for these funds determined by the frequency and volume of trading. The establishment and management of property funds in Australia are governed by the *Management Investments Act 1998* and the *Corporations Act 2001*. Property funds listed and traded on the ASX are governed by the ASX Listing Rules and regulated by ASIC (Rowland 2010).

Higgins and Ng (2009) explained that indirect property vehicles such as REITs were designed to make property more liquid, easily tradable, and a cost effective way to gain exposure to commercial real estate for institutional and small/retail investors. The securitisation of property assets has enabled it to more effectively compete with other easily accessible forms of investment, such as shares, for a place in institutional investment portfolio. The main principle of securitisation is that while investors receive a share of the property's income flow and capital value, they have no direct management control or responsibility for the investment.

Although direct property and indirect property are classed as property, they are different assets, and therefore add different features to an investment portfolio. Intensive management, lack of reliable data/information, and liquidity is what separates direct property from REITs and other unlisted property investments. In theory, indirect property investments are more volatile than direct property investment. In particular, listed property provides more transparent market knowledge to investors in general as transactions take place daily or hourly. In contrast, direct property investments have relatively low volatility of return and low liquidity, which continues to decline as the size of individual properties within the portfolio increases. Unlisted property trusts and property syndicates also have low volatility of returns, but higher liquidity than direct property investments (Reddy 2001).

While REITs do offer greater liquidity, there is disparity in the return profile for REITs and their underlying portfolio assets. Newell (2006) argues that unlisted property trusts and property syndicates are more likely to

perform like their underlying direct property assets and provide greater direct property exposure to investors than REITs. Investment in direct property delivers investors with two main return attributes: consistent income through rental leases, and capital growth opportunity via asset value appreciation. Returns from direct property are underpinned on fundamental macroeconomic factors (such as employment growth, retail trade, and GDP) and financial market influences (such as the bond rate).

Holding real estate assets and deriving rental income are the main business activities of indirect property investment vehicles such as REITs. Therefore, the theoretical assumption is that both the indirect property fund assets and its sources of revenue are linked to, and influenced by, the direct property market fundamentals. However, several studies (Boshoff & Cloete 2012; De Francesco & Hartigan 2009; Morawski, Rehkugler & Füss 2008; Newell 2008) state that there are uncertainties about whether indirect property vehicles such as REITs provide ‘real’ property exposure. Therefore, if investors are to make informed optimal asset allocation decisions, in addition to the correlation between property and other assets, they need to consider the diversification benefits of different property sectors such as direct property and listed REITs.

### 2.3.3 Overview of the Australian Property Market

#### 2.3.3.1 Market Size and Global Significance

The Australian property market offers a diverse range of investments, differentiated by asset sectors and sub-sectors. Higgins (2007, p. 1) estimated that size of the Australian investment universe as A\$6.1 trillion, as at December 2006, of which commercial property represented approximately 6%. The Australian property market is approximately 2% of the global property sector. Institutional investment accounts for approximately 40% of the Australian commercial property market.

The Jones Lang LaSalle ‘Global Real Estate Transparency Index 2012’ ranks the Australian property market alongside the US and the UK as the leading property markets in the world. The Australian property market is characterised by accurate market information, reliable performance benchmarks, sound regulation, and high ethical and professional standards. The Australian property industry is supported by a stable economic and political environment, strong demographic profile, and low unemployment rates (Jones Lang LaSalle 2012).

The Australian commercial property market has consistently outperformed other leading global property markets. Table 2-6 details commercial property performance for Australia, the US and the UK.

**Table 2-6: Global Commercial Property Performance Statistics: 1994 - 2011**

Country	Total Returns: 1994-2007	Sharpe Ratio	Total Returns: 1994-2011	Sharpe Ratio	Total Returns: 2002-2011	Sharpe Ratio
Australia	14.7%	5.04	11.10%	1.81	11.8%	1.77
United States	12.9%	3.48	9.80%	1.00	9.0%	0.79
United Kingdom	11.9%	1.96	9.00%	0.55	7.4%	0.37

Source: Jones Lang LaSalle 2012, p. 6.

The Australian commercial property market delivered stronger returns and higher risk-adjusted returns than the US and the UK property markets over each time period between 1994 and 2011 (including pre-GFC and post-GFC timeframes). Jones Lang LaSalle's (2012) report explains that the higher returns in Australia can be attributed partially to the high interest rate structure.

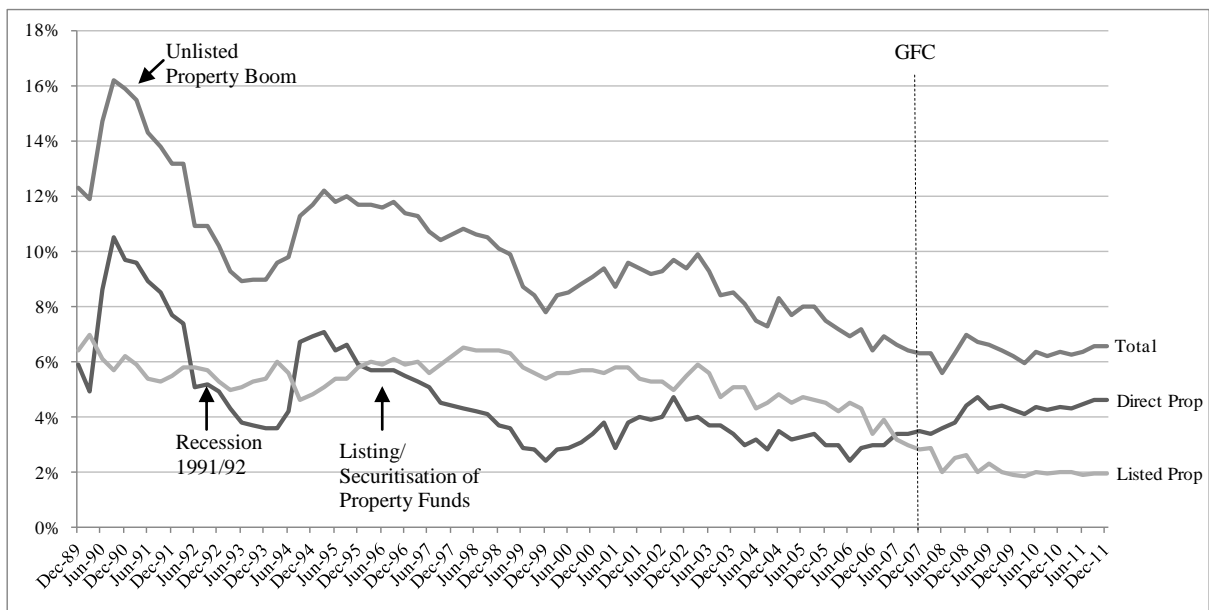
As a comparison, the 10-year Treasury bond yield in Australia averaged 7.77% during 1994-2011, compared with 5.99% in US, and 5.30% in UK. In addition, the higher Sharpe ratio is not a function of excess returns but evidence of lower volatility of returns in Australia compared to the US and the UK, even during and after the GFC. The lower volatility of returns is mainly a result of continued financial reforms and stronger regulation in recent years. Since the 1990-1991 recession, financing of major construction projects has been subject to high levels of discipline in Australia. Even during the real estate 'boom' period of 2004-2007, speculative development was limited in Australia (Jones Lang LaSalle 2012).

Investments in the Australian property markets are expected to remain an important part of institutional investment portfolios in future. According to Jones Lang LaSalle (2012, 2013) reports, there are two key factors that will attract institutional investors to Australian property markets over the medium to long-term. The first factor is the continued re-profiling of large superannuation funds and sovereign funds investment portfolios. In the post-GFC era, institutional investors have reduced their exposure to mainstream asset classes such as equities and bonds; they are investing more in real assets such as property to achieve improved risk-adjusted return portfolios. The second major factor underwriting the attractiveness of the Australian commercial property market is the significant growth of the Asia-Pacific property market. It is projected that the Asia-Pacific's share of global real estate's investible universe will increase from 22% in 2012 to 50% by 2031. At June 2012, Australia accounted for 9.1% of the Asia-Pacific investible universe.

The more developed Australian property market plays an important role in the Asia-Pacific for investors looking for global diversification. Jones Lang LaSalle (2012, p. 5) reported that over the three years to June 2012, Australia accounted for 22.5% of the cross-border capital flows in the Asia-Pacific region. Compared to some countries in the Asia-Pacific region, which are characterised by operational challenges, low levels of liquidity and undeveloped capital markets, Australia offers a highly transparent and developed property market. The combination of a higher allocation trend to property in institutional investment portfolios, and increasing weighting towards the Asia-Pacific region, should effectively support the continued growth of Australian property markets.

### **2.3.3.2 Market Developments and Asset Allocation Trends**

Global property investment cycles have moved through periods of boom-bust in the early 1970s, early 1990s and late 2000s. These events significantly impacted both the structure and development of the Australian property market, and how Australian fund managers invest in property assets. Recent market data and reports (APRA 2013b; Newell 2008; Rowland 2010) highlight that institutional allocation to property assets in Australia currently averages 10%. Clayton et al. (2009) explain that property cycles are affected by both the general business cycle, which strongly influences the operating earnings of the property, and the capital market factors. Figure 2-8 provides a historical look at the Australian superannuation industry property allocation trend.

**Figure 2-8: Superannuation Property Allocation Trend: December 1989-December 2011**

Source: Austrade 2010b; Rainmaker Group 2012.

It is important to note that the Australian investment property market is fairly new compared to other sectors such as equities and bonds. Until the 1960s, Australia virtually did not have an active property investment market. Before this time, most commercial properties were owner-occupied. By the 1960s and 1970s, superannuation funds and insurance companies dominated the investment market. Initial institutional investors included a handful of large funds such as AMP and National Mutual, before other local developers/investors entered the sector, such as Lend Lease, Westfield, and Stocks and Holdings (JLW Research 1989, p. 1). Some of these companies (like AMP, Lend Lease and Westfield) remain among the largest and most active players in the Australian property market.

The 1980s saw the emergence of property trusts after two decades of dominance of the Australian property investment market by superannuation funds and life offices. The deregulation of Australian financial markets in the early 1980s meant that property developers had easy access to capital which resulted in a period of phenomenal growth in the Australian property market and eventual oversupply of direct property assets. Investments in the Australian property industry by superannuation funds, life insurance and the property trust industry increased from A\$3.8 billion in 1984 to A\$42 billion in 1989. During this period, most Australian fund managers had accepted property as an integral component of their investment portfolios. Large fund managers such as AMP held approximately 25% of their portfolio in property assets. On a sector level in the late 1980s, life insurance fund and superannuation fund allocation to property was 20% and 18% respectively. During this period, the unlisted property trust sector was popular in Australia because of its ability to redeem investments within a 60 day maximum period imposed by the corporations law (JLW Research 1989, p. 1; McDonald 1992, pp. 1-4; Newell 2008, p. 672).

The recession in 1990-91 resulted in a severe correction in property values. Similar to the 1973-1975 recession, the market collapse in 1990-1991 was characterised by overbuilding (excess new property supply) driven by

easily available debt financing and notable property overvaluation. However, compared to the mid-1970s property crash, when institutional buying was instrumental in the sector's recovery, most fund managers in the early 1990s disinvested their property allocation and were unwilling and unable to hold on to large properties that had little prospect of capital appreciation. Fund managers adjusted their investment portfolios to include more equities and bonds in response to falling interest rates, and with the expectation of superior returns in the other investment sectors. By fund management sector, property allocation in the life insurance industry declined from 20% in December 1988 to 11% in March 1992, and for superannuation funds declined from 18% in June 1989 to 11% in March 1992 (Austrade 2010a; Rainmaker Group 2012).

Spectacular falls in value, particularly in the office sector, saw institutional property portfolios being passively reweighted. The result was that institutional property allocation was mainly focused on sectoral reweighting of existing property portfolios rather than an increase in the overall property exposure. The industry asset value fell from A\$42 billion in 1989 to A\$31 billion in 1992. The market downturn, coupled with an influx in requests for redemptions and lack of liquidity, meant that either most of the open-ended structured unlisted property trusts went into liquidation, or merged and listed on the ASX. Managers also modified the structure of the funds to remove the unlisted property trust shortcomings that led to the collapse of the sector, such as moving to closed-ended fund structures. Consequently, listed property trusts (LPTs), now known as A-REITs, only became prominent as an investment option in Australia from the early 1990s (De Francesco & Hartigan 2009, pp. 543-544; McDonald 1992, pp. 1-4; Newell 2010, p. 46).

Market indications in the early 1990s were that the next cyclical upswing in the property market would be significantly modest and that fund managers would adopt more conservative structures. By this time, fund managers had already reweighted their property allocation benchmark closer to 15% of the investment portfolio, from a peak of about 25% in the late 1980s. The evolution of securitisation in the 1990s was an important development in the resurgence of the property market. This integrated the commercial property sector with the broader capital markets. Particularly, the emergence of the CMBS market was widely viewed as a more efficient source of debt capital, designed to improve liquidity and transparency of commercial property, and also act as a regulator of mortgage flows. The emergence and expansion of these widely available lending programs meant that investors in property equity were able to obtain higher amounts of leverage at low costs. The other important development in 1992 was the introduction of the compulsory superannuation contribution scheme by the Australian government. This resulted in an influx of institutional capital in the property sector. As a result property prices rose and there was sharp decline in capitalisation rates.

In the late 1990s, some listed property trusts had diversified into other activities, such as funds management and property development, which has given rise to 'stapled REITs'. In addition, some A-REITs begun to invest in a variety of emerging property sectors such as healthcare, retirement, entertainment and self-storage facilities. Consequently, the property sector experienced its biggest boom period, which started in 2002 and continued to 2007. Contrary to earlier projections, the growth in the property industry was anything but modest. Investments in the Australian property industry had grown four-fold in six years, from just under A\$100 billion in 2000 to nearly A\$450 billion in 2006 (at an annual growth rate of 20%). This was an A\$420 billion, or nearly fifteen-



fold, increase when compared to the A\$42 billion invested in the property industry in 1992 (Clayton et al. 2009; McDonald 1992, p. 1; PCA 2011, p. 6).

The number of A-REITs increased from 17 in June 1988 to 71 as at December 2006, due mainly to the significant amount of money flowing into the sector from institutional investors, like superannuation funds, and the higher demand for quality real estate. The combination of lack of supply in the local market, and the strengthening Australian dollar since the early 2000s, meant many A-REITs have also started to invest heavily in the overseas property markets, such as the US and Europe, where either property yields were higher for the type of properties that were acquired, and/or the margin between the interest rates on their debt and the property yields was greater than in Australia. Towards the late 2000s, some trusts had over 40% of their assets invested in offshore markets (Newell 2010, p. 54; PCA 2011, p. 26). This period of the market was characterised by phenomenally high total returns in the property sector. Rowland found that in the four years to June 2007, the ASX A-REIT 200 Accumulation Index earned an average of 19.8% per annum (with a return of 25.9% in the year to June 2007). The A-REITs sector generally outperformed the commercial property sector in the 2004-2007 period (Rowland 2010, p. 332). Consequently, a significant number of the institutional investors were attracted to listed property, in what is now termed as the 'A-REITs Golden Era'.

The A-REIT's higher return performance was a mixture of active portfolio selection and trusts taking on additional risk exposure, such as increased debt/gearing levels. The gearing level in the A-REITs sector increased strongly from 1994, from 10% to around 40% at mid 2005. Most A-REITs had gradually increased their debt exposure with the expectation that positive financial leverage would increase the returns to unit-holders. At times this was done using complex ownership structures which disguised the liabilities of the parent trust (De Francesco 2007; Higgins & Ng 2009; Newell 2010; Rowland 2010). De Francesco and Hartigan (2009) explain that the significant increase in A-REIT gearing levels during 2000s was driven by two main factors: the relatively low and stable interest rate environment, and expanded use of capital management techniques within the sector. Easy access to low-cost debt resulted in increased financial leverage and risk taking that would prove unsustainable. Eventually the collapse of stock prices, including REITs, widening credit spreads, and the freeze-up of the private equity real estate market in late 2007, resulted in a significant decline in returns and valuation across all property sectors (Clayton et al. 2009; Chen & Mills 2010).

The collapse of the credit markets in 2007 was more profound than previous recessions for all investment markets, including property. The event severely restricted the growth of the Australian property industry, negatively affecting both the A-REITs share price and underlying direct property values. The effect of the GFC was more prominent in the A-REITs sector. At the height of the GFC (March 2009), A-REITs market capitalisation declined by 70% to approximately A\$47 billion from a peak of approximately A\$148 billion in August 2007. Unlisted wholesale property funds, a better representation of direct property, declined from A\$78 billion in 2008 to A\$61 billion in 2009. Property transactions declined by 60%, from the peak of more than A\$17.0 billion (2007) to A\$6.8 billion in 2008, the lowest since 1996. Due to lower transaction volumes, institutions have found it difficult to accurately assess asset values. Consequently, the capitalisation rates for all Australian direct property sectors compressed to their lowest point during 2007-2008. The overall Australian

property investment industry value contracted to approximately A\$290 billion in December 2010, with the annual growth rate slowing to 12% (ASX 2012b, p. 1; ASX 2009; ASX 2007; PCA 2011, pp. 6-8; Parker 2013, p. 2).

The recessions in the 1970s and the 1990s were both characterised by overbuilding, with excess new property supply driven by easy access to debt and overvaluation of the market. Although the supply of new buildings was limited in the recent market collapse, easy access to low-cost debt again led to increased financial leverage and risk taking that took the commercial property market into unsustainable position. Ironically, the GFC has also become a catalyst for fundamental changes in property markets. Despite the impact of GFC, several studies (Clayton et al. 2009; Newell & Razali 2009; Newell 2008) highlight that the strategic allocations to property should not change much and that property as an asset class would remain important for institutional investors. In fact, more recent reports by JP Morgan Asset Management (2012) and Jones Lang LaSalle (2012) anticipate that in the next decade, institutional real assets allocation will increase from current average of 5%-10% to 25%. The GFC has forced institutional investors to reassess the risk profile of investment portfolios. The trend towards increased risk aversion means that capital displaced from mainstream assets such as equities and bonds will need to be invested in real assets, including property.

The post-GFC period has seen strong recovery in both the A-REITs and unlisted property fund markets. The unlisted property sector has recovered strongly to peak at approximately A\$96 billion, as at December 2010. During June 2012, the unlisted property fund sector was valued at A\$83 billion, with current inflows at approximately A\$2 billion per annum. A-REIT market capitalisation has recovered to approximately A\$92 billion, as at March 2013 (ASX 2013a, p. 1; Harley 2012; Higgins 2010, p. 259; Newell 2007b; Parker 2013, p. 10; PCA 2011, p. 8).

Unlike the 1990s recession, when institutional investors sold out of the sector, much of the recent post-GFC period recovery in the Australian property market has been attributed to higher demand for property by institutional investors. It is as though the market has come full circle, similar to post-1970s period, when institutional investors lowered their equities and bonds holdings in favour of property for more stable risk-adjusted return portfolios. In addition, recent market data shows that the current trends again significantly favour direct/unlisted property (see Figure 2-8).

In 2004, institutional superannuation fund investment in listed property was A\$11.9 billion, and unlisted property A\$12.5 billion. In the eight years to June 2012, the sub-sector allocation component has moved from a more even split in 2004 to a weighting of nearly 70% for unlisted property (APRA 2013b, p. 50). There is increased role of club deals and separate accounts versus unlisted funds in post-GFC context for larger pension funds; this shows a change in strategy and more focus on control and alignment of interest. Recent market reports (Harley 2012; APRA 2013b) show that some superannuation funds have switched their entire property allocation to unlisted property. This is mainly evident across all superannuation sectors (see Table 2-8).

As the repair to the financial markets continues, the way institutional investors treat property as an asset class will continue to change. Financial market reforms and future regulation would redefine how Australian fund managers invest in property assets and the inherent development of different property products. Amid these changes, the level of investment in property assets is expected to be higher than current levels. The preference for higher allocation to property is demonstrated by recent market forecasts. Jones Lang LaSalle (2013, p. 2) anticipates that direct commercial property transactions are expected to exceed US\$1 trillion per annum by 2030, compared to 2012 annual volumes of nearly US\$450 billion.

### **2.3.4 Australian Property Investors**

The Australian property industry has more than 1.3 million direct investors comprising retail/private, institutional and global investors. Property investments create retirement wealth and income for Australians, with more than 11 million Australians currently holding a direct or indirect stake in the property sector through superannuation, insurance companies and other investment management funds (PCA 2009, pp. 5&13).

Generally, institutional investors in Australia gain allocation to property assets by investing in property funds and via mandates or partnerships with other wholesale managed funds. Institutional property investors, such as superannuation funds and other pooled investment management funds, undertake more sophisticated analysis than most individual or retail investors, and generally they focus on the needs of their members and investors.

According to Higgins (2007), when compared to the overseas markets, institutions own a significant portion of the Australian property market. This can be attributed to the developed A-REITs market and the impact of introducing compulsory superannuation. The continued aging of the population has also led to higher weighting to property assets. Steinert and Crowe (2001, p.233) state that as ‘baby boomers’ (born 1946-61) move from an accumulation phase to spending over the next two decades, there is expected to be a shift in investment demand from capital growth/low income assets to higher income/capital preservation style assets. Real estate provides the advantage of a regular income stream with the benefit of capital preservation.

Superannuation funds are the major institutional property investors in Australia. The property industry has been a major beneficiary of the significant growth in Australian superannuation assets. Superannuation fund investments in property assets have increased nearly threefold, from A\$24.4 billion at June 2004 to A\$65.6 billion as at June 2012. There was a 250% increase in superannuation industry unlisted property assets under management during the period 2004-2012. In the same period, superannuation fund listed property assets have grown by 83%. The average level of property allocation in institutional superannuation funds at June 2012 was 10%. This compares to average 8% property allocation at 2004 (APRA 2013b, p. 50).

The level of property in institutional superannuation funds in Australia is one of the highest by pension funds in the major developed countries. Newell (2008, p. 670) found that pension fund property allocations in other countries were: Netherlands (10%), Germany (7%), US (6%), UK (5%), France (4%), and Japan (2%). The Pension & Investments/Watson Wyatt ‘Global 300 Pension Fund Survey’ report (P&I /Towers Watson 2012b) top ten globally ranked pension fund’s property allocation level ranged from 0-9%. In comparison, property allocation for the top two globally ranked Australian funds ranged from 5-12% (see Appendix 5). In most

countries, pension fund allocation to property is mostly through direct property, with only Netherlands (5%) and US (1%) having significant exposure to listed property assets.

Newell (2007a) identified that direct property exposure for large and medium sized superannuation funds is generally in the core property sector, typically via unlisted wholesale property funds. Direct property exposure for the smaller industry based superannuation funds was mainly via unlisted wholesale property funds and prominent property syndicates. Small funds mostly favour the flexibility and liquidity provided by REITs. Recent data from APRA show similar trends. Not-for-profit superannuation funds' property allocations are mainly via unlisted assets. The retail superannuation funds have a higher proportion of their property allocation invested in listed property.

Table 2-7 details the institutional superannuation funds' property allocation value and market component.

**Table 2-7: Superannuation Property Allocation Value (A\$ Billion) and Market Component: June 2012**

Property Type	Corporate A\$ Millions		Industry A\$ Millions		Public Sector A\$ Millions		Retail A\$ Millions		Total A\$ Millions	
Listed	519	2%	1,909	1%	3,637	3%	3,046	4%	9,111	2%
Unlisted	1,911	7%	18,861	10%	7,911	7%	1,810	3%	30,493	8%
Total	2,430	9%	20,770	11%	11,548	10%	4,856	7%	39,604	10%
<b>Market Share</b>	<b>6%</b>		<b>52%</b>		<b>29%</b>		<b>12%</b>			

Source: APRA 2013b, p. 50.

Industry funds and private sector funds represent 82% of Australian institutional superannuation property assets under management. Australian institutional superannuation funds generally have extensive property portfolios invested in both direct/unlisted and listed property. Typically, institutional superannuation funds favour unlisted property for diversification and stability reasons. Institutional superannuation funds' property allocation as at June 2012 was 10%, invested mainly in unlisted property (8%), with listed allocation being 2%. Each superannuation fund investment option has different mandates and risk profiles (for example, conservative, balanced, growth funds), and the level of property can vary slightly across the investment options. However, property as an asset class features prominently in most superannuation funds mandates. Newell (2007a, pp. 38-39), in a study of 395 superannuation fund investment options, found that 218 (55%) contained property in their portfolios.

Table 2-8 lists the superannuation funds that had close to, and above, A\$2.0 billion invested in property assets, as at June 2012. As at June 2012, several superannuation funds had in excess of A\$2 billion invested in property assets. The AMP Superannuation Trust holds the largest proportion of property assets (A\$7.9 billion). Other funds with significant investments in property assets include AustralianSuper (A\$5.2 billion), Colonial First State Superannuation Trust (A\$4.9 billion), State Public Sector Superannuation Scheme (A\$2.8 billion), Unisuper (A\$2.6 billion), and Construction & Building Unions Superannuation (A\$2.5 billion).

**Table 2-8: Superannuation Funds with Extensive Coverage of Property Assets: June 2012**

<b>Fund name</b>	<b>Fund Type</b>	<b>Property Assets (\$ Billions)</b>	<b>Listed Property (%)*</b>	<b>Unlisted Property (%)</b>
AMP Superannuation Savings Trust	Retail	7.9	7%	9%
AustralianSuper	Industry	5.2	0%	12%
Colonial First State FirstChoice Superannuation Trust	Retail	4.9	12%	0%
State Public Sector Superannuation Scheme	Public	2.8	0%	9%
Unisuper	Industry	2.6	4%	5%
Construction & Building Unions Superannuation	Industry	2.5	0%	14%
Mercer Super Trust	Retail	2.1	7%	7%
First State Superannuation Scheme	Public	2.0	4%	3%
Health Employees Superannuation Trust Australia	Industry	1.9	0%	10%
Retail Employees Superannuation Trust	Industry	1.8	0%	9%
Public Sector Superannuation Scheme	Public	1.8	0%	15%
Sunsuper Superannuation Fund	Industry	1.6	0%	9%
Telstra Superannuation Scheme	Corporate	1.6	0%	14%

\*Note: Some funds classify listed property within the equity asset class.

Source: APRA 2013b.

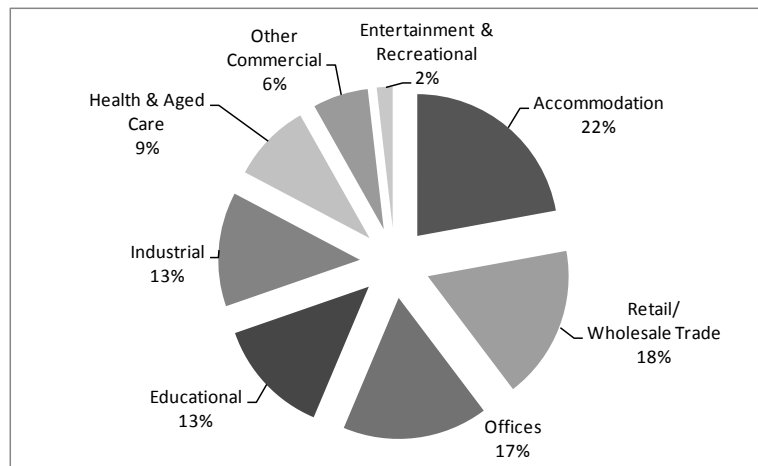
Property is expected to continue to be a significant asset class in superannuation fund portfolios in future. According to PCA (2009, p. 16), due to the ‘denominator effect’, declining stock market values following the 2007 GFC, the allocation to property assets is expected to increase to 10-15% for some superannuation funds. During 2009, Unisuper (the industry fund for university employees) announced that to reduce the volatility of portfolio returns, it would increase the fund’s weighting to property assets from 10% to 15% in 2010. It remains to be seen whether other funds will follow suit and increase their allocation to property assets. This will be one of the key issues investigated during the survey of fund managers and asset consultants in this PhD research.

## **2.3.5 Property Investment Market Segments**

### **2.3.5.1 Direct Property**

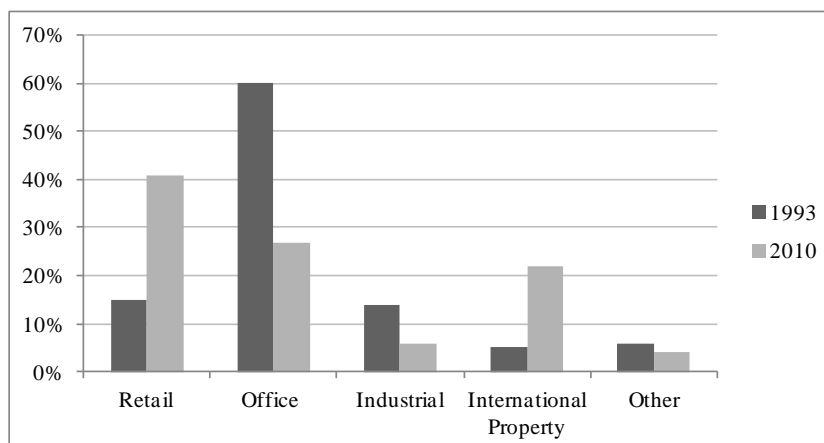
Direct property investment is the underlying physical asset (that is, bricks and mortar) that forms the nucleus of property fund portfolios. Traditionally, Australian fund managers have divided their property portfolio into core and non-core sectors. Higgins (2007) explains that in the institutional investor context, core property includes office, retail and industrial property markets. The non-core property sector includes assets such as residential apartments, hotels, entertainment and recreational facilities, healthcare facilities and educational properties. Figure 2-9 details the Australian direct property investments sectors, based on area coverage (square metres).

The Australian property market is dominated by the core sectors, both in size and value. The core property markets represent approximately 55% of Australian property coverage by square metres. Higgins (2007) estimated that, as at December 2006, the institutional exposure to the core property sector was A\$167 billion, and non-core property sector AU\$11 billion. While there is evidence of greater diversification benefit from including residential properties, it is currently not part of Australian investment fund strategy as, generally, private investors can outbid institutions for investment properties due to the high level of tax-deductible borrowings.

**Figure 2-9: Australian Commercial Property Market Types by Square Metres (Millions): December 2008**

Source: PCA 2011, p. 14.

Non-core sectors such as health and aged care, and entertainment and recreation facilities, have recently gained greater representation in institutional property portfolios. Newell and Peng (2008b) found that the growth of the emerging property sector is driven by an increased appetite for property investment by superannuation funds, acceptance of higher risk levels by many investors (for example, value-added and opportunistic funds), demographic changes favouring the retirement and healthcare property sectors, and increased experience in including emerging property sector assets in their property fund portfolios. The key motivating factor for fund managers investing in the emerging property sector has been the need for new product diversity. In addition, there is the mismatch between available funds and available core property assets in Australia. Institutional investors obtain exposure to these emerging property market sectors through a range of property funds including A-REITs, unlisted retail funds, property syndicates, and unlisted wholesale funds. A-REITs are the largest property fund investor in emerging property markets in Australia. The nature of the commercial property allocation landscape has also changed significantly in recent years. Figure 2-10 compares the allocation of property assets by sector for superannuation funds in 1993 and 2010.

**Figure 2-10: Superannuation Fund Commercial Property Allocation Comparison: 1993 & 2010**

Source: Newell, Stevenson &amp; Rowland 1993, p. 451; PCA 2011, p. 14.

In 1993, the majority of the institutional holding in property was in the office sector (60%), followed by retail (15%) and industrial (14%). Investments overseas represented only a small fraction (5%) of the institutional portfolios. In comparison, superannuation fund property allocation was more diverse in 2010. Retail (41%), followed by office (27%) were major property investment sectors. Interestingly, investments overseas now represent more than 22% of the Australian institutional fund management portfolio. This has been favoured by Australia's higher exchange rates and also reflects institutional investors' appetite for potentially higher return from exposure to higher risk sectors of international property. However, institutions investing globally need to develop sophisticated risk management strategies, such as currency hedging, to mitigate the potentially higher risk levels of international property investments (Newell 2007b).

Traditionally, fund managers have divided their property portfolio by type (such as office, retail, industrial and hotels) and by cities or regions. Using the correlation matrix for a 22 year period (June 1986-June 2008), Rowland (2010, p. 307) identified that there were only moderate diversification benefits for investing in various property types in Australia. Newell and Keng's (2003) study of the significance of the property sector and geographical diversification in Australian institutional portfolios found no substantive differences in property sector and regional diversification. However, regional diversification delivered slightly better results than property sector diversification. The more significant regional contribution to property diversification in Australia has seen increased institutional investment strategy focusing on sector-specific REITs in recent years and achieving portfolio diversification via regional diversification. Newell and Peng (2008b) and Rowland (2010) found that regional diversification of retail properties appears to be more effective than other uses.

Table 2-9 details the Australian commercial property performance in 1 year, 3 year and 5 year intervals. In the most recent five year period, the retail sector has provided the highest returns due to strong capital growth. As a very broad benchmark, Blake Dawson/Jones Lang LaSalle (2009) report states that capital growth in office and industrial sectors approximates the rate of inflation. While in the retail sector, growth is closely aligned to real wages growth which is between 1% and 1.5% higher.

**Table 2-9: Commercial Property Sub-Sector Performance: December 2012**

	<b>Income Return</b>	<b>Capital Growth</b>	<b>1 Year Return</b>	<b>3 Year Return</b>	<b>5 Year Return</b>
<b>All Property</b>	7.4	1.9	<b>9.3</b>	<b>8.7</b>	<b>3.0</b>
<b>Retail</b>	7.0	1.8	<b>8.8</b>	<b>8.6</b>	<b>5.5</b>
<b>Office</b>	7.4	2.2	<b>9.6</b>	<b>8.5</b>	<b>0.9</b>
<b>Industrial</b>	8.7	0.8	<b>9.5</b>	<b>6.9</b>	<b>0.2</b>

Source: IPD 2013b, p. 1.

The dislocation of the capital markets following the GFC resulted in compression in capitalisation rates across all direct property sectors. Industrial property cap rates compressed by 390bps, from 10.9% in 1985 to a low of 7.0% at December 2007. The retail and office sector cap rates compressed by 270bps (from 8.6% to 5.9%) and (8.1% to 6.2%) respectively. Property transactions declined by 60% from the peak of over \$17.0 billion (2007) to \$6.8 billion during 2008, the lowest since 1996. This was consistent with the significant deterioration in the

transaction volumes globally. Between 2007 and 2008, asset sales in the USA fell by 74%, Europe by 47% and Asia by 40%. The market has become more stringent with tenant quality, lease expiry and sustainability issues given more importance. The direct property market has recently shown signs of greater recovery with the PCA/IPD Property Index currently trading at values closer to the pre-GFC period. Market capitalisation rates have firmed with the industrial sector at 8.9%, office at 7.5% and retail at 7.1%, as at December 2010 (IPD 2013b, p. 1; PCA 2011, p. 56). A 17-year historical performance of the direct property market, in comparison to other investment sectors in Australia, is provided later in Figure 2-14.

### 2.3.5.2 Property Funds

Australian fund managers have access to more than 1,000 different property funds, including listed property (A-REITs) and unlisted property, such as wholesale property funds, property syndicates and retail property funds. Table 2-10 details the composition of the Australian property fund market and investor proportionality.

**Table 2-10: Australian Property Funds Assets and Investors: June 2011**

<b>Property Funds</b>	<b>Total Assets (\$ Billions)</b>	<b>Market Share (%)</b>	<b>Direct &amp; Indirect Investors (Millions)</b>	<b>Proportion (%)</b>
REITs	143.0	48%	6.6	60%
Unlisted Wholesale Funds	98.3	33%	0.2	2%
Property Security Funds	20.9	7%	1.1	10%
Unlisted Retail Funds	17.9	6%	1.4	13%
Mortgage Schemes	14.9	5%	1.6	15%
Property Syndicates	3.0	1%	0.0	0%
<b>Total</b>	<b>298.0</b>	<b>100%</b>	<b>11.0</b>	<b>100%</b>

Source: PCA 2011, p. 6.

Table 2-10 illustrates that A-REITs is the largest sector, representing 48% of the Australian A\$290 billion property fund market, followed by unlisted wholesale funds (33%). The remaining industry assets are split between property syndicates, unlisted retail funds and mortgage schemes.

### 2.3.5.3 Unlisted Property Funds

The unlisted property funds sector has experienced significant growth over the last decade, increasing from A\$16 billion in 2002 to A\$155 billion at 2011. Unlisted wholesale property funds offer large institutional investors, such as superannuation funds, the opportunity to hold investments in significant and high quality direct commercial property exposure without the requirement of extensive time input and property management experience. Unlisted property funds are total return focused, with low risk and low gearing. Investments in unlisted wholesale property funds represent 22% of the direct commercial property investments in Australia. The performance of unlisted property funds is significantly aligned with the underlying property assets. However, unlike A-REITs, unlisted property funds offer low liquidity, significant minimum investment levels, and high entry costs (Higgins 2010, pp. 259-260; Parker 2013).

#### 2.3.5.3.1 Unlisted Wholesale Property Funds

Wholesale property funds buy, hold and sell properties on behalf of institutional investors. Wholesale funds provide superannuation and other managed funds indirect ownership in parts of several high quality commercial property assets for less than the cost of owning high quality properties directly. Generally, major investors are



represented on the decision-making board. These funds are open-ended in nature and can issue new units based on demand. Units can be traded with other institutions or sold back to the manager of the fund if the managers have enough cash to buy back the units, or have other willing investors ready to subscribe to the fund. The redemption price for the units is based on the most recent valuations of the properties. These are 'wholesale' funds because minimum holdings are generally A\$1 million or more. Generally, wholesale property funds have low gearing (typically up to 20%), low risk and low entry costs when compared to securitised property, such as A-REITs. Listed property is generally yield focused, while wholesale property funds are total return focused. Wholesale property funds are generally attractive to superannuation funds which typically have a low risk investment mandate (Higgins 2010; Newell 2007b, pp. 218-219; Newell 2008; Rowland 2010).

In 2011, there were approximately 200 wholesale property funds which accounted for A\$98.3 billion in total property assets, having increased nearly fivefold from \$16.2 billion at 2002. The key factor driving the wholesale property funds growth in recent years has been the significant capital inflows from the superannuation funds which are seeking quality commercial property exposure with a strong focus on total returns. In part, the growth of wholesale property funds is also due to major A-REITs setting up wholesale property trusts. This has seen the emergence of significant wholesale property funds (both diversified and sector-specific) with domestic and international property exposure across the core, value-added and opportunistic property risk spectrum (Newell 2008, p. 670; Newell 2007b, pp. 216-217; PCA 2011, p. 6). According to Rowland (2010), wholesale property funds have become a popular way of holding properties as they provide institutional investors with an alternative to buying units in more volatile listed property funds. Although public information about unlisted trusts is limited, generally, major unit-holders such as superannuation funds and other fund managers are in close contact with the trust managers, having an input into the strategies of the trusts. As some of these wholesale unlisted funds were formed by consortiums of institutional investors, they will be heavily involved in managing the property trust's portfolios. The wholesale property funds are externally managed by several major fund managers in Australia, including AMP, Lend Lease, QIC, ISPT and GPT.

Table 2-11 provides details of the top ten wholesale property fund managers in Australia.

**Table 2-11: Top 10 Australian Wholesale Property Fund Managers: 2010**

<b>Fund Manager</b>	<b>Total Assets (A\$ Billions)</b>	<b>Market Share (%)</b>
AMP Capital Investors	13.6	14%
Lend Lease	9.2	9%
QIC Real Estate Funds	9.2	9%
ISPT	7.0	7%
GPT	5.3	5%
Colonial First State	4.8	5%
Charter Hall	4.2	4%
Centro	3.5	4%
Eureka	3.5	4%
DEXUS	3.0	3%
<b>Total</b>	<b>63.3</b>	<b>64%</b>

Source: PCA 2011, p. 40.

AMP Capital Investors is the largest wholesale property fund manager in Australia, accounting for 14% of the industry with A\$98.3 funds under management. The top ten wholesale property fund managers account for 64% of the sector assets. A study by Newell (2007b) identified that wholesale property fund managers generally have a number of investment options: examples AMP Capital (11), Lend Lease (7), and Colonial First State (4), which includes diversified property assets and sector-specific property portfolios.

#### **2.3.5.3.2    *Unlisted Retail Funds***

Unlisted retail funds invest in many types of non-residential properties, mainly in Australia, on behalf of retail or private investors. These trusts normally own properties that are less prestigious than the A-REITs and wholesale property funds, mainly minor office buildings and district shopping centres. Trust size varies from about A\$50 million to A\$1 billion, with terms of 10 to the maximum 80 years permitted by trust legislation. Gearing levels for most retail open-ended trusts range from 50-60%. These trusts have establishment and other ongoing fees, such as management fees, which range from 0.75 to 1%. The minimum subscription ranges from A\$5,000 to A\$10,000. Being open-ended in nature, trust managers can issue further units if there is demand from investors (Rowland 2010, pp. 342-343).

In 2011, there were approximately 100 retail unlisted trusts, which were set up and managed by a variety of fund managers. These fund managers include large institutional investors (such as AMP and ING), A-REITs (such as Centro, Stockland and Mirvac), property developers (such as Australand, Grocon and 360 Capital Group), and other mid to large size fund managers (such as APN, Aspen and Australian Unity) (PCA 2011).

Retail property funds are generally open-ended trusts. The ability to change the properties in their portfolios lets the trusts expand without further establishment costs. However, trust unit-holders have no say in the choice of properties that are bought or sold. Until 2007, retail open-ended trusts rapidly grew funds under management due to their popularity with investors seeking long-term income streams and potential for capital gain, such as self-funded retirees and superannuation funds. However, during the GFC, fund managers found it difficult to raise debt to start new unlisted trusts. In addition, during 2008, redemption requests were temporarily suspended for most trusts (Rowland 2010).

#### **2.3.5.3.3    *Property Syndicates***

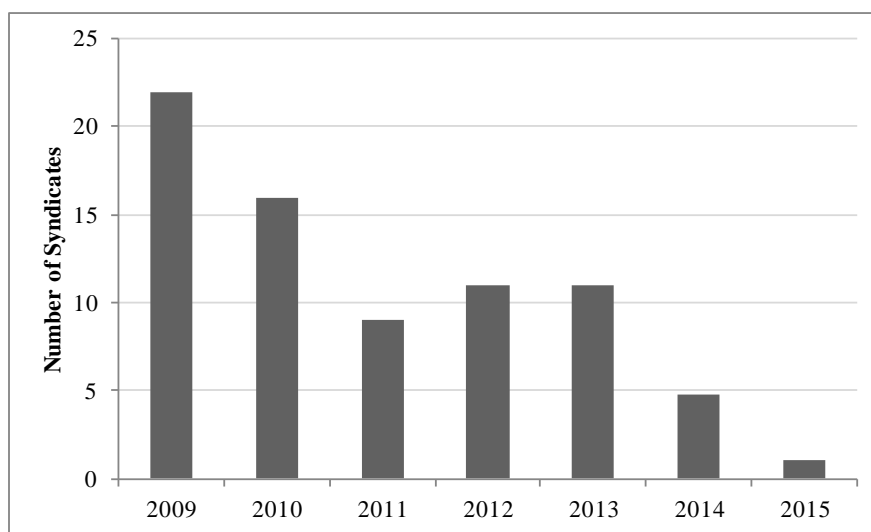
Property syndicates are typically closed-ended vehicles, whereby investors with similar goals come together as tenants-in-common and combine their capital to purchase a specific property or properties that would be sold after five to seven years. Property syndicates are generally focused at small investors offering low entry costs. The unit-holders receive distributions during the life of these trusts and a portion of resale proceeds. Shares in property syndicates are non-redeemable, and typically, all investors enter or purchase at the same time and exit together when the property is sold. Thus, like direct property, syndicates are relatively illiquid investments (Pridham 2000).

Most property syndicates have a provision that, unless 75% of unit-holders wish to extend the life of the trust, the manager must wind up the trust by selling the property and distributing the proceeds. This places investors at a disadvantage. As they have a specific or limited life, the properties can be sold either in an economic boom

period or in an economic recession, meaning that investors can at times actually end up with a negative return on the capital they had originally contributed to buy the property. Several property syndicates in Australia reached the end of their term in 2008 and 2009, with most managers seeking approval to extend their life rather than sell properties due to the declining market conditions (Reddy 2001; Rowland 2010).

Public property syndicates are termed as closed end funds because they do not raise additional capital after the initial offering. Generally, they are setup and managed by the same fund managers that operate unlisted retail property funds. Minimum investments range from \$5,000 to \$20,000, and generally, gearing levels are around 60%. These funds mostly purchase modern commercial properties on the fringe of city centres or in suburbs of regional cities, neighbourhood shopping centres, single-tenanted industrial premises, or specialised properties, such as cinemas, healthcare centres and retirement villages. The ongoing management fees for syndicate funds range from 0.5-1.0% of the value of the property. While syndicates offer unit-holders returns based on a known property or small group of properties, fund managers provide little information about changing capital values because they do not offer to buy back units before the end of the life of the trust (Higgins 2007; Rowland 2010, p. 346). Figure 2-11 details the number of property syndicates maturing within the period 2009-2015.

**Figure 2-11: Maturing Syndicates: 2009 - 2015**



Source: PCA 2011, p. 38.

The growth of property syndicates has been affected by property syndicate portfolios being restructured into REITs. In 2008, there were about 250 property syndicates, although currently there are few new syndicates being launched, with majority reaching the end of their term. Consequently funds under management for public property syndicates are in a decline. The number of maturing syndicates is expected to decline to two by 2015 compared to 22 during 2009. Consequently, the gross asset value of maturing syndicates by 2015 is expected to be less than A\$200 million. This is a significant decline compared to the 2009-2010 period when gross asset values were above A\$2.5 billion (PCA 2011, p. 38).

#### **2.3.5.4 Listed Property Funds**

##### **2.3.5.4.1 Australian Real Estate Investment Trusts**

Listed property trusts (LPTs) were invented in the United States in 1960 to allow small investors access to large-scale, income producing property assets. The concept started in Australia in the early 1970s with the General Property Trust (ASX code: GPT) being the first trust to attain stock exchange listing in 1971. However, LPTs only became prominent as an investment option in Australia after the credit crisis in early 1990s when most unlisted property trusts went into liquidation. For consistency with other countries, LPTs are now generally known as real estate investment trusts, or REITs, and the acronym A-REITs has been adopted recently for ASX-listed property trusts (Armytage 2002; PCA 2011, p. 6).

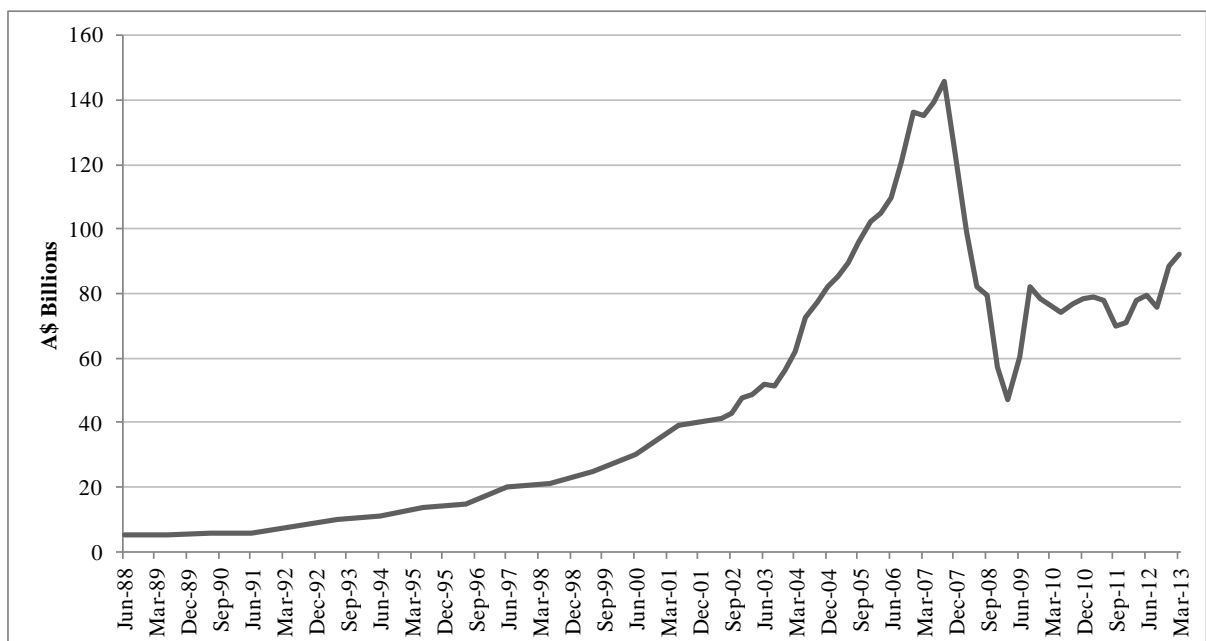
Higgins (2007) described A-REITs as tax transparent, open-ended property investment vehicles that primarily hold, manage and maintain properties for investment. The A-REIT sector is regarded as one of the most developed and sophisticated listed property markets in the world. In the global context, the A-REITs sector represented 13% of the estimated US\$661 billion global REIT market as at 2008. A-REITs include most of the largest property funds in Australia and represent 48% of the Australian property market by value, and close to 10% of the ASX market capitalisation. A-REITs operate in a well established regulatory environment and are traded on the ASX, providing liquidity and governance that is typically not offered in the direct property market. Following listing, units in A-REITs are traded through brokers with transaction and ownership details facilitated through an electronic register. The unit-holders include private or retail investors, institutional investors and managed funds. A-REIT investors receive distributions (paid quarterly or half yearly) traditionally based on rent, net of interest payments, management fees and other expense. The management fee for larger A-REITs ranges from 0.5-0.6% of total asset value under management. In addition, some fund managers are entitled to payments based on performance targets. Generally, to meet taxation requirements REITs distribute almost 100% of their taxable income. This typically equates to a distribution yield of between 5-9% (Rowland 2010, pp. 329-331).

The major advantage of REITs is that units are continually revalued by the market and can be sold at any time. In contrast, the value of units in unlisted vehicles is derived by the fund manager based on what the underlying assets are worth. This valuation may be less frequent and is sometimes less transparent. Another major advantage of A-REITs is that, generally, the trusts are subject to the same rigorous initial and continuous financial disclosure requirements as other shares listed on the ASX. Due to the stock exchange continuous disclosure requirements, and the updated coverage from research houses and brokerage firms, listed A-REITs are the most transparent of the property funds. A-REITs provide investors with access to several types of high quality real estate at a limited cost and under the administration of a professional manager. Even for institutions or investors with have long-term investment horizons, but which lack the size and capital to invest in direct property assets directly, REITs present a viable option. The major disadvantage is the fact that units in listed property trusts behave like shares. While unit prices are tied loosely to the net tangible assets (NTA), A-REIT prices suffer from the same volatility as other ASX-listed companies and are subject to changing market sentiment. During periods of significant market downturn such investor sentiment becomes negative and unit valuations can suffer disproportionately, without reference to the underlying property values (De Francesco & Hartigan 2009; Higgins & Ng 2009; Newell 2008).

The A-REITs sector was based originally on passive investment strategies, involving quality property/lease-backed income streams. Initially, A-REITs almost exclusively owned properties only. However, from the late 1990s, some trusts have diversified into other activities, such as funds management and property development, which has given rise to ‘stapled REITs’. These REITs generally issue a separate security of the company that represents the fund management and or property development arm. That security is then stapled to the original security so that investors end up owning two or more securities that are related and bounded together through one vehicle. These securities cannot be traded separately. The concept is that the trust holds the portfolio of assets, while the related company conducts the funds management and/ or development activities. Most stapled A-REITs earned profits from providing property services and management services for listed and unlisted property funds (De Francesco & Hartigan 2009; Rowland 2010).

Prior to the GFC, some stapled A-REITs were trading at more than double the value of their NTA. NTA represents the opinion of an independent valuer or valuers as to the value of each individual property in the trust at a point in time. NTA is often used as a benchmark to assess the value of the REITs. During mid 2000s the growth in some stapled A-REITs was driven mainly by investor perceptions that these business activities would generate huge profits. The decline in financial market conditions since the later part of 2007 meant that value for A-REITs with higher debt levels were significantly negatively affected. A-REITs average debt level during this period was 35%, with some trusts recording gearing levels above 60%. A-REITs that had higher levels of international property exposure, and/or used stapled securities to access other income streams from property development and funds management, were also in the spotlight. By June 2008, most A-REITs were trading at a discount to their NTAs, in some cases a discount of more than 20% (De Francesco & Hartigan 2009, pp. 543-544; PCA 2011; Rowland 2010). Figure 2-12 details the historical market capitalisation for the A-REITs sector.

**Figure 2-12: A-REIT Market Capitalisation: June 1988-March 2013**



Source: ASX 2013a; ASX 2009; ASX 2007; PCA 2011, p.20.

The A-REITs sector measured by the S&P/ASX 200 A-REIT Index declined from a peak of approximately A\$148 billion (August 2007) in market capitalisation to a low of approximately A\$47 billion at the end of March 2009. The consensus is that the recent collapse exceeded the severity of the decline in A-REITs during 1989 when the sector was more conservative. The more severe collapse in the A-REITs sector has been attributed to structural alteration in recent years, including increased gearing levels, higher exposure to offshore property assets, diversification in funds management and property development, and non-traditional types of property investment, such as healthcare and retirement, thus increasing the investment risks (ASX 2013a, p. 1; De Francesco & Hartigan 2009; Newell 2005, 2008; Rowland 2010, pp. 336-337).

In the post-GFC period, several trusts have reduced their debt levels and are attempting to change their management structures, such as reverting to external management and separating their investment trust units from their stapled company shares. A-REIT sector exposure to overseas assets has also declined from 43% of the total assets under management during 2007, to 31% at 2010. In addition, the composition of A-REIT income has also changed significantly. In 2008, the composition of the A-REIT income was rent (84%) and non-rent (16%). The A-REIT rental income proportion has increased to 93%, while non-rent income declined to 7% during 2010. A-REIT sector average gearing levels had declined to around 30% at 2010. These structural changes have led the recovery of the A-REIT sector, with market capitalisation improving to approximately A\$92.4 billion, as at March 2013 (ASX 2013a; PCA 2011, p. 26).

The ongoing consolidation of funds since the late 1990s through mergers and acquisitions has resulted in the number of A-REITs declining from 71 in December 2006, to 46 in March 2013. As a result, the market has become more concentrated with fewer A-REITs dominating the sector. Table 2-12 lists the top ten leading A-REITs by market capitalisation, as at 31 March 2013.

**Table 2-12: Top 10 Leading A-REITs by Market Capitalisation: March 2013**

A-REITs	ASX Code	Market Capitalisation (A\$ billions)	Market Share
Westfield Group	WDC	23.97	26%
Westfield Retail Trust	WRT	9.22	10%
Goodman Group	GMG	8.19	9%
Stockland	SGP	8.04	9%
GPT Group	GPT	6.56	7%
CFS Retail Property Trust Group	CFX	5.69	6%
Mirvac Group	MGR	5.55	6%
Dexus Property Group	DXS	5.03	5%
Federation Centres	FDC	3.37	4%
Investa Office Fund	IOF	1.88	2%
<b>A-REIT Sector Total Market Capitalisation</b>		<b>92.43</b>	<b>84%</b>

Source: ASX 2013a, p. 7.

The top ten leading A-REITs accounted for 84% of the A-REIT sector total market capitalisation, as at March 2013. This can be compared to the share of top ten funds during December 1999, which accounted for only 63%

of the total A-REIT sector market capitalisation. The Westfield Group is the largest A-REIT listed on the ASX, with a market capitalisation of approximately A\$24 billion. The Westfield funds (Westfield Group and Westfield Retail Trust) accounted for 36% of the total A-REITs sector market capitalisation as at March 2013. An earlier study by De Francesco and Hartigan (2009) noted that the high consolidation in the A-REITs, driven by limited organic growth (due to lack of quality grade domestic product), means increased risk of lack of sector diversity which could lead to less efficient pricing.

De Francesco and Hartigan (2009), and Newell and Razali (2009), found that post-GFC investors have become more risk averse, refocusing on A-REITs that cater for defensive style investments with premium core asset exposure, quality income streams, low to moderate gearing, limited offshore exposure, and sound management practices. De Francesco and Hartigan (2009) noted that while the level of institutional allocation to listed property has remained consistent in recent years, the state of the market warrants a rethink of future investment allocation strategies for REITs.

#### **2.3.5.4.2 Property Securities Funds**

Property securities funds (PSFs) provide investors with exposure to a range of public and private property investment vehicles. PSFs buy and hold units in other property funds and pass on the distributions from the funds to unit-holders. Most PSFs invest in listed A-REITs only. Despite not being listed on the ASX, units in most PSFs are reasonably liquid as the funds' investments can be sold at short notice. While similar to managed funds investing in the shares of ASX-listed companies, PSFs predominantly specialise in the property sector. Investment managers research and select funds and have access to specialist property funds that might otherwise be unavailable to investors. Units for PSFs are traded through the fund managers who set up unit prices daily or weekly, based on the current market trading price for A-REITs and the exit price or net tangible assets of any unlisted trust units (Higgins 2007; Rowland 2010).

PSFs are generally termed open-ended funds as they create more units when there are more applications to buy than sell. Some PSFs are wholesale (such as Colonial First State and Macquarie) which manage units on behalf of institutions. Other PSFs are retail (such as APN and UBS), available to investors at minimum subscriptions of \$10,000. Most fund managers in Australia have investments in both wholesale and retail PSFs. In 2008, there were about 80 retail and 80 wholesale PSFs, with some managers controlling several funds (Rowland 2010, p. 349). The Global Property Listed Securities Fund (managed by AMP Capital) and Vanguard Property Securities Index Fund (managed by Vanguard Investments Australia Ltd), are the largest Australian PSFs with A\$4.5 billion and A\$2.0 billion assets under management respectively, as at June 2012 (PIR 2013). The funds represented approximately 50% of the Australian PSFs industry assets, as at June 2012 (see Appendix 12).

PSFs are both sector specific and diversified funds, with some holding investments in overseas property securities. Passive PSFs normally aim to track either the ASX A-REIT 200 Index, while others try to outperform indices by actively trading in A-REITs. A small number of these funds are geared funds with debt levels of 50% of their securities value. However, PSFs may be indirectly exposed to high debt levels through their investments in highly geared A-REITs. PSFs charge entry and/ or exit fees up to 4% of the unit price, with fund management fees generally ranging from 0.5-1.5% per annum of the value of units, with active funds also charging

performance fees. Distributions range from 5-6% per annum income from A-REIT units. The value of PSF units changes in line with the value of their A-REIT and other investments. The severe decline in the A-REITs market due to the GFC also resulted in a sharp decline in total number and value of units in PSFs (Rowland 2010, p. 349).

#### **2.3.5.5 Property Debt Securities**

##### **2.3.5.5.1 Commercial Mortgage Backed Securities**

Commercial Mortgage Backed Securities (CMBS) are financial instruments that are backed by a pool of first aligned mortgage loans secured over commercial (non-residential) properties. In the early and mid-2000s, many Australian listed and unlisted property trusts found CMBS to be a popular instrument for raising debt. CMBS provides institutional investors with returns based on the loan payments and the repayment of capital on maturity. Most Australian CMBS mature after five years and have floating interest rates. The Australian CMBS are backed by mortgages over several properties of one trust, rather than being a pool of mortgages granted to many borrowers. Most issues are rated by the credit rating agencies to give confidence to the investors. Until the recent credit crisis, CMBS with AAA rating were the norm which enabled property funds to raise debt at a lower cost than bank loans (Higgins 2007; Rowland 2010).

The CMBS market in Australia was launched in 1999. Since then Australian CMBS total issuance has been around A\$23 billion, with approximately A\$10 billion outstanding, as at June 2009. CMBS issues in Australia rose from about A\$100 million during December 2000 to A\$1.5 billion, as at December 2006. As at June 2009, the largest issuers of CMBS in Australia were A-REIT vehicles (Macquarie Office Trust at \$570 million, and Macquarie CountryWide Trust at \$450 million), and unlisted vehicles managed by Colonial (\$430 million). The properties used as security for CBMS in Australia were owned by stapled A-REITs, unlisted property trusts and large development companies. The Australian CMBS market has virtually dried up since the GFC. There were no new CMBS issuances recorded during 2008. Although the sector has shown signs of recovery, CMBS issues were still well below A\$1.0 billion in 2009 and 2010 (PCA 2011, p. 65; PCA 2009, p. 63).

The Australian CMBS market is significantly smaller when compared to other developed economies. The US CMBS market, for example, had US\$685 billion (A\$850 billion) issuances outstanding, as at June 2009. In comparison, the Australian CMBS market issuances outstanding were A\$10 billion, as at June 2009. The CMBS in the US is the major source of commercial property finance. The US CMBS market tends to be dominated by multi-borrower facilities, whereby loans backed by property assets owned by a range of investors are packaged up into one CMBS facility. In contrast, CMBS facilities in Australia are single borrower led (PCA 2009, p. 62; Rees 2007, p. 307).

##### **2.3.5.5.2 Property Trusts Bonds**

Property trust bonds represent an unsecured claim against the property investment vehicle, rather than a claim against the underlying properties. These medium-term debt instruments have been issued mainly by larger listed property trusts since the late 1990s, often through investment banks which may advise on the terms of issue and find likely buyers. They are similar to corporate bonds issued by large public companies. Like CMBS, property trust bonds are also traded on the secondary market, mostly through private negotiations. Property trust bonds



and notes may have either fixed or floating interest rates, with floating rates at a margin above the Bank Bill Swap rate. The margin for property trust bonds is determined by the credit rating and market conditions at the time of the issue and subsequent trading. There was no new issue of Australian property trust bonds during the 2007 to 2010 period, with the bonds occasionally traded between investment institutions. Property bonds accounted for 0.3% of the A\$190 billion Australian property industry loan composition during FY2010 (Higgins 2007; PCA 2011, p. 62; Rowland 2010).

#### **2.3.5.5.3    *Property Derivatives***

A derivative security by definition is a financial contract that gives the right to a return, which is based on change in value or income generated by assets not owned by the investor trading the derivative security. Property derivatives are securities which reflect the growth or decline across defined property markets, or in stock exchange listed property trusts or companies. Derivatives based on units in property funds offer a form of leverage because, for a small outlay, it is possible to hold the right to buy or sell units worth much more than the outlay. Derivatives have much lower transaction costs than properties and can be traded at short notice. The instruments may be certificates, bonds, futures, options or swaps, and their value and returns may be based on a property index, a pool of properties, or a listed property fund (Rowland 2010, pp. 315&320).

Fund managers overseas have begun to make use of property derivatives such as options, futures and swaps, generally traded on property indices to balance their portfolios. However, the use of derivatives is limited even in most developed property markets. Fabozzi, Shiller and Tunaru (2010) noted that the risk management tools available for hedging property risk are very much in their infancy phase, with problems including illiquidity of trading and lack of theoretical development of models. The use of property derivatives is limited even within the institutional sector due to knowledge and transaction costs barriers. However, improvements in futures markets on real-estate indices may improve efficiency in spot markets and improve price discovery.

Property derivatives enable investors to have paper investments in their portfolios that will behave exactly as a property index or the average of a pool of property. The application of property derivatives can provide fund managers with flexibility in newly designed, structured property products, such as hedging a trade in forwards, or total return swaps to recoup the potential loss on primary real estate assets. In addition, property fund managers can adjust sector allocations and invest in markets where normally they would not operate; that is, country swap trades, where an investor trades in opposite directions on real estate indices in two different countries (Fabozzi, Shiller & Tunaru 2010; Rowland 2010). McNamara (2010) anticipates that in future, property derivatives will become a major part of the global property strategy with exposure being managed with the effective use of sector-specific derivatives.

Despite its benefits, property derivatives remain of little or no importance to Australian fund managers. In Australia, there are options and warrants available over larger A-REITs, and future contracts over the S&P/ASX 200 A-REIT Index, all traded on the ASX. However, trading on these instruments is limited. Rowland (2010) explained that the market for derivatives must be an active market to ensure that trading is viable for brokers or for sponsors to issue instruments, such as property certificates and swaps. In addition, concerns remain over the tax treatment of property derivatives returns.

### 2.3.6 Are REITs Property or Equities?

The issue of whether REITs are property or equity assets has been extensively studied, both locally and internationally. Venmore-Rowland (1990) described listed property companies as ‘asset-backed’ equities. Venmore-Rowland (1990, p. 289) clarified that:

‘... listed property companies are subject to the vagaries of the traded market place, but their long-term performance is linked to the returns on their underlying property portfolio, and these returns maybe significantly boosted (or reduced) by gearing and by management input.’

The core business activities of REITs is holding real estate assets and deriving rental income. Therefore, theoretically, both the trust’s assets and its sources of revenue should be linked to, and influenced by, the direct property market fundamentals. In addition, one would expect that the value of the REIT units will be a function of the market value of its property holdings. However, the reality is that listed REITs are traded on the stock exchange where unit prices are determined by daily supply and demand factors, overall capital market conditions, general market sentiment, market liquidity, and even the irrational ‘herding’ behaviour of market participants. Consequently, the prices of REITs differ from the net tangible asset (NTA) value and experiences significant market volatility when compared to direct property. Thus, it is highly unlikely that listed REIT shares will perfectly reproduce the performance of direct property investments (De Francesco 2005; Morawski, Rehkugler & Füss 2008).

Earlier empirical studies in the US (Goetzmann & Ibbotson 1990; Lee & Stevenson 2005; Ling & Naranjo 1999; Pagliari & Webb 1995; Ross & Zisler 1991) showed evidence of similar return behaviour between REIT returns and the common stock, and weak correlation between REITs and direct property from the early 1970s to the 1990s. Clayton and MacKinnon (2003) examined whether REIT returns reflected the performance of underlying direct property assets during the ‘REITs Boom’ in the early 1990s. Their study found that the REIT market performance went from being driven by the same factors that affect large cap stocks in the 1970s and 1980s to being strongly related to small cap stocks and real estate related factors in the early 1990s. In addition, large cap REITs, mainly owned by institutional investors, behaved more like stocks during late 1990s, than did small cap REITs which behaved more like real estate. These findings were backed by other studies (Brounen & Eichholtz 2003; Pagliari, Scherer & Monopoli 2005) that showed that sensitivity of REIT returns to the stock market declined significantly in the 1990s.

More recently, Simon and Ng (2009) found increased co-movement between REITs and the general stock market since the GFC. In the Australian context, Radanovic (2010) found that since 1994, the volatility of A-REITs generally has remained below that of equities before the GFC. However, the volatility of A-REITs rose significantly during the GFC when investors mainly sold out of A-REITs because of higher gearing and sensitivity to interest rate movements. Many A-REITs are moving to more conservative models following the GFC which is likely to reduce correlation with the broader equities market.

Boudry et al. (2012) used transaction based data instead of appraisal based data to gain an insight into the relationship between REITs and direct property, and found significant evidence that REITs and the underlying

markets are related and share long run equilibrium. Hoesli and Oikarinen (2012) used the sector level REIT and direct property indices for the US and the UK markets and found that securitised and direct property markets are tightly linked in the long run. However, a significant portion of the variance of securitised property returns is explained by the variance of stocks, while contribution of direct real estate is more limited in the short-term. Their research identified that the performance of REITs is largely independent with respect to shocks in the other assets; that is, neither direct property nor stock market shocks appear to drive REIT market performance.

Other studies in the US and the UK (Barkham & Geltner 1995; Clayton & MacKinnon 2001; Lee & Chiang 2010; Morawski, Rehkugler & Füss 2008; Myer & Webb 1993; Oikarinen, Hoesli & Serrano 2011; Sebastian & Schätz 2009) also found evidence of long-term integration between direct property and REITs. Similar results are exhibited in the Australian market. Numerous studies (CFS 2008a; CFS 2008b; De Francesco & Hartigan 2009; Newell 2008; Radanovic 2010; Yunus, Hansz & Kennedy 2012) conclude that the Australian direct property and A-REITs markets move in counter-cyclical nature in the short-term, but show convergence in the long-run.

Despite the lack of short-term co-integration, several studies (Giliberto 1990; Mei & Lee 1994; Newell & Chau 1996; Oikarinen, Hoesli & Serrano 2011) found evidence of a common ‘real estate’ factor driving the returns of both the listed REITs and direct property markets. Giliberto (1990) labelled this as ‘pure’ property. However, the general consensus is that the relationship between listed property and direct property is considerably stronger when a lead in REIT returns is considered. Brounen and Eichholtz (2003) and Hoesli and Oikarinen (2012) found short-term co-movements between securitised and direct property may be substantially diminished by direct property frictions. These studies show that while direct property and securitised markets are closely linked, the predictability generally goes from REITs to the direct property market; that is, ‘real estate shocks’ take place first in the REIT market, after which the direct market adjusts to these shocks. The findings are supported by earlier studies (Barkham & Geltner 1995; Crowe & Krisbergh 2010; Geltner & Kluger 1998; Myer & Webb 1994; Seiler, Webb & Myer 1999) which provide evidence that REITs incorporate information into prices more quickly than appraised values. In general, price information does not fully transmit to the direct property market for a year or more.

Several recent studies have tried to explain the absence of co-integration between REITs and direct property returns. Boudry et al. (2012) noted that the differences between direct property and REITs may arise due to the partial debt financing of the latter. The considerable leverage of REITs over time has led to an absence of co-integration between REITs and direct property returns. Leverage effects increase the average profitability of REITs, but they also lead to higher variability, and thus, to higher investment risk. Boshoff and Cloete (2012) and Yunus, Hansz and Kennedy (2012) used time-lag and information efficiency as key reasons for the lack of co-integration between direct property and REITs. Others such as De Francesco and Hartigan (2009), Morawski, Rehkugler and Füss (2008), Newell (2006b), and Sirmans, Friday and Price (2006), found that in addition to these factors, changes in REIT structure and operations over time has increased its investment risk and variance when compared to direct property.

The debate on whether REITs are equities or property will be the subject of many future researches. The survey of literature illustrates that there are disparities in return profiles of direct property and REITs. In addition, recent structural changes in the REITs sector has resulted in different investment risk profiles. What is clear though is that the long-term responses of REIT and direct property returns to various market shocks closely resemble each other. The resemblance between REITs and direct property is substantially greater than that between REITs and the general stock market. The diversification benefits of REITs and direct property will be examined in detail later.

### **2.3.7 Property Investment Liquidity Profile**

Liquidity can be defined as the ease and certainty with which an asset can be converted to cash at, or close to, its market value. Liquidity is often seen as a common deterrent on the level of allocation to property. However, there are counter-arguments that the notion of liquidity is tied to an investor's investment objectives, timeframe and appetite for risk. In addition, an investor's need for liquidity should be driven by the nature of their liability. In recent decades, wholesale property funds and property syndicate vehicles have become increasingly sophisticated in the product structure and offering to investors, with the ability to facilitate an investor's specific investment objectives and liquidity requirements (Armytage 2002; De Francesco 2005).

The liquidity profile of unlisted property funds and property syndicates is different from direct property investments. In buoyant markets, the securities in unlisted property funds can be sold back to the manager at short notice, such as one month or so. In contrast, disinvestment of direct property assets could take anywhere from 6-12 months or more. In declining market conditions, unlisted property fund managers may find it hard to sell their properties, but substantial commercial properties can usually be sold if the owner is willing to accept a longer selling period and a discounted price. Despite these differences, both direct property and unlisted property funds are classed as illiquid assets when compared to REITs. However, liquidity for REITs does vary depending on the size of trusts. Larger trusts (by market capitalisation) are more liquid as they trade more frequently than smaller trusts (CFS 2004; Rowland 2010).

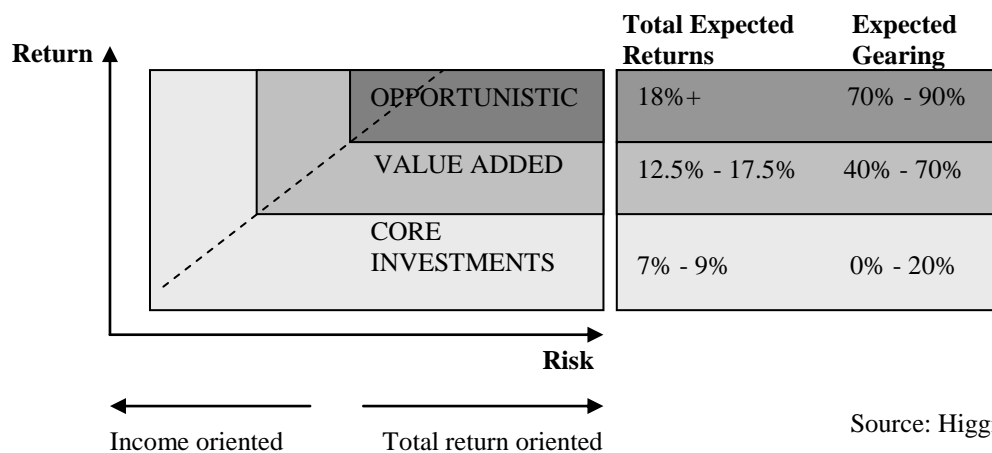
According to Harvey (2010), the liquidity of REITs enables portfolio managers to capitalise on valuation anomalies and performance variances across property types and markets as economic and real estate cycles change. The liquidity in the REIT market has grown significantly in recent years as more investors have embraced the investment case for REITs, and as the market has developed. However, Hoesli and Lekander (2009) explain that making an illiquid asset liquid has its problems. The key is that the vehicle must in some way handle the potential redemption from investors. Transacting the underlying direct property assets can take time; therefore, the fund must in some way guarantee that it meets the potential capital outflow. While the tendency is for property funds to hold some type of interest in cash and equities to meet immediate redemption requests, most vehicles are set-up as closed-ended funds. This allows institutional investors to commit capital to the property fund and redeem investments in a specific timeframe, based on their investment objectives and liquidity requirements. Baum and Hartzell (2012) went as far as stating that introducing liquidity in the form of property securitisation may damage returns. They argue that diversification only works as long as the asset is truly different. Therefore, taking away the illiquid, heterogeneous, commodity nature of real estate would take away a large part of its diversification potential and appeal to investors.

It is commonly argued that liquidity is enhanced with deeper markets as it enables assets to absorb temporary imbalances between supply and demand without significant price changes (CFS 2004). The size and depth of the Australian property market has grown substantially in recent years, driven mainly by the weight of capital flowing to the sector. A further factor that is conducive to a market's liquidity is its ability to quickly mean-revert back to some sense of equilibrium after events such as the GFC. While capital flow in the private market virtually shut down during the GFC, significant liquidity was maintained for REITs markets, enabling portfolio managers and asset allocators to rebalance their investment portfolios.

### 2.3.8 Property Risk/Return Characteristics

Higgins (2010) stated that the risk/return spectrum for property can be categorised in three segments: lower risk (core investments), medium risk (value added investments), and high risk (opportunistic investments). Figure 2-13 details the different property investment frameworks based on the risk/return and debt profile.

**Figure 2-13: Risk/ Return Framework for Property Investment**



Source: Higgins (2010, p. 258).

*Core style* investments are generally investments in properties held directly, or through, property funds that deliver secure income returns and are highly favoured by institutional investors. Generally, these assets are well located, high quality buildings with low risk of obsolescence and depreciation, with anchor tenants on long leases. Investment risk for core property investments is generally low. In addition, core property investments have low gearing levels, generally less than 20%. Core style property investments are characterised by high risk-adjusted return and low correlation in comparison to other assets in the portfolio.

*Value added style* (also referred to as core plus style) are property investments held for various periods, either directly or in securitised property funds, with significant capital growth from active management or activities such as development, redevelopment, re-leasing, or activities that involve an incremental risk/return investment style. These investments comprise a base income return, often with strong upside potential, with capital growth as well as uplift from financial engineering. Value added property investments provide medium risk exposure and gearing is generally around 60%.

*Opportunistic style* investments are characterised by low initial income return with high risk growth potential, strong capital growth, and good capital returns from gearing structure. Opportunistic investments are normally

medium term (3-7 years) in close-ended funds. The investment seeks to take advantage of high capital growth from development activities, and by capitalising on opportunities to offer higher expected returns arising from distressed markets, significant market mispricing, and corporate portfolio restructuring and financial engineering. These investments are highly geared, generally above 80%, and have significant interests in emerging markets (Higgins 2010, pp. 258-259).

According to Rowland (2010, p. 41), there are three major sources of risks that generally threaten property investments:

- i. *Market risks* – which affect all properties in that market and largely arise from economic changes or business or social trends with impact across the market; for example, drop in demand, oversupply, and unexpected inflation.
- ii. *Financial risks* – that arise from the commitments to the sources of capital, particularly loans, used to purchase properties; for example, interest rates, renewal terms, and insolvency.
- iii. *Property risks* – which are specific to each property and can be divided into three aspects of each property investment: its locality, its building, and its tenants.

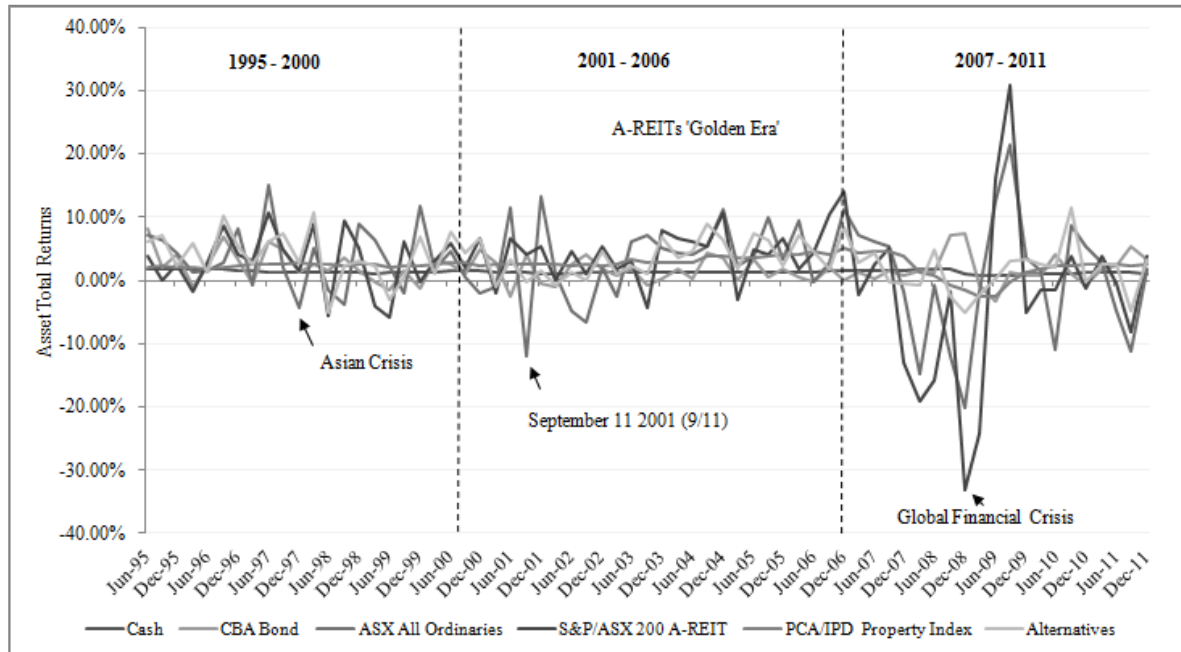
The expected risk and return of property assets is perceived as midway between stock and bonds. Property exhibits characteristics of both equities (in terms of potential rises in income from rents) and of bonds (in terms of a degree of certainty of income and security of value). Property offers high risk-adjusted returns, in part due to liquidity premium. In comparison with equities, commercial property provides a greater certainty of income. Commercial property leases are generally long-term in nature, and fixed or indexed. Therefore, the principal return to the investor is income return that is reasonably certain. This offers investors an attractive opportunity to seek debt funding. In high interest rate environments, property returns become negative with strong downturn momentum, which is likely to be attributed to the combination of corresponding bond yield rises and the effect on the cost of debt capital. In addition, property returns are positive and stable when equity markets are positive. Particularly in the current low interest rate environment, the return on equity of geared property investments would exceed the perceived risk to property investments (AXA Real Estate 2012; Baum & Hartzell 2012; Hoesli & Lekander 2009).

An over-riding driver in this post-GFC investment world is the desire for yield. While the global sovereign bond market yields are at record lows and the outlook for capital growth subdued, yield has become the core driver of investment returns. Traditionally, property yields have followed bond yields lower in many markets during economic downturns. However, the current spread between property and sovereign bond yields remains high, providing return benefits to property investors. A Jones Lang LaSalle (2013, p. 3) report shows that across 11 major global markets, including Australia, the spreads between real bond rates and prime-grade office market yields were, on average, 195 basis points wider in 2012 than during 2007.

Over the longer term, property investments are generally expected to produce higher returns than cash and fixed interest investment, and lower returns than shares. Figure 2-14 illustrates the Australian asset performance for a

17-year period (June 1995 to December 2011), highlighting the key market changing factors at different time intervals.

**Figure 2-14: Australian Market Asset Performance: Quarterly Data (June 1995-December 2011)**



Source: ASX 2012c; AVCAL 2012a; AVCAL 2012b; CBA 2012; IPD 2012; RBA 2012a; RBA 2012b; UBS 2012.

Figure 2-14 illustrates that the A-REITs and the Australian equities markets display significant variance compared to the more stable investment sectors, such as direct property, cash, and Australian fixed income. For the purpose of this research paper, direct property represents investments in direct commercial property assets and unlisted property funds. Listed property represents the Australian REITs. Returns for direct property and securitised property, such as REITs, tend to move counter-cyclically to one another. The divergence in the two property cycles can be attributable to different underlying drivers, as discussed earlier.

### 2.3.9 Evaluating Property Index Data

Geltner et al. (2007) stated that the real estate sector was probably the last sector of the capital markets to develop indexes and benchmarks for performance measurements. While equities and fixed income securities have indexes dating back to late 1800s, the first real estate based index (US NCREIF Property Index) was created only in 1978 (Clayton et al. 2009). Parker (2011) highlighted that index construction in property market context provides several challenges. In particular, the direct property market indexes are based on a less clearly, or undefined, universe. The property market includes several sectors, geographic locations and forms of ownerships, ranging from a small apartment to large office buildings. Different real estate sectors are being considered institutional grade in different countries. The real estate market's distinctive characteristics mean that a property index cannot be replicated exactly by passive style fund managers in a way that is similar to the equities market.

Australian fund managers have access to a number of direct/unlisted property fund benchmark indices developed in partnership by the Property Council of Australia (PCA), IPD and Mercer. These include the PCA/IPD Australian All Property Index, Mercer/IPD Australia Monthly Property Fund Index – Core Wholesale and the PCA/IPD Australia Monthly Property Fund Index – Unlisted Retail. The most widely tracked unlisted property index is the PCA/IPD Australian All Property Index. The PCA/IPD Australian All Property Index measures ungeared total returns to directly held standing property investments from one open market valuation to the next.

Table 2-13 details the data profile of the PCA/IPD Australian All Property Index.

**Table 2-13: PCA/IPD Australian All Property Index Market Composition: December 2012**

<b>Property Type</b>	<b>Capital Value (A\$ billions)</b>	<b>Capital Value (%)</b>	<b>Number of Properties</b>	<b>Number of Funds/ Managers</b>
Retail	56.2	41%	419	39
Office	60.5	44%	577	53
Industrial	12.0	9%	352	32
Residential	0.0	0%	0	0
Other	8.5	6%	307	41
<b>All Property</b>	<b>137.3</b>	<b>100%</b>	<b>1,655</b>	<b>165</b>

Source: IPD 2013b, p. 1.

Table 2-13 details the index composition for the PCA/IPD Australian All Property benchmark. As at December 2012, the capital value of the PCA/IPD Australian All Property Index was A\$138 billion. This was invested in 1,655 properties across 165 property funds. Offices (44%), followed by retail (41%) represent the largest index weights in the PCA/IPD Australian All Property Index (IPD 2013, p. 1).

Introduced in April 2000, the S&P/ASX 200 A-REIT Index is another important benchmark performance measure for institutional investors. REITs are treated almost as a separate asset class to equity, and are often managed on a separate basis. The A-REIT sector accounts for 6.9% of the S&P/ASX 200 Index value. The S&P/ASX 200 A-REIT Index included 17 constituents with mean market capitalisation of A\$3.4 billion as at December 2012 (S&P Dow Jones 2013b, p. 1).

Ross and Zisler (1991) stated that the true return index for property assets lies somewhere between the available securitised and unsecuritised property return indexes. Academic researchers have tried various approaches to construct this true index, either by adjusting (unsmoothing) the direct property return series, or by adjusting (unlevering, hedging) the property share returns. Exploratory work by Geltner (1991, 1993) has been widely used by academics to develop statistical methods to unsmooth the underestimated risk parameter in appraisal-based time-series data. Other studies – such as Giliberto (1990) and Liang and Webb (1996) – have developed methods to filter stock market effects out of the REITs returns.

AXA Real Estate (2012) in a study of UK property investors found that not all agree that property index data needs to be de-smoothed as the results can vary significantly depending on the technique used. The AXA study used both raw and de-smoothed UK IPD time-series data from 1971-2011 to determine optimal weighting to



property. The results show that substituting the de-smoothed property returns with the raw property index data did little to change the weighting of property in the optimal portfolio. The report highlighted that while the results would have been different prior to the GFC, the current results are indicative of improved efficiency of valuation models in the property sector in recent years. In the context of the Australian commercial property, Newell and Lee (2011b) also found that using de-smoothed property risk estimates does not impact on the make-up of the mixed-asset portfolio, particularly the level of allocation to property assets in the mixed-asset portfolio. The normal industry practice is to use property index data in the original format.

### **2.3.10 Property in Mixed-asset Portfolio**

Bond et al. (2007a), and MacGregor and Nanthakumaran (1992), examined the diversification benefits of property and concluded that property assets provide strong diversification potential when included in a mixed-asset portfolio. Typically, institutional investors have used their property allocations to improve portfolio performance by adding an uncorrelated asset class to the investment portfolio. Hudson-Wilson, Fabozzi and Gordon (2003) identified that property in an investment portfolio is important:

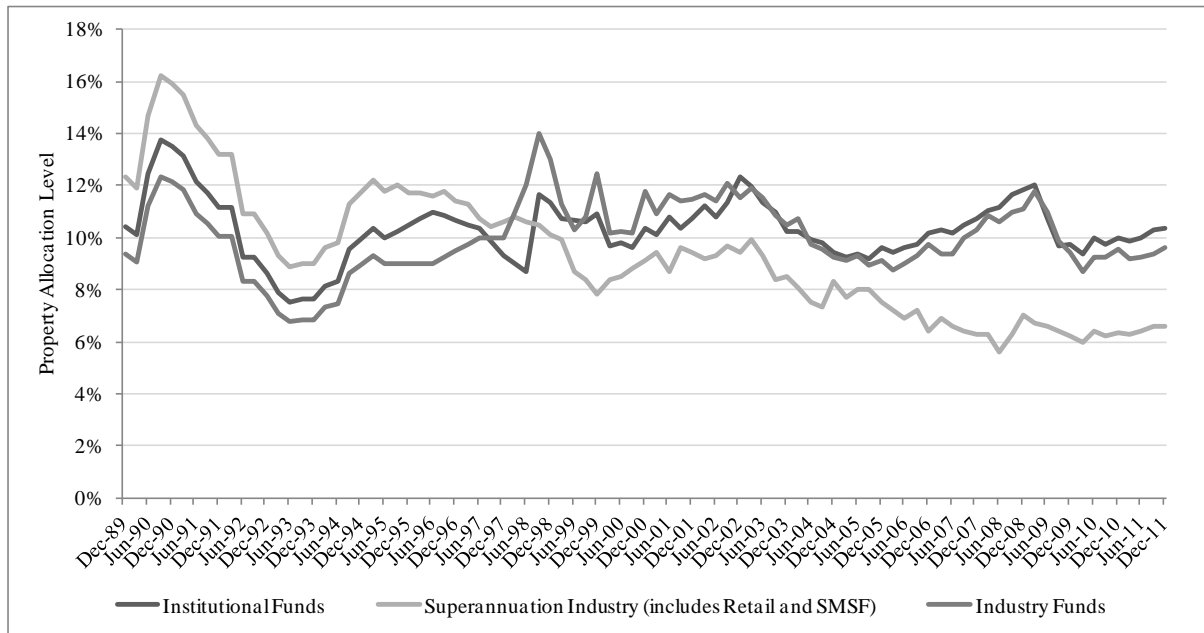
- i. To reduce the portfolio's overall risk by combining asset classes that respond differently to expected and unexpected events. Property generally demonstrates low correlation with stocks, bonds and cash.
- ii. To achieve absolute returns well above the risk-free rate. Generally, property outperforms stocks and bonds on a risk-adjusted basis. Property does not consistently produce high returns when compared to equities and bonds. However, property's lower volatility offers investors protection from drastically low returns.
- iii. To hedge against unexpected inflation or deflation. If inflation is higher than expected, property returns will compensate for the surprise and help offset the negative response of other assets in the portfolio. However, the inflation hedging capability is not uniform across all property types. For example, as REITs are listed and traded on the stock exchange and behave similarly to equities, their inflation hedging benefits are limited. Investors seeking inflation hedging benefits in property are likely to tilt their portfolio toward direct property assets which are traded in the private equity market.
- iv. To constitute a part of portfolio that is a reasonable reflection of the overall investment universe. The recent correction in stock market has resulted in increased allocation to property as investors seek stable portfolios. Therefore, property is an essential asset in institutional balanced investment portfolio.
- v. To deliver strong cash flows to the portfolio. To a risk-sensitive investor, whose main focus is capital preservation, allocation to property will be the starting point for portfolio construction. Property provides stable returns compared to stocks.

Source: Hudson-Wilson, Fabozzi & Gordon 2003, pp. 13, 18-22.

Superannuation funds valued at A\$1.5 trillion are the dominant institutional property investors in Australia and provide a good measure of institutional allocation to the property sector. Most superannuation funds would set strategic targets to meet the long-term goals of the fund and its members. Because property investments are long-term and provide regular income and capital growth, most superannuation funds have some exposure to property. As at 30 June 2012, the Australian superannuation industry's allocation to property was A\$141 billion, representing approximately 50% of the A\$300 billion Australian property market's value. This comprises 7% in unlisted property and 3% in listed property (APRA 2013b, p. 40, 50; PCA 2011, p. 8).

Figure 2-15 details the Australian superannuation industry's historical property allocation trend.

**Figure 2-15: Australian Superannuation Property Allocation Levels: December 1989-December 2011**



Source: Austrade 2010b; Rainmaker Group 2012.

Figure 2-15 illustrates the Australian superannuation industry's historical property allocation trend. For the 22 years to December 2011, property allocation for institutional superannuation sector ranged from 8-14%. The institutional sector, consisting of the not-for-profit funds (corporate funds, industry funds, public sector funds) and retail funds make up 65% of the \$1.4 trillion superannuation industry assets under management. Property asset allocation for the industry funds, the largest segment of the institutional superannuation funds sector, averages 10%. However, the overall superannuation industry (including small self-managed funds) demonstrate waning appetite for property assets, with allocation declining from 16% during December 1989 to 7% as at December 2011.

Baum and Hartzell (2012, p. 11) stated that property's under-weighting in institutional portfolios can be attributed to several factors including:

- i. The operational difficulties of holding properties, including illiquidity, lumpiness (specific risks) and the difficulty in aligning the investment management process for property and equities.
- ii. The introduction of new alternative asset classes, such as indexed-linked bonds, private equity, infrastructure and hedge funds. Some of these alternatives, such as infrastructure funds, offer income security and diversification benefits that are similar to those associated with real estate.
- iii. A lack of trust in property data, due to the nature of valuations, suspicions of smoothing in valuation-based indices and the lack of historical time-series total return data.

Compared to other investment assets, property requires intensive management. This has been cited as one of the major reasons why fund managers do not include property in their investment portfolios (Dhar & Goetzmann

2005). Rowland (2010) argues that this is also a reason why it is advantageous to specialise in acquiring and managing one type of property, or in one region. It is expensive to accumulate the expertise to manage property assets as each market or sub-market is distinct, with fund managers having to undertake thorough research of each market before acquiring assets. As a result of these factors, there is usually a mismatch between the importance of property asset class in value and its weighting in institutional portfolios.

Studies by Bajtelsmit and Worzala (1995), Brown and Schuck (1996), Craft (2001) and Hoesli, Lekander and Witkiewicz (2003) have concluded that the optimal weight for property in mixed-asset portfolios should be within the 10-30% range, and that including property in such portfolios reduces the portfolio's risk level by 15-25% reduction. JLW Research (1989) investigated the asset allocation from the property perspective in the post-war period up until the late 1980s in Australia and found that the mean-variance optimal portfolio comprised of 50% holding in property.

Lee and Byrne (1995) investigated the SAA problem of a mixed-asset portfolio using the unconstrained and constrained portfolio optimisation models. In their study, the upper limit to property was set at 20%. The results illustrated that even with the constrained approach there can still be a higher allocation to property and that property reached the upper bound quite rapidly. Stevenson (2000) also examined the role of property in unconstrained and constrained mean-variance optimisation portfolios. The results show that even with the imposition of constraints, there is a substantial increase in the role that property plays in the optimal portfolios.

Bekkers, Doeswijk and Lam (2009, p. 64) evaluated data on ten US asset classes within the SAA portfolio model and found that adding property to the traditional asset mix of stocks and bonds creates the most value for investors. The allocation to property in the mean-variance optimal portfolio was 26%. Stevenson (2000) constructed the optimal portfolios using 5%, 10%, 15% and 20% fixed allocation to property. Under all four scenarios, including property leads to low risk and improved returns, with the frontier with 20% allocation to property dominating the results. More recently, AXA Real Estate (2012, p. 12) used both raw and de-smoothed UK IPD time-series data from 1971-2011 to determine optimal weighting to property. The results show optimal weighting to property at approximately 20% in both models. On a sector level, Kallberg, Liu and Greig (1996) evaluated the role of direct property in a multi-asset portfolio allocation process and suggested that a 9% allocation to property is optimal. Booth and Broussard (2002) evaluated the role of listed property and suggested that a 10% allocation to listed property is optimal.

Mueller and Mueller (2003) argue that while allocations of 50% to property within unconstrained optimisation models, for example, may be only theoretically justifiable, superannuation funds can benefit from increased property allocation. The stable rental income returns from property would be beneficial when most superannuation funds move into heavy payout periods with more retirees, at which point annual cash flow becomes more important than price appreciation.

There is a strong support from the historical evidence to underlie the current trend towards the increase in allocation towards real estate. On a risk-adjusted basis, real estate has been one of the best performing asset

classes, and it must be noted that real estate has a significantly better risk hedging characteristic than any of the other asset classes. Recent evidence from quantitative analysis and survey expectations predicts that allocations to real estate will remain high. The risk-hedging benefits and the observed allocations to real estate, even among the most enthusiastic investors in alternative asset classes, emphasise the place of real estate in the modern world multi-asset portfolio (Bond et al. 2007a). Similarly, Baum and Hartzell (2012) noted that history shows property is a distinctly different asset class compared to equities and bonds which perhaps provides the strongest justification for holding it within a multi-asset portfolio.

Seiler, Webb and Myer (1999) conclude that although real estate does warrant inclusion in mixed-asset portfolios, generally there is disagreement on the proportions of various types of real estate that should be held. This will be one of key factors investigated later in this research. The next two sections in this Chapter focus on asset allocation and portfolio construction theory and the factors that influence property asset allocation decisions.

## **2.4 Asset Allocation and Portfolio Construction Theory**

### **2.4.1 The Importance of Asset Allocation**

The allocation of investment capital into different asset classes has long been recognised as the greatest single determinant of an investment fund performance. Brinson, Hood and Beebower (1986), and Brinson, Singer and Beebower (1991), used data from large pension funds in the US and found that more than 90% of the variations in the portfolio returns of a fund are explained by its asset allocation decisions. A study by Ibbotson and Kaplan (2000) of institutional mutual funds in the US found similar results, with 81% of the performance linked to the fund policy on asset allocation. Therefore, determining the asset allocation policy is a key task in the institutional investment management process.

Maginn et al. (2007, p. 5) described investment management as a continuous and systematic process complete with feedback loops for monitoring and rebalancing. They explain that ‘the process can be as loose or as disciplined, as quantitative or as qualitative, and as simple or as complex as its operators desire’. Fabozzi and Markowitz (2011b, pp. 3-4) categorised the investment management process into five key tasks:

- i. Setting investment objectives.
- ii. Establishing an investment policy.
- iii. Selecting an investment strategy.
- iv. Constructing the portfolio.
- v. Measuring and evaluating investment performance.

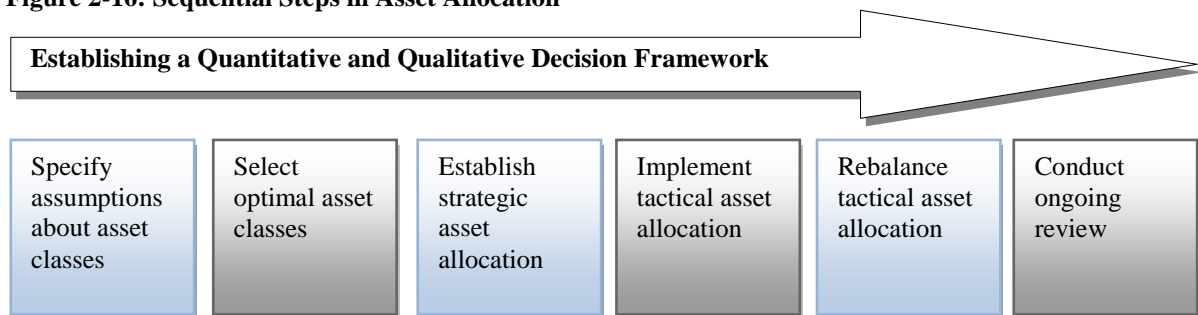
*Setting the investment objectives* begins with a thorough analysis of the investment objectives of the entity whose funds are being managed. *Establishing an investment policy* starts with the asset allocation decision. The development of the investment policies is influenced by factors such as client constraints, regulatory constraints, and tax and accounting issues. *Selecting an investment strategy* needs to be consistent with investment objectives and the investment policy guidelines of the managed fund. The selection can be made from a wide range of portfolio strategies, such as active or passive. Once the investment strategy is selected, the next step is

*constructing an efficient portfolio*. This phase generally involves selecting specific assets to include in the portfolio. Finally, the investment performance needs to be measured and evaluated. *Performance evaluation* helps determine whether the portfolio manager added value by outperforming the stated benchmark, identifies how the portfolio manager achieved those returns, and assesses whether the portfolio manager achieved superior performance (that is, added value) by skill or by luck (eds Fabozzi & Markowitz 2011a).

## 2.4.2 Asset Allocation Process

The asset allocation process includes the determinants and consequences of asset allocation decisions facing the fund managers. Darst (2003) outlined the asset allocation process in sequential steps, as illustrated in Figure 2-16.

**Figure 2-16: Sequential Steps in Asset Allocation**



Source: Darst 2003, p. 5.

Figure 2-16 illustrates that institutions generally commence their asset allocation process by defining key assumptions on future expected return, risk, and the correlation between asset classes. Institutions or investment advisors may then select asset classes that best match the fund's investment objectives and provide the maximum expected return for a given level of risk. The third step is to establish a long-term asset allocation policy (generally referred to as SAA). Fourth, the fund manager may decide to implement TAA, which generally is set against the investment board guidelines for SAA. Fifth, institutions periodically rebalance the portfolio of assets. The final step involves the institution regularly reviewing its SAA framework to ensure the investment objectives and targets match the outlook for each of the respective asset classes, and are in line with recent financial market developments.

There are two steps involved in selecting a balanced portfolio: asset allocation (where resources are allocated to various asset class and sub-class), and asset selection (where the choice is made about the specific assets to be selected). Any investment selection decision is preceded (either implicitly or explicitly) by an asset allocation decision. Therefore, asset allocation is an important factor in the investment management process. There are several economic, statistical and financial principles, as well as qualitative factors, which affect asset allocation decisions. Fund managers may forecast future returns using quantitative models that are based on historical data, or qualitative forecasts based on the judgement or experience of a group of experienced investment professionals. Based on these inputs and assumptions, portfolio optimisation models can generate a set of possible asset allocation projections, each with its own level of return and risk. These projections need to be

reviewed carefully for soundness and consistency with the institution's investment goals and preferences (Darst 2003; Ragsdale & Rao 1994).

### 2.4.3 Asset Allocation Strategies: Strategic, Tactical and Dynamic

For institutional investors, the SAA policy is the starting point for all portfolio construction. SAA dictates the division of investment capital into different asset classes that best meet the long-term investment objectives and constraints of fund members. Although traditionally any changes to asset class exposures are made within the SAA guidelines, fund managers (mainly active managers) attempt to earn additional returns by adopting shorter term asset allocation strategies, such as TAA and DAA strategies. Table 2-14 details the key characteristics of the different asset allocation strategies.

**Table 2-14: Asset Allocation Strategies: Key Characteristics and Operational Features**

Strategy	Strategic Asset Allocation	Dynamic Asset Allocation	Tactical Asset Allocation
Timeframe	10+ years	3+ years	Monthly/Quarterly
Preferred Investments	All asset classes	All asset classes	Liquid assets only
Transaction Costs	Medium	Medium	High
Management Costs	Medium	High	High
Liquidity Benefits	Medium	Medium	High

Source: Reddy et al. 2013a; Watson Wyatt 2009.

TAA policy is concerned with improving short-term gains by over-weighting or under-weighting certain major asset classes or asset subclasses when values and returns appear to be out of line with economic fundamentals, thus offering investment managers the opportunity to generate enhanced returns. In contrast, DAA decisions are made on a medium term investment horizon (3+ years). Except for the investment timeframe, DAA display similar characteristics to the SAA policy and is often referred in the industry as dynamic strategic asset allocation, or DSAA.

#### 2.4.3.1 Strategic Asset Allocation

Institutional investors often consider SAA as the central element of the investment process. During the portfolio planning stage, institutions formulate their investment objectives and policies (often referred as the investment policy statement or IPS) and establish capital market expectations. Institutions form capital market expectations by undertaking long-term forecasts of risk and return characteristics of various assets classes. The investor's return objectives, risk tolerance, and investment constraints are integrated with the fund's long-term capital market expectations to establish exposures to IPS permissible asset classes.

The IPS, when combined with a fund's capital market expectation, forms the basis for SAA decisions. Therefore, SAA is the subject of considerable thought and planning for investment institutions. The key aim of SAA is to satisfy the investor's long-term investment objectives and constraints under normal market conditions over a full market cycle, anywhere from 2-10+ years (eds Fabozzi & Markowitz 2011a; Hauss 2004; Sharpe et al. 2007).

In addition to set investment policies, institutions also formulate a range of permissible values for each asset class, which is primarily a risk management device. At times the portfolio's actual allocation can differ (either purposefully or temporarily) from the institution's permissible asset allocation range. As allocations outside the range may have substantially different risk characteristics from the policy portfolio, generally the portfolios are rebalanced. Any rebalancing is done to restore the institution's long-term target asset allocation range and is not a reaction to changing market condition. Generally, institutions conduct an annual review of the SAA. Changes to SAA are infrequent and generally result from adjustment in the investor's risk profile and risk objectives, altered expectations of assets' returns, standard deviation and/ or correlation matrix, and the emergence of new asset class not currently part of the institution's investment portfolio. However, SAA policies can be adjusted or replaced by a new SAA to reflect these changes. Because of its long-term nature, the SAA approach is not designed to beat the market (Anson 2004; Canto 2006; Darst 2003; eds Maginn et al. 2007; Picerno 2010).

An important point about SAA is that there is usually a predefined asset allocation policy or investment guideline for the decision-maker to follow. Therefore, an institution's preferred long-term exposure for certain asset class (such as small-cap shares, emerging market products, and REITs) may be guided or restricted by its investment policy. The institution's overall SAA policy may also be documented (on a stand-alone basis or as part of an IPS) and can serve as a guidepost for effecting any tactical allocations. The policy guidelines may define how closely or loosely any tactical asset shifts may vary from the strategic allocation (Darst 2003; Hauss 2004; Wendt 1994).

SAA can also be an important reference point during periods of extreme market downturn or when market sentiment tempts institutions to dramatically shift their asset allocations. Farrell (2011) and Morrison (2010) found that institutional investors are increasingly changing their focus to shorter term strategies due to the continued erratic behaviour of the investment markets following the GFC. Darst (2003) explains that, although events such as financial market crisis often present attractive buying or selling opportunities, generally these should be addressed from a tactical viewpoint rather than changing the institution's overall strategy in response to short-term market swings. Therefore, a SAA approach brings a certain degree of reflection and reason, and a disciplined approach, to fund managers' asset allocation decisions.

#### **2.4.3.2 Tactical Asset Allocation**

TAA responds to changes in short-term capital market expectations rather than to investor circumstances. Therefore, unlike SAA, TAA attempts to beat the market. TAA strategy involves a range of approaches, from occasional and ad hoc adjustments, to frequent and model based adjustments. There are three basic TAA strategies, each based on a different perspective of what drives short-term capital market expectations. These include the mean reversion model, various types of top-down or bottom-up economic forecasting models, and momentum models. TAA review occurs more frequently than SAA. Although a common TAA time horizon may be one year, large institutional investors have the ability to consider tactical adjustments on a more frequent basis such as quarterly, monthly or even weekly timeframes. Due to its short-term nature, TAA policy is mainly feasible with certain major asset classes, mainly liquid assets such as stocks and bonds (Anson 2004; eds Maginn et al. 2007; Norton 2012; Sharpe et al. 2007).

Picerno (2010) highlighted that TAA is an active management process which creates active risk. The aim is to obtain superior results relative to the fund's SAA policy. Sharpe et al. (2007) stated that TAA may decrease or increase the absolute risk level of the investor's overall portfolio, depending on the manager's skill, the type of TAA discipline involved, and the market conditions at the time. TAA is a means of managing risk. However, in practice, fund managers involved in the TAA process are often limited to making adjustments within the pre-defined asset allocation bands or tactical ranges around target asset class weights. If fund managers can make accurate short-term forecasts, TAA portfolio can provide enhanced returns. Normally this depends on the fund manager's ability to understand the market and their ability to take advantage of any market inefficiencies. In addition, to be beneficial for the investor, TAA must also overcome transaction cost barriers created by constant readjustments of the portfolio (Lummer & Riepe 1994; Faber 2007).

The major downside of the TAA approach is that fund managers may end up overweighting certain assets or underweighting others at certain times. This could increase portfolio risk and reduce diversification benefits. Therefore, fund managers will need to generate above market returns to compensate for the increased level of risk. Despite its shortcomings, institutions are likely to continue their use of TAA as it offers them the opportunity to generate higher returns (Hauss 2004; Ragsdale & Rao 1994).

#### **2.4.3.3 Dynamic Asset Allocation**

DAA is as an investment strategy that seeks to produce high total returns, irrespective of the performance of market indices, using the tools of TAA around a strategic benchmark. DAA bridges the gap with long-term SAA and shorter-term TAA policies to provide a more flexible approach to asset allocation. While TAA predicts the movements of investment markets over very short-term periods, in contrast DAA adjusts or 'tilts' SAA strategies in the medium term (3+ years), to improve a portfolio's overall risk/return characteristics. The medium term timeframe recognises that market dislocations and mispricing can persist for several years (Barings 2012; Hammer 1991; Mercer 2011, para. 3; Vliet & Blitz 2011).

Leading Australian asset consultants Mercer (2011) and Watson Wyatt (2009) noted that the DAA approach in particular provides an effective short-term strategy amid the current unpredictable investment environment. The DAA's medium term timeframe allows fund managers to competently protect against market extremes. The advantages of DAA are that it provides fund managers with: better returns compared to other asset allocation strategies, better market exploitation opportunities, reduced downside risk by avoiding declining investments products, portfolio diversification (may result in greater exposure to property and alternative asset classes), and the ability to adjust portfolios with changing global and local financial and economic market conditions.

Lawrence and Singh (2011) state that unlike TAA, dynamic strategy does not involve timing the market; that is, shifts in allocation are based on funded status, and not short-term forecasts of asset class returns. In addition, unlike TAA, dynamic allocation mandates tend to have absolute return targets that are not related to market index returns. There is no target asset mix and portfolio managers can change allocations based on their assessments of current and future market trends. The aim is for funds to generate investment returns when they are available and then reduce risk when the market conditions change. The upside is that investment managers are able to generate high returns if they are correct in picking market trends and if these trends continue over



longer-term periods. However, there is also an increased chance of a loss due to poor market interpretation and wrong investment decisions. Therefore, evaluating current market trends and predicting future trends is significantly important for successfully implementing DAA strategies (Hammer 1991).

#### **2.4.3.4 Strategic versus Active Asset Allocation**

There has been ongoing debate on whether deviating from the long-term strategies provides any benefits to investment institutions. In recent years, researchers have attempted to quantify the costs and benefits of active management strategies. Brinson, Hood and Beebower (1986), Brinson, Singer and Beebower (1991), and Ibbotson and Kaplan (2000), found that active investment decisions by large pension funds in the United States did little on average to improve performance, and that 93.6-100% of the portfolio returns are dominated by the SAA policy decisions. These and other studies, such as Sharpe (1992) and Bekkers, Doeswijk and Lam (2009), imply that the SAA allocation policy decision is far more important than market timing and asset selection.

Farrell (2011) stated that asset allocation is always a critical consideration for investors and is difficult to execute, particularly under the extreme market conditions. Under extreme, volatile market conditions active asset allocation strategies may underperform market averages because of the cost associated with continuous rebalancing of portfolios. However, Hoernemann, Junkans and Zarate (2005) argue that active investment strategies should not be ignored. Although TAA adds less value than SAA decisions, their study highlighted three key reasons why fund managers should continue to employ shorter term strategies: i) small changes in return mean more in a low-return environment; ii) the power of compounding returns; and iii) manager skills. Their study found that the performance of actively managed portfolios depends on the skills of the portfolio manager. Those managers who are able to make effective TAA and DAA decisions are likely to offer better performance. Other researchers (Jahnke 1997; Hensel, Ezra & Ilkiw 1991; Sharpe et al. 2007; Statman 2000) also highlight the importance of effective management as key to implementing successful active asset allocation strategies in their studies.

Research on the effectiveness of active asset allocation strategies is limited in Australia and mainly focused on the TAA strategy. Gallagher (2001) and Faff, Gallagher and Wu (2005) found that SAA strategies adopted by the Australian superannuation funds represent the single most important determinant of portfolio returns. The evidence from their studies indicates that active managers have been unable to deliver to investors superior returns through TAA. However, literature on the effectiveness of DAA compared to the SAA approach is lacking in Australia. In addition, portfolio construction research has mainly focused on capital market assets such as equities, bonds and cash. Portfolio construction research on the asset allocation component of investments such as property, particularly in the context of active asset allocation strategies, is lacking in Australia. Schneeweis, Crowder and Kazemi (2010) explain that the unique characteristics of property and alternative assets which are lumpy and typically illiquid make it difficult to implement typical tactical allocation strategies.

Perold and Sharpe (1988) evaluated several concepts of dynamic strategies for asset allocation and found that the choice between a static investment approach and a dynamic investment strategy is based generally on the investor's circumstances and desires. Asset allocation can be an active process to varying degrees, or strictly passive in nature. Whether an investor chooses a precise asset allocation strategy or a combination of different

strategies depends on that investor's goals, age, market expectations, and risk tolerance. The case generally is that most institutional investors use a combination of strategic and active asset allocation approaches. Strategic allocation allows institutions to map out a long-term investment plan for assets. Active asset allocation strategies allow institutions to anticipate and respond to significant shifts in the investment environments.

## 2.4.4 Portfolio Construction and Performance Measurement

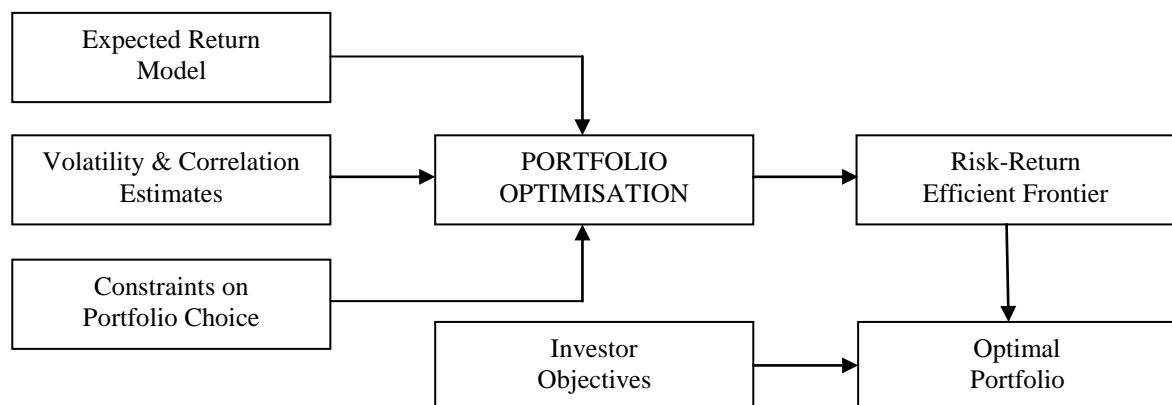
### 2.4.4.1 Modern Portfolio Theory

The concept of MPT, pioneered by Harry Markowitz in 1950s, is widely adopted by the financial community. MPT has revolutionised the world of investment management, allowing fund managers to scientifically quantify the investment risk and expected return of a portfolio. To construct a diversified portfolio, investors first need to ascertain what proportion of capital needs to be invested in which asset class (such as 40% stocks, 50% bonds and 10% property), and second, given the allocation, which specific stocks, bonds and property should the investor select. Prior to the development of Markowitz's portfolio selection theory, investors often talked about diversification but did not possess the analytical tools to attain a diversified portfolio (Fabozzi et al. 2012). Therefore, the advent of the portfolio selection theory has shifted the focus of fund managers from the risk of individual assets to the assessment of the risk of the entire portfolio.

Markowitz's theory of portfolio selection, together with the capital asset pricing theory, provides the foundation for modern day institutional portfolio construction and management. Fabozzi et al. (2012) defined Markowitz's mean-variance portfolio analysis as a normative theory. Normative theories describe the normative behaviour that investors should pursue in constructing a portfolio rather than a prediction concerning the actual behaviour. In contrast to normative theory, asset pricing theory is a positive theory. The asset pricing theory goes on to formalise the relationship that should exist between asset returns and risk, should investors behave in a hypothesised manner.

Fabozzi, Gupta and Markowitz (2002) noted that although the theory behind MPT is straightforward, implementing the process can be quite involved. Figure 2-17 presents the summary of the MPT process (mean-variance optimisation, or the theory of portfolio selection).

**Figure 2-17: The Modern Portfolio Theory Investment Process**



Source: Fabozzi, Gupta & Markowitz 2002, p. 8.

The key inputs to solving the portfolio optimisation problem include the estimates of expected portfolio return, volatility and correlation estimates of individual assets in the portfolio, and the portfolio constraints. Once the mean-variance efficient frontier has been calculated, an optimal portfolio can be determined based on the institution's investment objectives and guidelines. Based on the complexity of the portfolio, optimisation can be solved either with spreadsheet analysis, such as Microsoft Excel, or with more specialised commercial optimisation software.

#### 2.4.4.2 Portfolio Risk and Return

The Oxford Advanced Learner's Dictionary (1974) defines risk as the 'possibility or chance of meeting danger, suffering loss, injury etc.' Risk in financial markets is the measure of not achieving the expected return. In addition to the risk related to the expected return, investors are also concerned with competitor risk (the risk of losing market share to a competitor), and liability risk (the risk of being unable to meet liability requirements). Although the definitions of risk in the financial markets vary, the most commonly used statistical measure of risk is variance, and is referred to as the 'total risk'.

Risk management is the key to attaining a diversified portfolio. However, it must be noted that risk cannot be totally eliminated. It can only be reduced to some extent. The total risk component comprises systematic and unsystematic risks. Sharpe (1964) defined systematic risk as the portion of an asset's variability that can be attributed to a common factor. Thus, systematic risk is often referred to as 'market risk', as market effects largely determine it; for example, inflation, monetary and fiscal policies. The Greek letter 'beta' is used to demonstrate the quantity of systematic risk (mean market risk) associated with an asset or portfolio. Sharpe (1964) defined the portion of an asset's total risk that can be diversified away as unsystematic risk. Unsystematic risk is often referred as 'company-specific risk' or 'idiosyncratic risk' and represents that element of risk that is a particular feature of any given asset, such as property location characteristics, vacancy rates, and demographic and employment projections. Anson, Fabozzi and Jones (2011) explained that unsystematic or specific risk can be eliminated through diversification; thus, it is systematic or market risk that is of greatest significance. It is important because it is this element of risk that determines the required return at which an asset should be valued.

Markowitz (1952, 1959) quantified the concept of investment risk (known statistically as standard deviation and the variance) and expected return using the mean-variance formulation. The mean is the portfolio's expected return measure, and the variance is the portfolio's risk measure. The actual return on a portfolio of assets over some period of time is simply equal to the sum over all individual assets' weights in the portfolio, multiplied by their respective returns (Fabozzi et al. 2012).

The formula for the expected portfolio return is:

$$R_p = \sum_{g=1}^G w_g R_g$$

**Equation 2-1: Actual Portfolio Return**

where  $R_p$  = rate of return on the portfolio over the period.

$R_g$  = rate of return on asset g over the period.

$w_g$  = weight of asset g in the portfolio.

G = number of assets in the portfolio.

The portfolio return ( $R_p$ ) is sometimes also referred as the holding period return or the ‘ex-post’ return. In addition to ex-post returns, fund managers also prefer to calculate the expected portfolio return. The expected portfolio return is the weighted average of the expected return for each asset in the portfolio. The expected return  $E(R_i)$  of asset  $i$  is calculated as:

$$E(R_p) = w_1 E(R_1) + w_2 E(R_2) + \dots + w_G E(R_G) \quad \text{Equation 2-2: Expected Portfolio Return}$$

The  $E()$  indicates return expectations.  $E(R_p)$  is also referred as ‘ex ante’ return, or the expected portfolio return over some specific time period (Fabozzi et al. 2012). In the context of investment management, assets are normally classified as risky assets and risk-free assets. A risky asset is one for which the return that will be realised for the asset sometime in future is uncertain; for example, investments in equities. These are classed as risky assets as return expectations in the long-term are uncertain. Mathematically, the expected return of a risky asset  $i$  is calculated as:

$$E(R_i) = p_1 R_1 + p_2 R_2 + \dots + p_N R_N \quad \text{Equation 2-3: Expected Return for Risk Assets}$$

where  $R_n$  = the  $n$ th possible rate of return for asset  $i$ .

$P_n$  = the probability of attaining the rate of return  $R_n$  for asset  $i$ .

$N$  = the number of possible outcomes for the return.

Risk-free or riskless assets are those for which future return expectations are known with certainty; for example, investments in short-term government securities such as 90 day Treasury Bills. The two most common measures of risk in the investment market are variance and standard deviation. They measure the deviation of the data value from the mean. The standard deviation is simply the square root of the variance. Variance is defined as the arithmetic mean of the squared deviation from the mean. Fabozzi et al. (2012) explains that for a portfolio of  $G$  assets, the portfolio variance is:

$$\text{var}(R_p) = \sum_{g=1}^G w_g^2 \text{var}(R_g) + \sum_{g=1}^G \sum_{\substack{h=1 \\ h \neq g}}^G w_g w_h \text{cov}(R_g, R_h) \quad \text{Equation 2-4: Portfolio Variance}$$

The equation states that the portfolio variance is calculated by multiplying the sum of the squared weight of each asset class in the portfolio by its corresponding variance, plus two times the sum of the weighted covariance between the assets.

#### 2.4.4.3 Portfolio Diversification

Diversification is central to Markowitz’s mean-variance optimisation model. Markowitz’s portfolio selection model showed how risk could be reduced within a portfolio by combining assets whose returns demonstrate less than perfect positive correlation. When two assets are combined to form an investment portfolio, the low or negative correlation between the two is important. Markowitz’s theory exploits the low correlation between two assets and demonstrates that as long as the correlation between two assets is low, the risk component of a portfolio would be less than the average of the risk of the individual assets (Fabozzi et al. 2012; Fabozzi 2009).

The diversification benefits of assets are determined by examining the correlation coefficient matrix. The correlation coefficient determines whether two or more assets can be combined in a portfolio to produce a lower risk investment option compared to investing in the two assets separately. The correlation coefficient ( $\text{Cor}_{ij}$ ) is

covariance divided by the sample standard deviation ( $\sigma$ ) of assets  $i$  and  $j$ , as outlined in Equation 2-5. The values of correlation coefficient range from -1 to 1. A value of 1 implies perfect positive correlation between the asset classes, -1 implies perfect negative correlation, while 0 implies no correlation. A low (negative) correlation between assets displays greater diversification potential.

$$\text{Cor}_{ij} = \text{Cov}_{ij} / \sigma_i \times \sigma_j$$

**Equation 2-5: Correlation Coefficient**

where portfolio covariance ( $\text{Cov}_{ij}$ ) =

$$\frac{\sum_{t=1}^n (R_{it} - \bar{R}_i) (R_{jt} - \bar{R}_j)}{(n - 1)}$$

**Equation 2-6: Covariance**

$R_{it}$  and  $R_{jt}$  = return on assets  $i$  and  $j$  in period.

$\bar{R}_i$  and  $\bar{R}_j$  = the expected or mean returns from assets  $i$  and  $j$ .

$t$  = time periods from 1 to  $n$ .

The covariance is calculated by measuring, for each period, whether the above average returns from one asset class are accompanied by similar return movements in the other asset (see Equation 2-6). Covariance measures the strength and the degree to which two assets co-vary or change together. The covariance is not expressed in a particular unit such as dollars or percentages. A positive covariance indicates that the returns on two assets tend to move or change in the same direction, while negative covariance means returns tend to move in opposite directions. A value of zero means that there is no linear relationship between the two assets. A covariance matrix is a tabular presentation of the pairwise combinations of all portfolio components (Berenson et al. 2007; Fabozzi et al. 2012; Rowland 2010; Strong 2000).

#### 2.4.4.4 Determining an Efficient and Optimal Portfolio

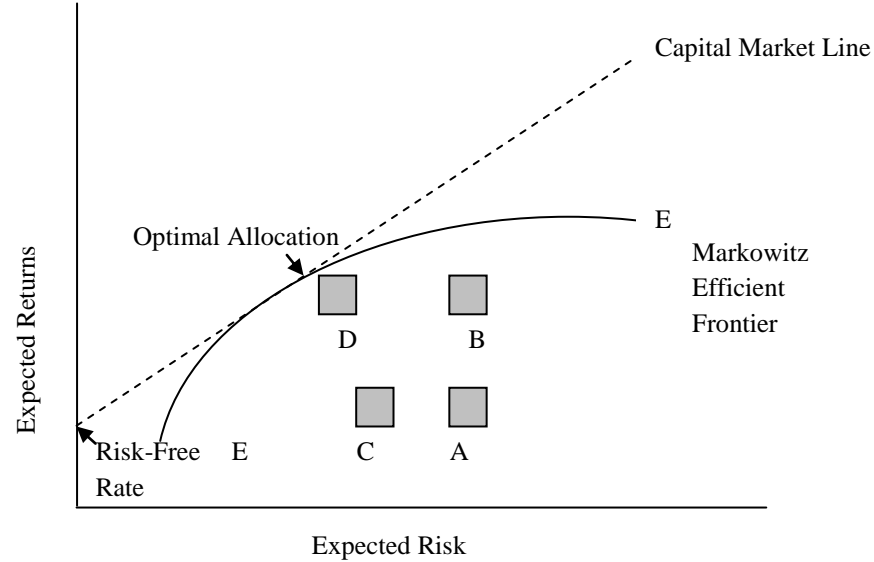
Normally, the old axiom, ‘there is no free lunch’, holds as there is rarely a strategy that has better advantages and fewer disadvantages than other strategies. Markowitz applied this concept to investment strategies, where the advantages of each asset class are represented by the expected return, and disadvantages are measured by the risk or volatility (standard deviation) of the asset class. Markowitz developed a methodology for finding the exact set of asset strategies that were clearly preferable over all other alternatives and used an efficient frontier curve to demonstrate this (Craft 2001).

Investment portfolios that provide the largest possible expected return for given levels of risk or, equivalently, the lowest risk for a given expected return, are called ‘efficient portfolios’. The construction of efficient portfolios relies on assumptions such as how investors behave when making investment decisions. Generally, investors are assumed to be risk-averse in nature; when faced with the choice of two assets with the same level of return but different levels of risk, they prefer the one with the lower risk. Thus, when presented with a choice from the set of efficient portfolios, most investors prefer the ‘optimal portfolio’. The optimal portfolio demonstrates the investor’s risk-return trade-off preferences (Fabozzi et al. 2012; Fabozzi 2009).

The optimal portfolio allocation for property and other assets is best illustrated through constructing the efficient frontier graph. Figure 2-18 illustrates the efficient frontier graph. For each portfolio on the efficient frontier, the expected return is shown on the Y axis, and the risk (standard deviation) on the X axis. This frontier is efficient

as underlying every point on this frontier is a portfolio that results in the greatest possible expected return for a given level of risk, or results in the smallest possible risk for the level of expected return. The curve is also a frontier as it represents the boundary of asset allocation strategies. Thus, the term ‘efficient frontier’ is applied. The portfolios that lie on the frontier make up the set of efficient portfolios (Fabozzi et al. 2007; Fabozzi, Gupta & Markowitz 2002).

**Figure 2-18: Efficient Frontier Graph**



Source: Author – adapted from: Rowland 2010, p. 303; Schneeweis, Crowder & Kazemi 2010, p. 5.

The combination of various assets (A-D) with low correlations may result in optimal portfolios along a curve like EE on the diagram (‘efficient frontier’). Rowland (2010) explains that in theory, all investors try to construct portfolios along this curve, rather than below and to the right of it. Investors can create optimal portfolios by changing the weights in each asset. The areas below the curve are said to contain all the inefficient strategies; that is, for each of these strategies, there is either an efficient strategy with same risk level and a higher expected return, or an efficient strategy with the same expected return and a lower risk level. The area above the curve is empty; that is, there are no other strategies with the same risk as an efficient portfolio and higher expected return.

Generally, the efficient frontier curve is constructed using computer software. The key variables include the expected returns, expected standard deviation of return for each asset class, the correlation coefficients of return of each asset classes, and constraints or limitations imposed by the investment committee. Generally, fund managers construct efficient frontiers with varying levels of constraints, to determine the impact of each constraint, and decide whether it is cost effective. The formula for the efficient frontier is:

$$\sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n x_i x_j p_{ij} \sigma_i \sigma_j \quad \text{Equation 2-7: Efficient Frontier}$$

where  $x_i$  = proportion of total investment in asset  $i$ .

$p_{ij}$  = correlation coefficient between asset  $i$  and  $j$ .

$\sigma$  = standard deviation.

For portfolio of two assets, all possible combinations of assets A and B (beginning with 100% allocation to asset A and 0% allocation to asset B, and ending with 0% allocation to asset A and 100% allocation to asset B) are calculated. The portfolio risk reduction increases as the correlation coefficient in the returns of the two assets decreases. The risk reduction is greatest when the assets are perfectly negatively correlated. Conversely, if the assets are perfectly positively correlated, the risk reduction is low or zero and there is no diversification benefit from this combination of assets (Strong 2000).

#### 2.4.4.5 Mean-Variance Portfolio Optimisation

Mean-variance optimisation refers to a mathematical process that calculates the asset class weights that would provide a portfolio with maximum expected return for a given level of risk; or conversely, the minimum risk for a given expected return. The inputs required for the mean-variance optimisation analysis include the asset's expected returns, standard deviation, and correlation matrix for other assets. When first developed, mean-variance optimisation was primarily applied to portfolios of individual stocks. Today, the technique is used widely for all assets, including the allocation to property.

The use of the mean-variance optimisation technique allows institutions to set asset class weights that provide them with a long-term guide for investing. The classical mean-variance framework introduced by Markowitz (1952, 1959), and developed further in Markowitz (1987), is the first proposed model of the reward-risk type in financial markets. There are several alternative formulas of the classical mean-variance optimisation. The 'risk minimisation formulation' problem states that to calculate the weights for one possible available mean-variance pair, the portfolio manager must choose a target mean return. The equation is:

$$\min_w w' \Sigma w \quad \text{subject to constraints} \quad \mu_0 = w' \mu \quad \text{Equation 2-8: Risk Minimisation Formulation}$$

$$w' \mathbf{1} = 1, \mathbf{1}' = [1, 1, \dots, 1]$$

where the control variable is a vector  $w$  which represents the optimal portfolio weight allocation of various assets,  $\mu$  is the portfolio expected return, and  $\Sigma$  is the covariance matrix.

The equation places no restrictions on the portfolio weights other than having them add up to one. The emphasis is on reducing risk but maintaining the level of total returns. An alternative to the above mean-variance optimisation equation is the 'expected return maximisation formulation' detailed in Equation 2-9.

$$\max_w w' \mu \quad \text{subject to constraints} \quad w' \Sigma w = \sigma_0^2 \quad \text{Equation 2-9: Return Maximisation Formulation}$$

$$w' \mathbf{1} = 1, \mathbf{1}' = [1, 1, \dots, 1]$$

With the 'return maximisation' formulation, the portfolio manager can choose a certain level of targeted portfolio risk ( $\sigma_0$ ) and then maximise the expected return of the portfolio. This equation is used by portfolio managers who are required not to take more risk, as measured by the standard deviation of the portfolio return (Rachev, Stoyanov & Fabozzi 2008; Fabozzi et al. 2007).

James Tobin (1958), William Sharpe (1964), John Lintner (1965) and Jan Mossin (1966) further developed the Markowitz mean-variance optimisation formulation to include risk-free assets. The argument is that the efficient

set of portfolios available to portfolio managers who employ the mean-variance analysis in the absence of a risk-free asset, is inferior to that portfolio that includes risk-free assets. The portfolio manager's objective again is to minimise the portfolio risk for a targeted level of expected portfolio return. The formulation involves choosing allocations by solving a quadratic optimisation problem, as highlighted in Equation 2-10.

$$\min_{w_R} w'_R \Sigma w_R$$

**Equation 2-10: Risk Minimisation Formulation  
(Including Risk-Free Assets)**

$$\text{subject to constraints } \mu_0 = w'_R \mu + (1 - w'_R \mathbf{1}) R_f$$

The weights ( $w'_R$ ) do not have to add to 1 as the remaining part ( $1 - w'_R \mathbf{1}$ ) can be invested in the risk-free rate ( $R_f$ ). This minimum variance portfolio equation involves the portfolio manager combining the risk-free asset and the given risky assets portfolio. The risky portfolio is also known as the tangency portfolio (Amenc et al. 2011; Fabozzi et al. 2007).

For fund managers, the classical mean-variance framework serves as the starting point for constructing optimal asset allocation models. In practice, the proposed Markowitz mean-variance framework is altered with various types of constraints that follow the institution's investment guidelines and investment objectives. This is because the classical mean-variance portfolio optimisation can often result in extreme allocation in specific assets. For example, the optimisation solution for a multi-asset portfolio consisting of equities, fixed income securities, property, and cash, can exhibit high concentration in assets such as cash due to its low variance characteristics. Therefore, including constraints, leads to a more industry practical application of the mean-variance optimisation problem. The minimal and maximal exposure for individual assets can be controlled by the constraint:

$$L_i \leq w_i \leq U_i$$

**Equation 2-11: Weight Constraints**

where  $L_i$  and  $U_i$  are vectors representing the minimum and maximum holding in asset  $i$ .

In addition to asset weight constraints, other frequently used modelling constraints include no short selling and turnover constraints. The long-only constraints (no short selling) prohibit the fund manager from selling stocks short. Higher turnover can result in higher transaction costs, making portfolio rebalancing inefficient. Therefore, institutions may place turnover constraints on individual assets in the optimisation problem. Other institutional constraints added to the portfolio optimisation problem can include transaction costs, taxation, risk factor constraints, benchmark exposure, and tracking error constraints (Fabozzi et al. 2007; Focardo & Fabozzi 2004).

Advances in the field of computerisation has seen the development of a number of commercial optimisation software programs, such as the widely used OPL Studio and MATLAB, designed specifically to solve large-scale optimisation problems. Other software packages, such as Mathematica, Splus and SAS, also aid in developing financial models. In addition, investors can develop their own portfolio optimisation models by using freeware and open-source software. Spreadsheet programs, such as Microsoft Excel, are equipped with general purpose optimisation algorithms for linear, integer and nonlinear programming functions.



The Microsoft Excel ‘Solver’ function, a what-if analysis tool, allows the formulation of optimisation solutions for a target cell by changing the values of the related adjustable cells. The ‘Solver’ function can be constrained and is useful for quadratic optimisation problems of up to a few hundred decision variables. Fabozzi et al. (2007) noted that it is highly unlikely that one software package will solve all optimisation problems. The choice of the appropriate software depends on the optimiser problem and whether a problem is constrained or unconstrained. Unconstrained optimisation is regarded as a somewhat simpler process than constrained optimisation.

#### 2.4.4.6 Capital Asset Pricing Model (CAPM)

Capital market theory links the MPT and asset pricing theory, based on work of William Sharpe (1964), John Lintner (1965) and Jan Mossin (1966). The CAPM is an equilibrium asset pricing model developed from Markowitz’s mean-variance portfolio selection. It captures the risk/return relationship of an investment portfolio. The main foundation of the CAPM is that regardless of their risk-return preference, all investors can create desirable mean-variance efficient portfolios by combining two portfolios/assets: one, a highly diversified mean-variance efficient portfolio (market portfolio), and the other, a risk-free asset. Therefore, by combining the two investments, investors should be able to create a mean-variance efficient portfolio that matches their risk preference. The combination of the market portfolio (the Capital Market Line) and the risk-free asset provides an optimal risk-return portfolio (see Figure 2-18). Generally, the risk-free rate is represented by a central government long-term bond rate, with the expected market return generally a proxy for return from the equities market. The CAPM methodology is highlighted in Equation 2-12:

$$E(R_i) = R_f + \beta_i[E(R_m) - R_f] \quad \text{Equation 2-12: CAPM}$$

where  $E(R_i)$  = expected return on asset  $i$ .

$R_f$  = risk-free rate (Australian 10 year bond rate).

$E(R_m)$  = expected return on the market.

$\beta_i$  = beta of asset  $i$ .

The CAPM is used to measure systematic risk (beta), separating fund manager skills from the exposure to the market (alpha). Therefore, CAPM has become the standard on which the risk-adjusted performance of fund managers is measured. The beta ( $\beta$ ) can be estimated using regression analysis from historical data on observed returns of asset  $i$ , and observed returns for the market (see Equation 2-13). The excess return (alpha) is the residual of the regression calculation (see Equation 2-14). This is the difference between the asset’s expected return  $[E(R_m)]$  and the risk-free interest rates ( $R_f$ ) at which all investments are assumed to lend or borrow (Elton et al. 2010; Kaplan 2012; Schneeweis, Crowder & Kazemi 2010). In the past 40 years, the CAPM has profoundly shaped how asset allocations within and across asset classes are conducted.

##### 2.4.4.6.1 Beta

The CAPM states that the expected return on an individual asset is a positive linear function of its index of systematic risk, as measured by beta. The higher the beta, the higher the expected return. If  $R_i$  is the return on asset  $i$  and  $R_m$  is the return on the market benchmark, then the beta of investment  $i$  ( $\beta_i$ ) is:

$$\beta_i = \text{Covariance}(R_i, R_m) / \text{variance}(R_m) \quad \text{Equation 2-13: Beta}$$

where Covariance ( $R_i, R_m$ ) is the covariance between the asset and the market, and variance ( $R_m$ ) measures the total variability of the asset.

Generally, fund managers desire a low beta level (1 or less than 1). However, a higher beta level is not a sign of poor fund manager performance; it may result from more aggressive fund management tactics. It is important to note that diversification does not reduce beta; it reduces total portfolio risk.

#### **2.4.4.6.2 Alpha**

Alpha measures excess return of the fund relative to the return of the market benchmark index. Alpha is a measure of performance on a risk-adjusted basis based of systematic risk. Alpha is a key representation of the value that a fund manager adds to, or subtracts from, a fund's return. The formula for calculating alpha ( $\alpha$ ) is:

$$\alpha = R_i - [R_f + \beta_i (R_m - R_f)]$$

**Equation 2-14: Alpha**

The equation simply means that alpha is equal to the return on asset  $i$  minus the expected return on asset  $i$ . The expression in square brackets is the return on the market benchmark adjusted for the beta of asset  $i$ . A positive alpha means that the fund manager has outperformed the benchmark index, and a negative alpha indicates underperformance (Focardo & Fabozzi 2004; Marston 2011; Strong 2000).

#### **2.4.4.7 Portfolio Performance Measures**

Portfolio performance measurement primarily deals with measuring and evaluating the portfolio's risk/return performance and the skill level of fund managers. The evaluation helps determine whether the fund manager has added value by outperforming the established benchmark. In addition to alpha, other risk-adjusted return performance measures include the Sharpe ratio, Treynor measure, and Jensen measure.

##### **2.4.4.7.1 Sharpe Ratio**

The Sharpe ratio, developed by William Sharpe (1966, 1994) is the most common measure of comparative performance in the financial market. The Sharpe ratio measures the excess return on an investment (above the risk-free return) relative to the standard deviation. As a risk-adjusted return measure, the Sharpe ratio is preferred over alpha by institutional fund managers because it assesses the total return and total risk (unsystematic and systematic).

The Sharpe ratio is calculated using Equation 2-15.

$$\text{Sharpe ratio} = (R_p - R_f) / \sigma_p$$

**Equation 2-15: Sharpe Ratio**

where  $R_p$  = expected portfolio return.

$R_f$  = is the risk-free rate (For example: Australian 10 year bond rate).

$\sigma_p$  = portfolio standard deviation.

Bernstein (2007) explains that a high Sharpe ratio performance is preferred by fund managers, with the target benchmark being 1.00. While a portfolio may demonstrate high total returns, the associated risk for that return may also be high. The risk-adjusted return performance attempts to capture the trade-off between risk and return.

##### **2.4.4.7.2 Treynor Measure**

The Treynor measure, developed by Jack Treynor (1965) is similar to the Sharpe ratio. However, the key difference mathematically is in their denominators. The Sharpe ratio uses the asset (or portfolio) standard

deviation, whereas the Treynor measure uses the asset (or portfolio) beta. The formula for the Treynor measure is outlined in Equation 2-16.

$$\text{Treynor measure} = (R_p - R_f) / \beta_p$$

**Equation 2-16: Treynor Measure**

where  $R_p$  = expected portfolio return.

$R_f$  = is the risk-free rate (Australian 10 year bond rate).

$\beta_p$  = portfolio beta.

The Treynor measure provides an assessment of the portfolio return relative to beta, a measure of systematic risk. The higher the Treynor measure, the better the portfolio performance. Although the Treynor measure is well known in the industry, it is perhaps less frequently used compared to the Sharpe ratio. This is because it ignores the unsystematic risk factor. The use of systematic risk only is based on the assumption that the investor already has an adequately diversified investment portfolio. Therefore, this performance measure is mainly used for the performance assessment of diversified portfolios rather than individual asset performance analysis (Bacon 2008; Strong 2000).

#### 2.4.4.7.3 Jensen Measure

The Jensen measure, developed by Michael Jensen (1968), is another traditional performance measure. The concept is also known as 'Jensen's alpha' or 'ex-post alpha'. The Jensen measure is based on the CAPM and demonstrates the excess return adjusted for systematic risk. The formula is illustrated in Equation 2-17.

$$\alpha = R_p - [R_f + \beta_p (R_m - R_f)]$$

**Equation 2-17: Jensen Measure**

where  $\alpha$  = Jensen measure or ex-post alpha.

$R_p$  = expected portfolio return.

$R_f$  = is the risk-free rate (Australian 10 year bond rate).

$\beta_p$  = portfolio beta.

$R_m$  = expected return on the market.

The higher the Jensen measure, the better the risk-adjusted returns. An investment portfolio that consistently produces positive excess return will have a positive alpha, while a portfolio that consistently produces negative excess return will have a negative alpha. More recent research on the Jensen measure has found several statistical and theoretical problems, and thus it is rarely used by fund managers and academics (Bacon 2008; Pareto 2012; Strong 2000).

Jensen's measure is not as widely used in the industry as the Sharpe ratio and the Treynor measure. Jensen's measure should not be confused with the regression alpha (Equation 2-14) which is the most common industry measure of a fund's excess return performance.

#### 2.4.4.8 Evaluating Fund Manager Performance

The industry generally uses two key statistical measures to evaluate the fund manager's performance: tracking error, and information ratio. These measures are essential as they form the basis for determining fund manager remuneration.

##### 2.4.4.8.1 Tracking Error

Tracking error is used to measure the degree of active management by a fund manager, or how closely a fund follows an appropriate index. The standard deviation of an investment portfolio is an absolute number. The tracking error measures the variation of the portfolio's return relative to a specified benchmark. Therefore, tracking error is the standard deviation of the portfolio's active return, where active return is calculated as the portfolio's actual return minus the benchmark's actual return (Fabozzi, Grant & Vardharaj 2011; Shein 2000). The equation used in this research is 'ex-post' or 'backward' looking tracking error.

Equation 2-18 details the ex-post tracking error formula.

$$\text{Tracking error} = \sqrt{\frac{\sum_{p=1}^N (R_P - R_B)^2}{N-1}}$$

**Equation 2-18: Tracking Error**

where  $R_P$  = return on asset.

$R_B$  = return of index.

$N$  = number of periods.

Higgins (2010) explains that a tracking error of zero details a fund that exactly matches the performance of the selected index. Any variation above zero helps determine the investment style of a fund manager and provides an optimal allocation approach across a range of funds offering different investment styles.

##### 2.4.4.8.2 Information Ratio

The information ratio combines the alpha and tracking error to produce a reward-to-risk ratio. The information ratio demonstrates the level of active returns from an asset to that of an appropriate benchmark. The reward is the average of the portfolio active return (alpha). The risk is the standard deviation of the portfolio's active return and ex-post tracking error. The information ratio is another key industry measure of the degree to which a fund consistently outperforms/underperforms the appropriate benchmark. The formula for information ratio is provided in Equation 2-19.

$$\text{Information ratio} = \text{Alpha} / \text{Ex Post Tracking Error}$$

**Equation 2-19: Information Ratio**

Information ratio is a key performance analysis measure, used extensively by the industry to gauge a portfolio manager's skills. A positive information ratio indicates outperformance and a negative information ratio indicates underperformance. The higher the information ratio, the better the fund manager has performed relative to the risk assumed. An information ratio of 1.0 is rated as exceptional (Fabozzi, Grant & Vardharaj 2011; Gupta, Prajogi & Stubbs 1999).

### **2.4.5 Modern Portfolio Theory and Property Asset Allocation**

MPT has been the cornerstone of almost all real estate portfolio research. Traditionally, investment managers have used Markowitz's traditional mean-variance formulation to produce efficient frontiers of the risk and return characteristics of combinations of property assets (listed and unlisted property), or property and other assets such as equities, bonds and cash. Several studies (Baum & Hartzell 2012; Bajtelsmit & Worzala 1995; Craft 2001; Geltner, Rodriguez & O'Connor 1995; Lee, Reed & Robinson 2008; Pai & Geltner 2007; Schuck & Howard 2005; Webb 1990) have found that true mean-variance analysis for including property in a multi-asset portfolio is difficult. There are several non-risk factors peculiar to property that results in it dominating mixed-asset portfolios in a mean-variance framework.

The most common problem of using mean-variance approach for property analysis is the actual nature of property return data. The property index has a major drawback as most values are based on appraisals and not actual transactions. Therefore, a property index generally provides appraisal-based returns, in contrast to auction or transaction based returns used for stocks and bonds. Valuers estimate the market value of property assets primarily by having regard to prices at which comparable properties have been traded. However, in reality property transactions (especially large institutional assets) are generally low, providing limited comparable sales information. In addition, available property data is not adjusted for transaction costs and illiquidity.

Real estate tends to have higher transaction costs, lower liquidity than investments such as shares and bonds, and is a heterogeneous investment. Furthermore, real estate asset/market information is not readily available to market participants, such as in the capital markets where assets are priced daily. Therefore, valuations are stated to be poor estimates of the market prices of properties. The result has been to 'smooth' returns over time, or underestimate the standard deviation of property returns. Since the volatility is underestimated, a mean-variance model would allocate more to property assets in portfolio construction. Therefore, the absence of daily or monthly data points, limitations of appraisal based capital return data, and flawed representation of real estate risk; all provide several constraints on applying the MPT to property assets (Baum 2002; Parker 2011; Rowland 2010). However, recent studies such as AXA Real Estate (2012) in UK, and Newell and Lee (2011b) in Australia, show that substituting the raw property index data with the de-smoothed property returns did little to change the weighting of property in the optimal portfolio.

Schuck (1995) focused on the use of MPT as a method of examining the diversification impact of property portfolios, and found that MPT should be used in conjunction with other techniques in managing real estate portfolios to benefit from diversification. Geltner et al. (2007) illustrated that applying the MPT principles to a hypothetical property portfolio consisting of four real estate sectors and four geographic areas would require 16 risk and return estimates, and 120 pairwise correlation estimates that are robustly based and reliable. Such an extensive analysis is often constrained by the limitations of real estate data. Therefore, given the lack of readily available robust and reliable data, there is seemingly some reluctance to fully implement MPT concepts to property.

The literature so far highlights that the commercial property as an investment asset has evolved from historically privately owned assets of large institutional investors and wealthy families, to a now more easily accessible and tradable asset class available to all investors. Despite significant development in the property market and the MPT in the last 60 years, only recently have institutional property investors begun to use standard techniques from the broader investment market, such as diversification, CAPM, structured finance, securitisation, derivatives, hedging, and other risk management tools. Clayton et al. (2009) stated that although the majority of institutional investors are unlikely to make major changes in how they approach property as an asset class, most are reassessing assumptions about MPT and market efficiency and seeking a deeper understanding of risk within real estate portfolios, with the aim of improving the effectiveness of actions to anticipate, monitor and manage risks.

Several recent studies (Cheng, Lin & Liu 2010; Fabozzi, Shiller & Tunaru 2010; Fuerst & Marcato 2009; Horrigan et al. 2009; McNamara 2010) have shed light on property risk management. Cheng, Lin and Liu (2010) proposed the notion that property risk is dependent on the investor's property holding period. Their study further suggested that investment strategies that reduce portfolio illiquidity risk need to be considered in conjunction with more typical diversification strategies aimed at reducing portfolio level return volatility.

Fabozzi, Shiller and Tunaru (2010), and McNamara (2010), provide an extensive review of the property derivatives markets and their role in property investment and risk management. Fuerst and Marcato (2009) used the detailed UK based commercial property dataset to analyse how diversification works in property. Their study is focused on 'style' and shows how factors such as market capitalisation, high-versus-low yield, tenant base, and lease period, explain much more about property performance than traditional sector analysis based on geography or property type. Horrigan et al. (2009) regressed the high-frequency traded individual REIT's returns on the underlying asset to derive 'pure' property-type-specific REIT indices. Their research highlights that by monitoring such pure play REIT indices, investors would be able to improve the effectiveness of tactical or rotation acquisition, disposition, and portfolio rebalancing decisions. As discussed earlier, property research in the area of risk management in the Australian context is still in its infancy.

Numerous commentators have focused on the limitations of Markowitz's mean-variance technique, particularly the use of ex-post data in the modelling process. MacGregor and Nanthakumaran (1992) noted that the results of an MPT analysis using historical data are of very limited value to asset allocation decision-making. For fund managers, it is essential to forecast the expected returns, volatility and correlations for all assets, including property, prior to the investment period. Although past returns provide a guide, future returns will not necessarily match past performance.

French (2001) explains that future return expectations are based on a number of different information sources, historic data, current market process, market sentiment, and personal intuition. While historic data is widely available, published information on qualitative factors that influence the portfolio allocation models are scarce. French (2001) argues that to better understand how the decision-makers and their advisers view property as an investment medium, research that attempts to quantify and qualify the 'behavioural' aspects of expectations is

important. The next section investigates decision theory, and identifies the key decision-makers and the factors that influence their property allocation decisions.

## 2.5 Property Asset Allocation Decision-Making Concepts

### 2.5.1 Introduction to Decision Theory

Decision theory is primarily concerned with analysing judgments. Decision theory is a multi-disciplinary concept, embracing work from the fields of philosophy (ethics), mathematics, economics (rational choice behaviour), psychology, sociology and political sciences that relates to analysing actual decision-making work.

French and French (1997, p. 226) described decision theory as:

‘... a study of models of judgment involved in, and leading to, deliberate, and usually rational choice. These may be probability based, loss functions models, or other forms of statistical representations of judgements.’

Bispinck (2012) highlighted that profound decision-making models have an impact on both the success of business and the investment world, and on every responsible person throughout life. Therefore, to come to a rational decision, undertaking a decision analysis is paramount for both individual and institutional investors. Howard (1988) described decision analysis as a systematic procedure for transforming opaque (hard to understand or unclear) decision problems into transparent (readily understood or clear) decision problems by a sequence of transparent steps. Therefore, decision analysis offers to a decision-maker the possibility of replacing confusion by clear insight that reveals a desired course of action.

French (2001) identified three distinct, yet interrelated, decision models:

- i. Descriptive analysis – models that describe how we *do* decide.
- ii. Normative analysis – models that suggest how we *should* decide.
- iii. Prescriptive analysis – models that use normative models to guide the decision-maker within other limiting cognitive parameters.

Early decision theory literature was focused generally on the descriptive and normative decision models. Normative models concentrate on ‘how decisions *should* be made’, while descriptive models ascertain ‘*how* decisions are actually made’. Normative theories are usually based on mathematical adages, which define rational behaviour. Normative models do not include factors such as cognitive limitations in calculations.

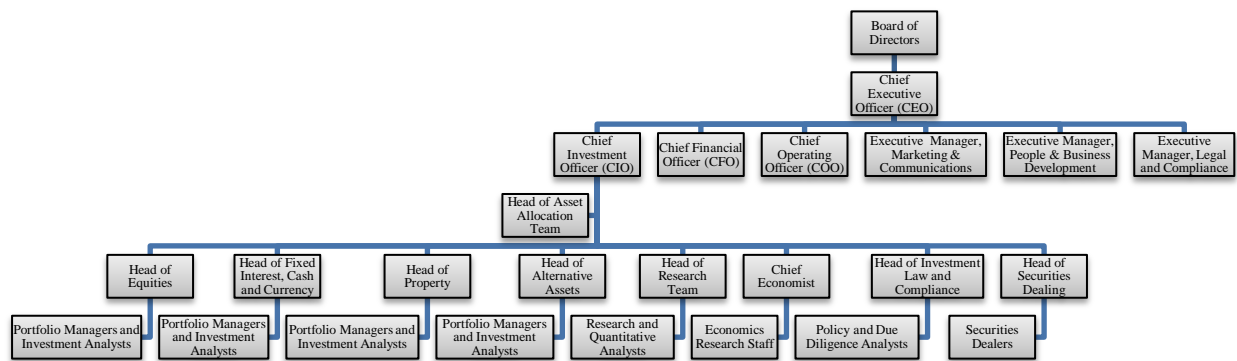
Asset allocation models, such as Markowitz’s mean-variance optimisation, are described as being normative in nature. Asset allocation models depend on historical data to give advice on asset allocations in the future. Although past performance is an important influence on the asset allocation decision, it is a shortcoming of the model as it fails to encompass the investor’s current perceptions of the relative merits of each asset class. Although descriptive models evaluate how decisions are made, it does not seek to aid people in making rational decisions or indicate how people may change their view to avoid inconsistencies or biases in their choices. In contrast, the prescriptive model seeks to guide decision-makers toward consistent, rational choices, while recognising the cognitive limitations (Atherton, French & Gabrielli 2008; Bispinck 2012; French 2001).

The use of prescriptive model is important to overcome the gap between the normative and descriptive models. The prescriptive model uses the descriptive theories of how people ‘do’ make decisions to understand people’s cognitive processes, while using the normative theories of decision-making as the ideal way to make decisions. In other words, the prescriptive model is the application of normative ideas within the context of findings of descriptive decision studies. This leads to the decision-maker making effective or good decisions (Atherton, French & Gabrielli 2008; Bispinck 2012; French 2001).

## 2.5.2 Decision-Makers and Functions

There are a number of professionals involved in managing investment portfolios and related asset allocation decisions. Figure 2-19 presents a typical organisation structure for an Australian managed fund firm.

**Figure 2-19: Typical Organisation Structure for Australian Funds Management Firm**



Source: Author – adapted from: Gallagher 2002, p. 55; Parker 2011, p. 6.

### 2.5.2.1 Executive Teams

The funds management entities have the same corporate governance structure as any other registered company. The shareholders select the board of directors, also referred in Australia as the Responsible Entity.

The *Board* governs the operations of the fund management firm and ensures that the fund is administered in accordance with the Trust Deed and the governance guidelines. The Board also determines the strategic direction of the fund, reviewing and approving investment strategies, business plans, budgets, and remuneration policies. The Board must ensure full disclosure of information to the relevant stakeholders and market in general, including the approval of the annual report, and conduct of the fund’s annual general meeting. In addition, the Board is responsible for monitoring investment policies and performance, compliance issues, risk management, setting the organisation values and culture, and overseeing key appointments such as the Chief Executive Officer (Gallagher 2002; Parker 2011).

The *Chief Executive Officer* (CEO) sits on the board as a director and is accountable to other company directors on the day-to-day administration of the firm. The role of the CEO is to be the public face of the fund, both through management of the investment team, and direct media activities and stakeholder presentations. The key responsibilities of the CEO include developing, leading and implementing corporate strategy and culture. The CEO is supported in the role by a team of executive managers and support roles, such as the chief investment



officer, chief financial officer, chief operating officer, and executive managers from marketing, business development and legal and compliance divisions. The CEO also oversees the appointment of key personnel to executive positions and monitors and assesses their performance. The CEO works with the executive managers to ensure that the fund's administrative, legislative and financial reporting requirements are maintained. In addition, the CEO oversees other key day-to-day functions, such as review and approval of business development and marketing plans, human resources and information technology operations, and investment policy review and risk management controls. Generally, the fund CEO is not involved in day-to-day management of the investment process. This function is vested with the fund's chief investment officer (Gallagher 2002; Parker 2011).

The *Chief Investment Officer* (CIO) oversees the implementation of the fund's investment strategy. The CIO manages various teams across the investment business unit, including equities, property, research, economists, legal/compliance, and dealers. The CIO participates in the fund's asset allocation and investment committee meetings. The CIO works closely with heads of the investment teams to ensure that their asset allocation decision-making is in line with the fund's investment philosophy.

The *Chief Financial Officer* (CFO) is responsible for managing the fund's finances, producing timely measurement of financial performance, and ensuring that the fund meets all financial reporting and compliance obligations. The main contribution of the CFO is to provide financial transparency, ensuring accounting management (statutory accounts, taxation, payroll, budgeting, forecasting, performance measures), management of annual and half year reporting, debt management, cash and currency management, derivatives management for foreign exchange, and risk and compliance management (supervising internal and external auditors and fund insurance coverage).

The *People and Business Development Manager* is responsible for expanding the investment manager's services to new and existing members, and for aligning the fund's human resource policies to the fund's business strategy. The marketing and communications manager markets and promotes the fund's activities and investment strategies. The legal and compliance manager is responsible for ensuring that the fund is compliant with legislative requirements. The investment law manager must ensure that the fund's legal position is protected across all investment dealings (Gallagher 2002; Parker 2011).

### **2.5.2.2 Asset and Portfolio Managers**

The *Fund Manager* oversees the operations of a number of portfolio managers, asset managers, facility managers, and investment analysts, across various investment sectors. For example, the Head of Equities will be assisted in the role by a domestic equities portfolio manager and an international equities portfolio manager, and associated investment analysts. The Head of Fixed Interest, Cash and Currency is responsible for the fund's domestic and international fixed interest strategies, investments in cash management funds, and foreign exchange asset class investments. The Head of Property oversees the operations of the property securities funds and direct property fund managers. The key functions of the Fund Manager include preparing a fund management plan for each asset in the portfolio, budgeting and forecasting at the asset level, undertaking data

collection, and periodic management reporting at the asset level to the CIO. The Fund Manager is supported in their role by portfolio managers, research and economics teams (Gallagher 2002; Parker 2011).

The *Portfolio Manager* is responsible for managing the respective portfolio of assets. The main goal of the Portfolio Manager is to optimise the fund's risk-adjusted return at the portfolio level. The main contribution of the Portfolio Manager is to develop the portfolio strategy that best meets the fund's investment goals. The Portfolio Manager must drive the team to develop the investment philosophy and process, see that the process is employed effectively, and take charge of the review of results. The Portfolio Manager is primarily tasked with day-to-day responsibilities such as preparing business planning, budgeting/forecasting at portfolio level, performance measurement at asset and portfolio level, insurance/ risk management at portfolio level, and providing investment acquisition and disposal recommendations. The Portfolio Manager is involved in negotiations for the acquisition and disposal of assets, and for selecting external asset managers at portfolio level. In addition to managing the team and the portfolio, the Portfolio Manager also acts as the chief spokesperson for the team or fund. The Portfolio Manager reports to the Fund Manager. The Portfolio Manager is supported in their role by the Asset Manager/Facility Manager, and strategic, research and economic team reports and models (Gallagher 2002; Walhausen 2012).

#### **2.5.2.3 Analysts**

Analysts are a critical part of asset management and research teams. In current financial markets, the amount of information available about individual companies, industries, and domestic and world economies, is truly daunting. Portfolio managers rely on analysts to gather, evaluate and analyse this information to make effective asset allocation decisions (Walhausen 2012).

The *Research Team* provides quantitative and qualitative information that investment managers and portfolio managers use to determine their asset allocation decisions. The Research Team's main responsibilities include providing reports on the investment markets to the Strategic Team, developing market briefs and presentations for the Investment Committees, CEO and the Board. The *Economics Team* is primarily concerned with providing the Asset Allocation Team and investment and portfolio managers with economic information, including data and analysis on inflation, retail sales, employment, and other macro-economic and micro-economic variables that affect the portfolio construction and investment decision-making process. The Economics Team and the Research Team work closely to provide analysis and forecast on capital markets, financial markets, and real estate markets, and develop the fund's econometric, financial, and investment/portfolio construction models (Gallagher 2002; Parker 2011).

#### **2.5.2.4 Investment Committee**

The *Strategy Team* (also referred as Asset Allocation Team) provides recommendation to portfolio and investment managers on fund investment and portfolio strategy. The main role of the Strategic Team is to determine the target risk-return balance at the fund and portfolio levels. The main contribution of the Strategic Team is determining the fund's strategic and TAA policies, determining asset selection criteria at fund and portfolio level, and monitoring and reviewing the funds strategic and TAA policies. The Strategic Team reports to the CEO and the Board. The Strategic Team is supported in their role by research team and the economic team reports and models.

It is typical that asset allocation decisions in funds management firms are determined by an *Investment Committee*. The Investment Committee is responsible for overseeing that the fund's investment policy and asset allocation decisions are consistent with the investment objectives set by the Board. The Investment Committee assists, and provides recommendation to, the Board on important management and strategic decisions. The Investment Committee also appoints investment managers (including external managers) and monitors their ongoing performance. Although there is no prescribed structure for the Investment Committee, normally it involves portfolio managers, analysts and strategists who are functioning at the very highest level and have proven investment records. The Investment Committee generally comprises the head of asset allocation, CIO, chief economists, sector heads (mainstream assets), and head of investment compliance. The Investment Committee has ultimate responsibility for setting the fund's investment strategy and portfolio weighting (target and permissible range). It is common for the Investment Committee to seek advice from asset consultancy firms and external investment managers. Dalton (2012) explains that the asset allocation decision-making process in many investment committees is not always democratic. It is likely that the process is often dominated by a few individuals, and sometimes one individual.

The challenge for this research is to identify and develop a framework illustrating the Australian fund manager's property asset allocation decision-making process. Before moving on to this part of research, it is important to identify and discuss key findings from previous research in this area.

### **2.5.3 Property Allocation Decision-Making Theory**

The property allocation decision-making process is performed at both the strategic and investment levels. Strategic property allocation decisions involve institutional fund managers (such as superannuation funds) deciding what proportion of the total investment portfolio should be held in property assets, and via which medium (investment in property funds, mandates or partnerships). Property investment decisions deal with how property fund managers invest this allocated proportion in different markets (office, retail, industrial, and so forth) or geographic areas (Parker 2011; Rowland 1997).

According to Dhar and Goetzmann (2005), the allocation of resources to property presents an interesting case for institutional investors. Choices about investment vehicles have expanded over the past two decades with the rise of REITs, and other unlisted property funds and syndicates. Dhar and Goetzmann (2005, p. 2) stated that:

‘... the secular trends in property returns – ranging from periods of credit crunch (1990s) to the boom in values in the early 2000s – have made long-term forecasts of risk and return somewhat challenging.’

In addition, the decision-making process may differ for unlisted property and REITs, based on the size and type of fund; therefore, making generalisations across funds is inappropriate.

In recent decades, there has been extensive research on decision-making theory within the context of property allocation. French and French (1997) identified the apparent difference between what decision-makers in real estate allocation say that they will do, and the final observed outcome. This may be because the original normative model failed to encompass the whole thought process behind the final decision. For example, in terms of property allocation, the optimisation model might predict that a particular allocation should be made to

property to gain optimum performance relative to the investment risk; however, the recommendation may conflict with business risk consideration, such as ‘what are the competitors doing?’.

French and French (1997) stated that the decision-maker must be judged on the process followed in coming to the decision; that is, whether the process demonstrates rational consistency and whether, on average, the results are good. Higgins (2010) illustrated that fund managers need to undertake the investment decision-making process systematically (in an orderly manner) and persistently (consistently and repeated over time) to yield superior returns (or excess returns over a benchmark), and to provide the fund manager with a higher risk-adjusted return to the investment portfolio.

Roberts and Henneberry (2007) noted that the property investment decision-making process is neither clinical nor methodical, but is undertaken by imperfect players in imperfect markets using imperfect information. They investigated the investment decision-making process in France, Germany and the UK. Their study found that the decision-making process, as perceived by institutional investors, does not deviate significantly from normative models. They identified that institutions tend to ‘collapse down’ the decision-making process, taking shortcuts to achieve investment outcomes which leave the whole process open to the influence of bias, judgement and sentiment. In addition, decision-makers tend to resort to heuristics when facing problems requiring statistical inference or judgement under uncertainty. In the context of this research, it is important to determine whether Australian fund managers make property asset allocation decisions based on formal prescriptive analysis, or rely solely upon normative models to support their decision-making process.

#### **2.5.4 Property Investment Decisions**

Property investment decisions deal with the sectoral (such as office, retail and industrial) and geographic real estate asset investment decisions made by a property fund manager. Rowland (1997) explained that property investment decisions are made as a series of steps, gradually moving towards a commitment to buy, sell, redevelop, or refinance a property. Parker’s (2010) extensive literature survey found that in theory the property investment decision-making process is sequential and linear, but the nature and extent of the process differs between investment products.

Property investment decision-making frameworks are characterised by multi-level procedures with the primary aim of maximising investors’ wealth. Hartigay and Yu (1993, p. 10) outlined the typical investment decision-making process as:

- i. Definition of objectives and specific goals.
- ii. Search for a set of alternative investment projects which promise to achieve the objectives and goals set.
- iii. Evaluate, compare and rank the alternatives in terms of quantified expectations of risk and return.
- iv. Choose the most satisfactory alternative.
- v. At a later date, evaluate the consequences of the decision taken earlier, draw conclusions, and revise goals and criteria.

Following Hartigay and Yu (1993), the property investment decision-making process has been extensively covered in other textbooks (Baum & Hartzell 2012; Baum 2002; Brown & Matysiak 2000; Brown 1991; Jaffe &

Sirmans 2001; ed Pagliari 1995; Parker 2011; Pyhrr et al. 1989; Roulac 1994) and journal publications (Bispinck 2012; Farragher & Savage 2008; Farragher & Kleiman 1996; Gallimore, Hansz & Gray 2000; Roberts & Henneberry 2007). In addition, Institutional Real Estate Inc. (2010) and Investment Property Forum (2010, 2012) are examples of institutional investor survey reports on the US and the UK markets respectively.

Each study provides a different perspective on the property investment decision-making process. Brown and Matysiak (2000), and Roulac (1994), both propose a four stage capital budgeting model focused on factors such as asset evaluation and auditing, rather than the investment decision. Baum (2002), Roberts and Henneberry (2007), and Jaffe and Sirmans (2001), stop the decision-making process once the property acquisition process is complete. In contrast, Farragher and Savage (2008), Farragher and Kleiman (1996), and Pagliari (1995), proposed models that continue to the post-investment performance review stage.

Pyhrr et al.'s (1989) ten-step model provided a much broader perspective of the property investment decision-making process, incorporating information on how institutions determine the overall property portfolio mix to the actual investment (and divestment) decision-making process, and later focusing on portfolio monitoring and performance measurements. Hartigay and Yu's (1993) model proposes a feedback loop in the final stage (draw conclusions and revise goals and criteria) that is essential for formulating institutional strategic investment policies. See Appendix 13 for full details of these property investment decision-making models.

Several studies in Australia (Armytage 2002; Boyd, MacGillivray & Schwartz 1995; De Francesco 2005; Newell & Peng 2008b; Newell, Stevenson & Rowland 1993; Rees 2008; Robinson 2002; Rowland & Kish 2000; Schuck & Howard 2005) have investigated the importance of property in institutional portfolios, and the property investment decision-making process at sector level and geographic level. More recently, Parker (2010, 2013) investigated the REITs and unlisted property fund property investment decision-making process and concluded that the process is complex, non-standardised, and potentially lacking in transparency. Parker explained that the property investment process moves through four key stages (envisioning, planning, dealing, and executing), and involves 20 key steps. Table 2-15 details the typical property investment decision-making process.

**Table 2-15: Characteristics of the Property Investment Decision-Making Process**

Stage	Step 1	Step 2	Step 3	Step 4	Step 5
<b>Envisioning</b>	Vision	Style	Goals	Strategic Plan	Objectives
<b>Planning</b>	Property Portfolio Strategy	Strategic Asset Allocation	Tactical Asset Allocation	Stock Selection	Asset Identification
<b>Dealing</b>	Preliminary Negotiations	Preliminary Analysis	Structuring	Advanced Financial Analysis	Portfolio Impact Assessment
<b>Executing</b>	Governance Decision	Transaction Closure/ Documentation	Due Diligence/ Independent Appraisal	Settlement	Post Audit

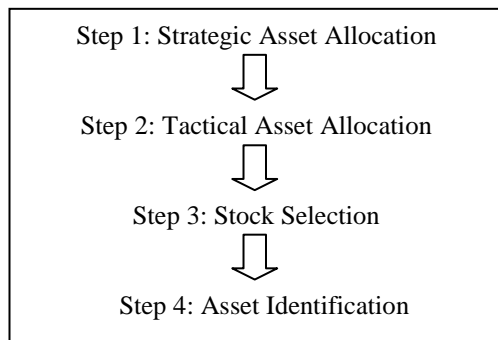
Source: Parker 2013.

Parker (2013) explains that the *envisioning* stage is a strategic stage at which institutions define their goals and objectives, visions, investment style, and strategy. The *planning* stage involves opportunity screening, measuring or analysis in which the property investor expresses target positions in terms of potential properties for acquisition. The *dealing* stage involves the evaluation, assessment and determination of potential property acquisition targets and converting appropriate targets into principal transactions. The *executing* stage involves the implementation, due diligence and settlement of the transaction, and the post transactions audits.

Parker (2013) found considerable similarities in both unlisted property funds and listed property funds investment decision-making processes. Approximately 70% of the property investment decision-making steps were similar for both property markets. Parker indicates that this could be explained by the fact that both property products are in the business of investing capital in property assets. The differences in decision-making process arose due to listed property trading in the public market; thus, the need to adapt to the respective listed market requirements. Direct property and listed property asset allocation factors are discussed in detail later.

In the context of asset allocation decisions, the property portfolio strategy is the most critical for property fund managers. Parker (2011) outlined the property portfolio strategy in four stages: strategic asset allocation, tactical asset allocation, stock selection, and asset identification (see Figure 2-20).

**Figure 2-20: Property Portfolio Strategy**



Source: Parker 2011, p. 57.

The property investment SAA decision involves analysing the entire property market to ascertain the viable risk/return characteristics of the different property sectors (such office, retail, industrial), and different geographic areas. The property investment TAA decision is primarily concerned with the property portfolio being overweighted in the short-term to a nominated market or sector to benefit from rising rental levels. The property investment stock selection phase is primarily concerned with identifying and specifying property characteristics (such as lot sizes, preferred location, property style, asset age, tenant profile). The property investment asset identification stage involves the property fund manager identifying potential assets for acquisition. Parker (2013) further explained that each of the property investment stages (strategic, tactical, asset selection and asset identification) are sequential and form the basis for the property portfolio strategy, leading to property acquisition and disposal decisions.

Institutions make reference to a series of risk and return evaluation measures when evaluating their property investment decisions. Earlier research by Farragher and Kleiman (1996) found that very little was made of sophisticated quantitative analysis (such as Monte Carlo simulation or beta analysis) in the property investment decision-making process. Sensitivity analysis, scenario analysis and forecasting were the preferred methods of quantitative analysis. The most popular evaluation measure was the discounted cash flow (DCF). Recent studies by Farragher and Savage (2008), and IREI (2010), on the US institutional real estate investment decision-making process found that the internal rate of return (IRR) and cash-on-cash rate of return were the most important return measures. Generally, investors use simple risk assessment measures (debt coverage, default ratio, breakeven point) rather than more sophisticated measures, such as sensitivity analysis and scenario analysis.

Bispinck (2012), in a recent survey of institutional property investors in the UK, found that IRR and DCF are the preferred quantitative analysis methods. Although fund managers know of MPT theory, the use of concepts such as CAPM was limited. Rowland and Kish (2000), in a study of Australian property funds' investment decision-making process, identified IRR as the most important return evaluation measure. In evaluating properties, sensitivity analysis, and to a lesser extent scenario analysis, dominated the methods of defining risk. Earlier Australian institutional investor studies (Boyd, MacGillivray & Schwartz 1995; IPD 2000; Newell, Stevenson & Rowland 1993) also identified IRR and the initial yield as that the most frequently used measures of property return, with sensitivity analysis being the most popular risk analysis technique.

The property investment decision-making process, and the required depth of analysis, may be influenced by the efficiency of the markets in which properties are traded. Rowland (2010, p. 11) defines efficient investment markets as:

‘... those on which it is not possible to consistently outperform other investors or the average return across the market because the prices are determined by a consensus of knowledge investors making use of all the information that is available about the investments.’

The degree of market inefficiency is determined largely by market imperfections. Property markets are imperfect in comparison to most financial assets; due to attributes such lack of uniformity, indivisibility, and high transaction costs. In addition, property markets lack the transparency of information which makes researching and buying property investments a lengthy process. The markets for direct property can be contrasted with those for securitised property, such as A-REIT, which is traded frequently on the stock market. Although the A-REIT market has fewer imperfections, it is more volatile and, thus, less predictable than direct property assets.

Another area of significant development in recent years is the issue of socially responsible property investment (SRPI). There is now growing interest in, and responsibility of, fund managers to invest in property assets that comply with the principles of sustainable development, or that follow ethical practices. Pivo and McNamara (2005, p. 129) described responsible property investing as a business practice aimed at maximising the positive effects and minimising the negative effects of property ownership, management and development on the society and natural environment. Lützkendorf and Lorenz (2010) further explained that a responsibility towards the environment and society does not only exist for those buying property assets, but also for those who are

concerned with facilities and portfolio management. Therefore, fund managers have a fiduciary duty to act in the best long-term interests of the beneficiaries when making property investment decisions.

Newell (2009) and Pivo (2005, 2008) investigated the impact of environmental, social and corporate governance issues on the performance of investment portfolios. Newell (2009) investigated UK property companies actively involved in SRPI and found that UK SRPI property companies delivered superior risk-adjusted returns than the overall UK property companies sector, with this performance achieved with no loss of portfolio diversification benefits. Pivo (2008), in an investigation of international property markets, including Australia, found that investors are willing to pay a premium for green energy rated buildings to obtain its environmental benefits. This demonstrates that fund managers are increasingly favouring investment decisions that are in the interest of society and the environment.

### **2.5.5 Strategic Property Allocation Decisions**

Strategic property asset allocation decisions primarily deal with how institutions decide, at a strategic level, what proportion of the total investment portfolio should be held in property assets. Research in this context is limited in Australia.

JLW Research (1989) investigated the asset allocation from the property perspective in the post-war period up until the late 1980s in Australia. Wallace (1992) investigated the asset allocation component of property assets in a large public sector superannuation fund and listed property trust. Worzala and Newell (1997) investigated institutional interest in international property by surveying European and Southeast Asian fund managers, including Australian investors. Hauss (2004), and Steinert and Crowe (2001), also focused on the global property asset allocation process. More recently, Newell (2007a) investigated the significance of property in industry-based superannuation funds in Australia. Generally, the theme across these studies is mean-variance optimal allocation to property assets, with either sectoral or international diversification. There is no documented evidence of how Australian institutional investors, such as superannuation funds, determine the strategic property allocation components and the factors that influence those decisions.

Gallimore and Gray (2002) stated that asset allocation decision-making is typically characterised as a structural rational process, using factual data and leading to optimal decision-making. Hauss (2004) divided the optimal property asset allocation process in four major steps:

Step 1: Specification of the asset classes to be included in the portfolio (strategic):

It is argued that because of the numerous differentiating factors, property has to be treated as a distinct asset class in the asset allocation process. Within this asset class, distinguishing characteristics for investment vehicles need to be systemised and linked to investment policies.

Step 2: Specification of capital market expectations (tactical, technical):

For property investments, forecasting components and monetary policy play decisive roles when considering the asset allocation decision to property. The inflation-hedging capability of property is important.

Step 3: Construction of the efficient frontier (purely technical):



Presents some technical problems: especially due to the special characteristics of property as an asset class.

Step 4: Selection of the optimal asset mix (analytical, action):

There is no doubt about the diversification potential of property assets. The problem, however, is that various determinants (investment vehicles profiles, inaccuracy in performance measurement) make a comparison matrix difficult.

Funds managers operate with strategic targets and policies, set by the investment board and senior executives, which guides their property resource allocation. Generally, the investment board and senior executives would seek advice from the property managers on market conditions and timing of purchases or sales. The funds can also use external advisors to manage a portion of their investments, such as part or all of the property allocation of the fund. Rowland (2010) explains that for both internal managers and external advisers, the mandate will be for an initial amount and will define the criteria for investing.

Rowland (2010) argued that funds may benefit from some flexibility, such as acquiring properties when the opportunities arise, rather than being restricted to allocation targets. The long-term strategic targets should not prevent funds from trying to take advantage of rising returns in one asset class by making tactical decisions to become overweight in one asset class. However, this is not straightforward. The performances of the investments are generally tracked against quantitative benchmarks. Each fund will have its own policies and guidelines for determining the suitability of an asset class for inclusion in an investment portfolio. The choice of whether property is included or not is mostly constrained by the target mix and selection criteria. Similar to other assets, the fund manager needs to justify that the inclusion of property provides reasonable prospects of earning the hurdle rate of return set by the board and exceeding its benchmark.

Worzala and Bajtelsmit (1997) noted that there is a different level of expertise and sophistication applied to the initial decision of how much property should be acquired versus the investment decision as to what type of property asset should be acquired, once the initial allocation is made. Rowland (2010) stated that because different teams are responsible for each asset class, the allocation decisions within the property portfolio may be independent of the asset class decision. Therefore, there may be large concentrations of properties or investments in shares and bonds related to one industry, or biased towards one region. Some large managed funds may set target weights for investing in different property sectors. Other funds continuously monitor their portfolios to avoid overweighting in one type of property.

There is a considerable diversity in the way asset allocations are made, in the use of consultants, in the discretion given to outside managers, and in the way that property investments are managed. Institutional Real Estate Inc (2010), and Worzala and Bajtelsmit (1997) in their study of US pension funds, found that it is commonplace to use asset consultants and outside management firms to make initial real estate investment decisions, or to manage the investment after the real estate has been purchased. Asset consultants typically advice US pension funds on portfolio strategy, manager selection, and performance monitoring. Smaller funds commonly use consultants, given their lower staffing capacity. Larger funds make allocation decisions in-house, given their

greater staffing capacity. Likewise, there is widespread use of asset consultants in Australian superannuation fund property allocation decisions. According to Newell (2008), asset consultant contributions were more evident at the strategic level, in the allocation to direct property versus listed property, and at the specific property fund selection level.

### **2.5.6 Factors Influencing Property Allocation Decisions**

Important factors influencing the property asset allocation decision are statistical estimates of risk and return, advice from external consultants, and long-term historical performance and forecasts. Investors do not make their asset allocation decisions solely on the basis of ex-post historic data. Instead, they portray their asset allocation assumptions as ex ante, prospective views, and derive them from a combination of economic theory, fundamental judgement, and expert opinion, in addition to the historic performance. Overall, their views portray a natural order of risk and return under which risk-adjusted returns are comparable across asset classes. The fund manager's perceptions regarding prospects for risk-adjusted returns for various asset classes, desire for predictable income to pay benefits, and concerns for safety of principal, are key institutional factors likely to affect their property asset allocation strategy (Bond et al. 2007a; Dhar & Goetzmann 2005; Bajtelsmit & Worzala 1995).

Several leading researchers (Craft 2001; De Wit 1996; Farragher & Savage 2008; Lee & Stevenson 2006; Rowland 2010) have concluded that property asset allocation is made, typically, in the context of a mean-variance framework. An optimal portfolio of assets is selected by combining an efficient frontier (representing the risk and return characteristics of available portfolios) with a specification of the investor's preferences for risk and return. Dhar and Goetzmann (2005) explain that the application of MPT, as developed by Harry Markowitz, is almost mechanical once all the parameters of the asset return distributions are known. However, in reality, investors are faced with considerable uncertainty about the true underlying return-generated process. The uncertainty mainly arises from whether past performances in a particular asset can be relied upon to provide meaningful inputs to the investment process. Their survey of US institutional investors' allocation to property assets found that uncertainty about the inputs (that is, lack of reliable data) is more important to respondents than volatility, suggesting that uncertainty, as opposed to risk, might loom large as a determinant of property asset allocation decisions.

According to French (2001), while definitive inputs in the property asset allocation model (historic data or predictive forecasts) are important, fund managers are also influenced by many other non-financial considerations, such as behavioural issues. Some institutions determine future property allocation by anchoring their current allocation. Primarily, this may be because they see the current allocation as, conceptually, a safer harbour. Thus, it becomes a benchmark from which the institution deviates as new information becomes available, and the yardstick by which the magnitude of deviation is measured. Farragher and Savage (2008) highlighted that fund managers may use their own judgement, experience and creativity to make a good property allocation decisions. An earlier study, by Worzala and Bajtelsmit (1997), of US pension funds found that the most common investment technique used for real estate allocation was general experience and intuition.

Sah, Gallimore and Clements (2010) explained that the information set available to the decision-maker is large, multi-channelled, and multi-dimensional. In the context of property allocation decision, due to the limitations of readily available information, the decision-maker's cognitive processing capabilities are likely to be developed and fashioned over time through experience. Therefore, experience is an effective tool in progressively resolving optimal reconciliation of the scale and limitations of information in the property allocation decision-making process. A more recent study by Parker (2011) highlighted that there is a need for fund managers to be balanced with the intuition and judgement that come from years of practical experience.

Gallimore and Gray (2002) explored the concept of investor sentiment and argued that investor sentiment for property investment differs from that which applies to the financial markets. Their study of UK property investors found that while there is extensive use of hard market information, use of personal 'feel' for the state of the market, or information based on the views of others, is highly significant in a decision-making process. An example includes the use of personal networks as an information source which investors appear to use more extensively than either public information sources or other sources of private information.

Adair, Berry and McGreal (1994) stated that the availability of information can affect the property allocation decision-making process. According to Higgins (2007), investment decisions inherently impact on the allocation of resources (land, labour and capital); thus, it is important that as part of the decision-making process, investors have access to good market knowledge. However, the type and level of information varies across different asset classes. Higgins (2007) explains that generally property is placed at a distinct disadvantage by their attention on local market knowledge compared to the better informed and more transparent alternative investment assets such as public equity and debt markets.

Property asset allocation decisions might also be influenced by factors such as peer group allocation and investor sentiment. According to Gallimore and Gray (2002), allocation decisions are made using forecast models that rely on different levels of data which, in the case of property markets, are characterised by unevenness in the quantity and quality of data. Where there is a deficiency in market data, property investors may lack the quantity or quality of information ideally required to make judgements in line with their decision models. To substitute for any deficiencies in such data, investors may turn to indirect signals in the form of perceptions of investor or market sentiment, such as those conveyed in published market analysis or commentaries. Their study, involving 13 companies in Europe and the UK, found that medium sized firms' decision-making processes may not follow normative theory, rather weighting decisions heavily on private information passed on by industry contracts. This could potentially lead to decision being bias. In addition, the fund manager can also overreact to such market information, thus making poor decisions. An earlier study by Barkham (1996) also found that institutional property allocation decision-making processes may exhibit heuristics and biases that are analogous to those displayed by individuals, such as behavioural momentum, the fear of regret, and an aversion to acknowledging 'sunk cost'. Therefore, the dynamics of decision-making at the institutional level are arguably more complex.

For certain fund managers, such as superannuation funds, the target exposure to property and preferred types of property may also be influenced by the age profile of its members. Gerrans, Clark-Murphy and Speelman (2010) investigated the age effects in retirement saving for Australian superannuation funds and found that property allocations appear least sensitive to age, peaking at age 43. In contrast, allocation to equities was more significantly related to age, with the allocation increasing up to the mid-30s and then declining. This provides evidence that property is regarded as a cornerstone in most Australian superannuants' retirement saving plans. Rowland (2010) also identified that funds with a higher proportion of members nearing retirement will generally concentrate on investments that can meet regular payments, while funds with a lower age profile can afford to invest in longer-term investments (Rowland 2010). Therefore, the decision-making process related to property allocation also varies depending on the types of property investment preferred by fund members.

### **2.5.7 The Direct versus Listed Property Allocation Decision**

Despite the distinct advantages of holding direct property assets in a portfolio, there are numerous problems associated with investing directly in property (the cost of the investment, appraisal-smoothing vs. transaction-based pricing, liquidity, short-term selling constraints, lag in reaction to market information, transaction costs, and higher management fees). Therefore, institutional investors generally prefer to use REITs in conjunction with, or in lieu of, investments in direct property (Geurts & Nolan 1997; Seiler, Webb & Myer 2001b).

Geltner, Rodriguez and O'Conner (1995) found that although both listed and direct property are essentially similar, neither form of the property is a perfect substitute for the other in a portfolio. Timing may also be an important factor in choosing between direct and securitised property; that is, there will be certain times when it is better to buy (or sell) one form of property over the other. This research set the tone for subsequent studies on the issue.

Several studies (Boshoff & Cloete 2012; Brounen & Eichholtz 2003; Feldman 2003; Mueller & Mueller 2003; Oikarinen, Hoesli & Serrano 2011) found that including both direct and listed property within a multi-asset portfolio is regarded as beneficial and can lead to improved portfolio performance. Sebastian and Schätz (2009) explained that investors with an extended investment horizon can profit from the advantages of both asset classes; that is, on one hand the liquidity, transparency, and management of listed property, and on the other hand, from the diversification qualities and the risk/return profile of direct property. There is even an argument that investments in listed property and direct property vehicles can be viewed somewhat interchangeably. Yunus, Hansz and Kennedy (2012) used data from Australia, Netherlands, the US and the UK and found that institutions can achieve portfolio diversification benefits by allocating resources to both the direct property and listed property sectors, and that both property assets are substitutable over the long-term. Pagliari, Scherer and Monopoli (2005), and Hoesli and Oikarinen (2012), also argue that investments in listed property and direct property vehicles can be viewed somewhat interchangeably, and allocations to the sectors can vary depending on investor preference and objectives.

Clayton and MacKinnon (2001), Hoesli and Oikarinen (2012), Lee and Stevenson (2005), and Mueller and Mueller (2003), found that REITs provide diversification benefits to the mixed-asset portfolio, even within different investment horizons. Waggle and Moon (2006) used mean-variance function to determine the optimal

allocation to REITs. Their study found that using recent data, rather than the full time-series data, results in optimal allocations in REITs that are considerably higher. REITs effectively sit between the broad equity and fixed-income sectors, with both risk and return measures falling between stocks and bonds. This means REITs can be seen as providing diversification benefits due to relatively low risk measures when compared to common stocks, and offer higher returns when compared to assets like fixed-income securities. However, REITs prices generally embed stock market noises that are not related to the fundamentals driving underlying property returns. Therefore, the diversification benefits of direct property may be lost by investing in REITs instead of the direct property assets.

Lee (2010), in a study of US REITs, found that prior to 1999 REITs showed strong diversification benefits to large-cap growth and value stocks, but a negative return benefit. In contrast, from 1999 to 2009, the benefit of US REITs to large growth and value stocks came from their return enhancement benefits rather than any diversification benefits. Therefore, the changes in REITs structure needs to be considered when assessing the benefits of REITs in a mixed-asset portfolio.

The consensus is that REITs are not a surrogate for owning direct property over the short to medium term. They are rather more like common stocks than real property (De Francesco 2005; Geurts & Nolan 1997; Lee & Stevenson 2005; Newell 2006; Stringer 2001). Seiler, Webb and Myer (2001a) stated that if institutional investors do wish to hold REITs, they should do so for reasons other than rebalancing their direct property portfolios. Seiler, Webb and Myer (2001a), and Stevenson (2001), examined the long and short-term advantages of incorporating REITs in direct property portfolios. The results show that while REITs do gain allocations in the extended optimal portfolios, the improvement in performance is not statistically significant; that is, including REITs does not provide any significant improvement or rebalancing benefit to the direct property portfolio. Therefore, within an optimal portfolio context, REITs must be viewed as just another type of financial asset rather than as substitutes for direct property, and analysed solely on their expected return, risk and correlation with others assets in the portfolio.

Chiang and Lee (2007), MacKinnon and Al Zaman (2009), and Pagliari, Scherer and Monopoli (2005), found that when both direct property and listed property are available as asset classes, REITs play little or no role in optimal portfolios. MacKinnon and Al Zaman (2009) examined the optimal allocation to property assets with different investment horizons and found that on all horizons, REITs displayed greater risk and the optimal portfolios displayed large allocations to direct property. Lee and Stevenson (2006) investigated the role of direct property in mixed-asset portfolio and found that real estate consistently had positive allocation over different time periods ranging from 5-25 years. The research states that direct property should be considered as a strategic asset in the mixed-asset portfolio. Previous research on Australian market (CFS 2008b; De Francesco & Hartigan 2009; Newell & Razali 2009) also anticipated higher allocation to direct property in the short to medium term as institutional investors sought greater portfolio stability and control after the GFC. CFS (2008) research found that increased A-REITs market volatility may warrant direct property allocation in the property asset portfolio exceeding 65-70% in the short-term.

The literature highlights that although both direct and listed property are classed as property, they offer different portfolio diversification benefits. Factors such as liquidity, governance, transparency and control may come into consideration in the institution's decision-making process. In addition, investments in property assets place considerable demands on institutional resources, particularly the ability to analyse, manage and monitor the investments over time. Therefore, it is important to cater for these differences when making asset allocation decisions. Direct property and listed property needs to be analysed as a separate asset class and their inclusion in multi-asset portfolios needs to be based solely on respective asset return, risk and correlation matrix against other assets.

### **2.5.8 The Property versus Alternatives Asset Allocation Decision**

The shortage of good quality commercial real estate, along with yield compression, has resulted in significant fund flow in the alternative sector, particularly in the infrastructure sector (Newell & Peng 2008a). The increasing level of institutional support means that alternatives are now the third largest asset group in most Australian institutional portfolios (see Figure 2-7). There is ongoing debate about whether alternative assets such as infrastructure can be regarded as property assets, and whether alternative assets can replicate the performance of property assets in the mixed-asset portfolio.

Finkenzeller, Dechant and Schäfers (2010) identified that institutional investors faced this classification problem when allocating alternative assets in their portfolios. Some institutional investors tend to allocate alternative assets in existing real estate or fixed income securities portfolio, although the risk-adjusted return characteristics do not match. The analogy, particularly between direct property and infrastructure assets, could potentially explain why institutional investors group them together. Direct property and infrastructure have similar underlying asset characteristics, such as indivisibility, long lifecycles, site dependency, long-term investment horizons, restricted liquidity, valuation-based performance, inflation hedging, capital gains, high yield, and strong competition for quality assets. Both are real assets and offer relatively stable investment returns when compared to more volatile assets such as equities.

However, there are also significant differences between property and infrastructure assets. While property markets are described as relatively competitive, infrastructure markets often have oligopolistic or even monopolistic structures. In addition, there is a greater degree of transparency in the real estate markets compared to the infrastructure market. There is limited potential to obtain ownership of direct infrastructure assets due to regulatory constraints which often only allow user rights (RREEF 2005; Newell, Chau & Wong 2009; Newell & Peng 2008a). Finkenzeller, Dechant and Schäfers (2010) explained that although investments in direct property are inhabited by large investment scales, direct infrastructure investments are lumpier. Real estate as an asset class provides various uses, whereas infrastructure assets are limited to very specific and restricted uses. The acquisition and sale of direct infrastructure projects is time consuming, and thus reduces the potential for investors to react immediately to changing market conditions.

Bond et al. (2007b) investigated whether the performance of real estate could be replicated by alternative assets (hedge funds, private equity, commodities and infrastructure) in UK institutional portfolios, and found that alternative assets could not deliver the same level of portfolio hedging benefits as real estate. Their study found

that adding real estate to a portfolio of bonds and equities would have led to a substantial reduction in portfolio risk. By contrast, in no case does adding one of the alternative assets to the core asset mix achieve a significant level of risk reduction. They further identified that in the absence of real estate, the greatest risk reduction occurs by adding private equity to the mixed-asset portfolio. Newell and Peng (2008c) in a similar study on the US market, found while utilities provided lower diversification options, infrastructure offer enhanced portfolio diversification benefits in real estate, real estate-related and mixed-asset portfolios.

Several recent studies have evaluated the performance and diversification benefits of property and alternative assets in Australia. Earlier studies by CFS (2009), Newell and Peng (2008a), and Peng and Newell (2007), found that the correlation between unlisted infrastructure and unlisted property in Australia is significantly low, explaining the potential diversification benefits of including both asset classes within the multi-asset portfolio. More recently, Newell and Lee (2011a) found that while direct property is still seen to play a key role in the Australian multi-asset portfolio, direct property plays a less significant role in the portfolio when the alternative assets (such as private equity, infrastructure, hedge funds and commodities) are included. An evaluation of the correlation matrix showed that in most instances, the diversification benefits of alternative assets compared to assets such as shares and bonds were much greater than property, which could in general have a negative impact on the level of allocation to direct property in the multi-asset portfolio. Newell, Peng and De Francesco (2011) found that even with the impact of the GFC, the performance attributes of unlisted infrastructure was superior to direct property. Their study found that the diversification benefits of unlisted infrastructure were more significant than the diversification benefits of direct property. These results provide justification for the current institutional practice of including alternative assets, such as infrastructure, as a separate asset class in the mixed-asset portfolio.

The literature review shows that direct property, and alternative assets such as infrastructure, has similar underlying asset characteristics. Infrastructure is a very heterogeneous asset class offering different risk-return profiles across a range of subsectors, similar to property. Both are real assets and offer relatively stable investment returns when compared to more volatile assets such as equities. However, there are a number of qualitative differences between direct property and infrastructure, which further adds weight to including infrastructure alongside property in a portfolio. Although research (Newell 2008) has identified that increased allocation to alternatives had not directly impacted a superannuation fund's property allocation component, this needs to be further investigated in light of recent changes to institutional asset allocation strategies.

## **2.5.9 International Property Asset Allocation**

Lack of quality domestic commercial real estate, and the strong Australian dollar, has resulted in a significant number of Australian fund managers now holding more property assets overseas, mainly in the form of REITs. The level of international property exposure for Australian property funds has increased from 5% in 1993 to more than 22% in 2010 (Newell, Stevenson & Rowland 1993, p. 451; PCA 2011, p. 8).

Rowland (2010) explains that, generally, it is harder for Australian institutions to buy one or more properties overseas than to buy into property funds that hold real estate in other countries. As most A-REITs hold international properties, Australian investors are able to earn returns based on overseas properties by investing in

these listed funds. Australian investors have sought portfolio diversification opportunities in both the mature and emerging property markets, such as the USA, UK, Europe, New Zealand and the Asian markets, particularly Japan. The increase in offshore property exposure is mostly driven by demand from Australian investors for quality income producing properties.

Recent research has concluded that there are advantages in integrating international property in mixed-asset portfolios as it may offer superior combinations of risk and return from the broader portfolios. Steinert and Crowe (2001), and Hauss (2004), found that in terms of global investment, diversification benefits of cross-border investments are significantly higher for property than for equities or bonds. Property's low correlation with other assets can increase diversification benefits for institutions seeking offshore asset allocation. The low correlation was attributed to country specific performance drivers. Therefore, international investments in property assets can reduce portfolio risk because asset return in different countries may not be perfectly correlated. Another key benefit of global asset allocation is the institutionalisation of investors like superannuation funds with a wider investment horizon. International property allocations also provide investors with expanded opportunities to acquire a wider range of properties and to use local expertise in foreign markets (Rowland, 2010).

The issue of currency risk is a major barrier for investors seeking international property investments. Returns from an overseas property generally fluctuate widely because the local equivalent to the foreign rent is affected by changes in the currency exchange rate. Generally, investors determine their strategic investment policy by considering the costs and benefits of currency hedging. Keng (2004) found that most property funds with international exposure generally have some sort of currency hedging policies in place where investment gains are paid in local currency, and thus, by investing in these funds, domestic investors are fully hedged for currency risk. However, Rowland (2010) explained that while most A-REITs with offshore investments hedge the currency risk, hedging currency changes from the acquisition to resale of a property investment is generally impractical, and the hedge only protects the rental income through a currency derivative contract. The changes in exchange rates may have a more pronounced effect on the local property value as recorded in financial statements and realised when the property is finally sold. In addition, the cost of hedging may reduce or even remove any benefits of international diversification. The impact of currency risk can be lessened if any borrowing is in the same country as the property.

Apart from currency risks, market efficiency, transparency, liquidity, local knowledge, and compliance with local regulations and tax regimes, are also key factors that institutions seeking offshore property investments must consider in their international property asset allocation decision-making process. The constraint for many investors seeking offshore property allocation is that on many occasions there are gaps in their local knowledge. Rowland (2010) highlighted that local rules and practices for land ownership, planning, and building consents, can impact on returns. To comply with foreign country investment rules, and to gain access to good market knowledge, most Australian investors acquire overseas properties jointly with local investors.



Lack of transparency is also major issue for international property allocation, particularly when information on ownership, prices and rents are not publicly available. Fund managers are unlikely to allocate resources in property markets which lack transparency and consistency. While there was significant growth in cross-border property investment before 2007, the GFC has curtailed this growth, resulting in a decline in transaction volumes. Recent studies by Rowland (2010), and Newell and Razali (2009), have also found that Australian institutional investors are now refocusing on domestic markets for investment opportunities. As discussed earlier, the area of international property asset allocation has been extensively studied (Hauss 2004; Steinert & Crowe 2001; Worzala & Newell 1997). Therefore, this research will focus on primarily Australian fund managers' domestic property asset allocation components.

## **2.6 Summary**

This chapter presented a literature review on investment strategies, property asset allocation concepts, and decision-making theory. The literature shows that the A\$2.0 trillion Australian funds management industry plays an essential role in the growth and development of the Australian property market. Institutional investors on average allocate 8-10% to property assets in multi-asset portfolios (Rainmaker Group 2012). However, this is seen by many in the property profession as a subjective measure and there is a need to investigate and document Australian fund managers' strategic property allocation decision-making processes and frameworks.

The property allocation decision-making process is classified in two tiers: i) the property asset allocation decision undertaken as at the strategic level, and ii) property investment decisions undertaken at the property fund/portfolio level. Strategic property asset allocation decisions involve institutional fund managers (such as superannuation funds) deciding what proportion of the investment portfolio should be held in property assets and in which sectors (direct or listed property). Rowland (1997) explained that property investment decisions are made as a series of steps, gradually moving towards a commitment to buy, sell, redevelop or refinance a property. Therefore, property investment decisions deals with how property managers invest this allocated proportion in different markets (such as office, retail and industrial), or geographic areas.

This literature review highlights several studies that evaluate the importance of property in Australian institutional portfolios (for example: Armytage 2002; De Francesco 2005; Newell, Stevenson & Rowland 1993; Rowland & Kish 2000; Schuck & Howard 2005). In addition, Parker (2010, 2013) has investigated REITs and unlisted property funds' investment decision-making process. However, there is very limited knowledge on how Australian fund managers determine at the strategic level the actual property allocation component, and related sub-sector allocations.

Generally, institutional investors in Australia gain allocation to property assets by investing in property funds, and via mandates or partnerships with other wholesale managed funds. Each managed fund type (such as superannuation funds, investment management funds, and property funds) has distinct property allocation strategies and investment processes. Generally, institutional fund managers undertake more sophisticated analysis than retail investors. There is a need to investigate and document the Australian fund managers' decision-making processes and frameworks at different levels. In addition, to a large extent, fund managers'

asset allocation and asset selection decisions are now increasingly being made by asset consultants and external investment managers. There is a need to test this via an industry survey.

Parker (2010) explained that the property asset allocation decision-making process can be described as sequential and linear, but the nature and extent of the process differs between investment products. Listed property assets, such as A-REITs, trade on the stock exchange and thus exhibit different risk/return characteristics compared to direct property (Higgins 2007). There is also an ongoing debate about whether alternative assets such as infrastructure can be regarded as property assets, and whether alternative assets can replicate the performance of property assets in the mixed-asset portfolio. The property asset allocation decision-making process itself is influenced by several economic, statistical, and financial principles, and by qualitative factors such as judgement and market sentiment. French and French (1997) identified three distinct forms of decision-making models: descriptive analysis, normative analysis, and prescriptive analysis. There is a need to identify whether Australian fund managers follow the traditional descriptive and normative decision-making framework, or whether there has been a shift towards the more integrated, prescriptive decision model.

As the financial market recovers from the GFC, indications are that property allocation in institutional investment portfolios is likely to be higher in future, but at what level/proportionality (direct and listed property split) is still unclear. The diversification benefits of different property assets, and property with other asset classes such as alternatives, needs to be tested in light of current changes in institutional investment portfolios. Research on portfolio construction in Australia (such as: Gallagher 2001; Faff, Gallagher & Wu 2005) is focused mainly on traditional assets such as equities, bonds and cash. In part this can be explained by the fact that, although MPT has existed for more than 60 years, property allocation decision-makers have begun only recently to use standard techniques from broader investment markets, such as diversification, CAPM, and other risk management tools. There is a need to enhance portfolio construction research in the context of property assets.

The theory highlights that property allocation should be within the 10-30% range, and that higher allocation to property significantly enhances the multi-asset portfolio's risk-adjusted return profile (Brown & Schuck 1996; Craft 2001; Hoesli, Lekander & Witkiewicz 2003; Worzala & Bajtelsmit 1997). There seems to be wide variation in theory and practice. Most theoretical studies about property allocation have been undertaken mainly on passive investment strategies, such as the 'buy and hold' model. There is a need to investigate the optimal allocation to property assets within the context of active investment strategies, where portfolio asset weights can be constantly rebalanced. In addition, research on the effectiveness of different asset allocation strategies (strategic, tactical and dynamic) in Australia is limited and focused mainly on short-term, highly liquid investments. There is a need to investigate the role of property within the setting of both strategic and active asset allocation models.

These issues form the basis for the industry survey and the subsequent asset allocation modelling investigations. The next chapter details the research data collection and analysis designs.

## CHAPTER THREE: RESEARCH DESIGN

### 3.1 Introduction

The objective of this chapter is to examine the research in light of philosophical orientation, methodology, and design of research methods. The findings from the literature review (Chapter Two) demonstrated that there is a need to investigate and document Australian institutional strategic property allocation processes and frameworks. Research on the effectiveness of asset allocation strategies with a property focus is limited in Australia. However, before proceeding with the investigation, it is important to re-examine the research purpose and objectives, and to identify and discuss the applicable research designs.

The purpose of this research is to identify whether Australian fund managers view property as a key investment asset class, to determine how these institutions formulate their property allocation decisions, and to suggest ways to improve institutional allocation to property assets. Table 3-1 highlights the research objectives and associated research approach.

**Table 3-1: Research Objectives and Approach**

Research Objectives		Approach
i.	To examine and evaluate the literature on investment theory, investment management and property asset allocation concepts.	Phase One: Literature Review
ii.	To identify and evaluate Australian managed funds industry investment data and strategies and property allocation trends.	
iii.	To examine and evaluate the growth of the Australian property investment market and the key factors that affects its performance.	
iv.	To identify key factors influencing Australian fund manager's property allocation decisions.	Phase Two: Industry Survey
v.	To identify Australian fund manager's property asset allocation strategies and decision-making frameworks.	
vi.	To identify and evaluate leading local and overseas investment techniques and strategies which includes an asset allocation to property.	
vii.	To prepare and evaluate asset allocation models that optimises direct and listed property asset classes.	Phase Three: Asset Allocation Modelling
viii.	To suggest ways of improving institutional investor's asset allocation decisions towards property investments.	

This research is undertaken in three key phases: literature review, followed by two phases of data collection and analysis. Objectives (i) to (iii) of this research focus on collating past literature on investment strategies and property asset allocation concepts. The literature was examined in the Chapter Two. Objectives iv to viii of the research are designed to address gaps in knowledge through a two-phase data collection and analysis process: an industry survey, and asset allocation modelling. This chapter examines the research design for the data collection and analysis phases. The theoretical perspective of the research is discussed first, followed by the research methodology, and methods of investigation.

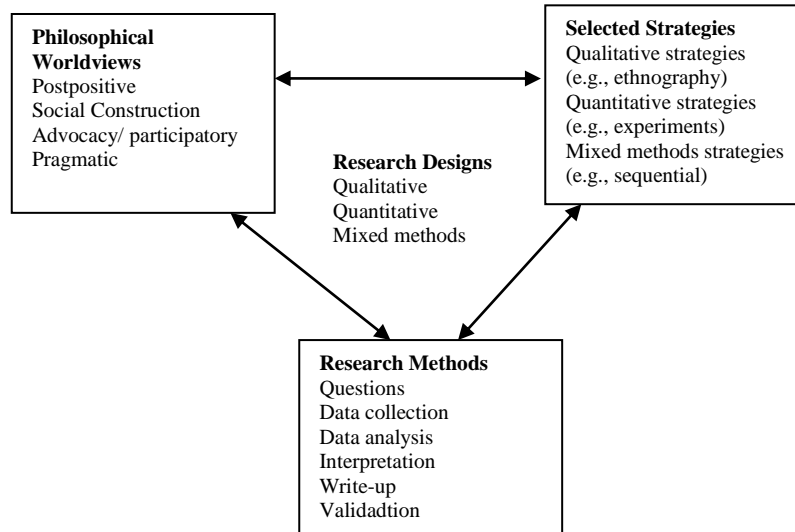
### 3.2 Theoretical Perspective

Burns (1997, p. 3) defines research as a systematic investigation to find answers to a problem. Research is undertaken within a framework of set philosophies using procedures, methods and techniques that have been tested for validity and reliability, and which are designed to be unbiased. In theory, research can be identified within two broad categories: pure research, and applied research. Pure research is concerned with developing research methods and tools that form the body of research methodology. Applied research is concerned with using the research methods that form the body of research methodology to develop information for policy formulation or the enhancement of understanding of a situation, problem or phenomenon (eds Bickman & Rog 2009; Kumar 2005).

This research study falls within the applied social sciences field of study. The nature of investigation overlaps the property (built environment) and investment and finance disciplines within the realm of social sciences.

The researcher's worldview (philosophical orientation) is the key factor that affects his or her standpoint (theoretical perspective) and approach to research, including the design of the research questions, selection of appropriate research method, and subsequent information gathering (Hesse-Biber 2010). Figure 3-1 demonstrates how the worldviews, strategies of inquiry, and research methods, are interconnected.

**Figure 3-1: Research Design Framework: The Interconnection of Philosophical Worldviews, Strategies of Inquiry, and Research Methods**



Source: Creswell 2009, p. 5.

According to Creswell (2009), worldviews may stem from one of the several paradigms and approaches in research, such as positivist, postpositivist, interpretive, phenomenologist, action or participatory, constructivist, feminist, or the academic discipline in which researchers are trained. Table 3-2 further examines the typical philosophical orientations, and the elements of each worldview position. Creswell (2009) further explains that postpositivists hold a deterministic philosophy, in which causes probably determine effects or outcomes. In contrast, constructivists hold assumptions that individuals seek understanding of the world in which they live and

work. Those with advocacy and participatory worldviews assume that research inquiry needs to be intertwined with political agenda. The pragmatist worldview arises out of actions, situations and consequences, rather than antecedent conditions, such as in postpositivism.

**Table 3-2: Four Research Worldviews**

<b>Postpositivism</b>	<b>Constructivism</b>
<ul style="list-style-type: none"> <li>• Determination</li> <li>• Reductionism</li> <li>• Empirical observation and measurement</li> <li>• Theory verification</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Multiple participant meanings</li> <li>• Social and historical construction</li> <li>• Theory generation</li> </ul>
<b>Advocacy/Participatory</b>	<b>Pragmatism</b>
<ul style="list-style-type: none"> <li>• Political</li> <li>• Empowerment issue-orientated</li> <li>• Collaborative</li> <li>• Change-orientated</li> </ul>	<ul style="list-style-type: none"> <li>• Consequences of actions</li> <li>• Problem-centered</li> <li>• Pluralistic</li> <li>• Real-world practice oriented</li> </ul>

Source: Creswell 2009, p. 6.

The identified research worldviews can be examined within three methodological movements:

- i. Quantitative (QUAN) – primarily work within the positivist or post-positivist paradigm, and principally interested in numerical data and analysis.
- ii. Qualitative (QUAL) – primarily work within the constructivist or participatory paradigm, and principally interested in narrative data and analysis.
- iii. Mixed methodologies – primarily work within the pragmatist paradigm, and interested in both narrative and numerical data and their analysis (Edmonds & Kennedy 2013; Teddlie & Tashakkori 2009).

A study is classified as qualitative if the purpose of the study is to describe a situation, phenomenon, problem or event. Qualitative methodologies (constructivism and participatory) focus on the importance of studying the ‘lived experiences’ of individuals and groups. However, the information gathered for qualitative research can also be through the use of variables measured on nominal or ordinal scales. A study is classified as quantitative if the researcher wants to quantify the variation in a phenomenon, situation, problem or issue, or if information is gathered using predominantly quantitative variables. Quantitative analysis is undertaken to determine the magnitude of the variation. Therefore, quantitative methodologies (post-positivism) involve hypothesis testing and causality as the means of social inquiry. Mixed methodologies (pragmatism) are interested in both narrative and numerical data and their analysis. Researchers who use mixed methods employ a research design that uses both quantitative and qualitative data to answer a particular question or set of questions in a single or multiphase study (Creswell & Plano Clark 2011; Creswell 2009; Edmonds & Kennedy 2013; Teddlie & Tashakkori 2009).

The epistemological underpinnings of quantitative design state that there exist definable and quantifiable social facts (Rist 1975). Burns (1997, p. 11) explains that the viewpoint stands in opposition to the qualitative position; that is; ‘reality cannot be subsumed within numerical classification’. According to Teddlie and Tashakkori

(2009), epistemology is simply concerned with the relationship between the knower and the known (the researcher and the participant). Positivists and post-positivists (quantitative researchers) perceive this relationship as being objective, with a separateness existing between the researcher and the participant. In contrast, constructivists (qualitative researchers) perceive research as subjective, with the researcher and participants working together to co-construct social realities. Pragmatists (mixed methods researchers) believe that epistemological issues exist on a continuum, rather than being situated in two opposing fields.

Pragmatists study topics in a way that matches their value system, including units of analysis and variables that they feel are most likely to yield valued responses or results (Teddle & Tashakkori 2009). Tashakkori and Teddle (2003, p. 713) defined pragmatism as:

‘... a deconstructive paradigm the debunks concepts such as ‘truth’ and ‘reality’ and focuses instead on ‘what works’ as the truth regarding the research questions under investigation. Pragmatism rejects the either/or choices and advocates for the use of mixed methods in research, and acknowledges that values of the researcher play a large role in interpretation of results.’

Teddle and Tashakkori (2009) explain that pragmatists use both objective and subjective points of view, depending on the stage of research cycle. For example, at some point during the study, the researcher and participants would require a highly interactive relationship with the participant to collate QUAL data. At other points, the researcher may not require interaction with participants, such as when testing QUAN data. Therefore, instead of focusing on methods, pragmatists use all approaches available to understand the research problem.

According to Creswell (2009) pragmatists look to the ‘what’ and ‘how’ to research, based on the research purpose. As outlined in Table 3-1, the first phase of data collection in this research involves an industry survey designed to identify ‘how’ the Australian fund managers determine their property allocation strategies and decision-making frameworks. This is followed by the asset allocation modelling phase, designed to identify ‘what’ can be done to improve institutional investor allocation decisions about property investments. Therefore, this research uses multi-methods of data collection (qualitative and quantitative) involving different forms of data (narrative and numerical), and thus can be classified within the pragmatist worldview.

### **3.3 Methodology**

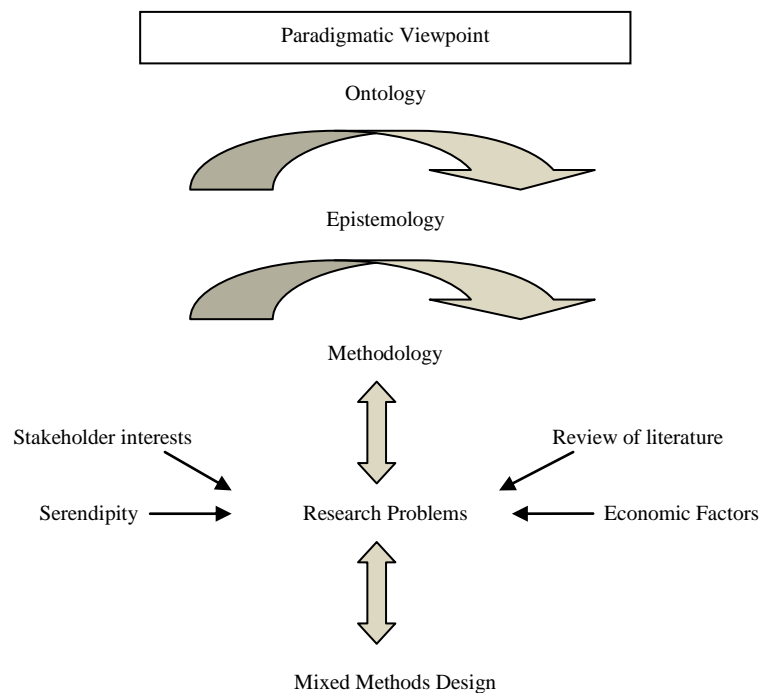
Researchers use research methodologies to strengthen and advance their own professions (Kumar 2005). Greene (2008) explains that it is important for researchers to distinguish between research methodology and research methods. Research methodology refers to the procedural framework within which the research is conducted. Research methods are specific strategies for conducting the research. Therefore, the methodology is a theoretical bridge that connects the research problem with the research method (Hesse-Biber 2010).

This research uses a mixed method methodology. The research worldview and methodological movements were discussed in Section 3.2. The theory explains that the mixed methods research tradition is less known than the quantitative or qualitative traditions. Although there is evidence of mixed methods studies in the field of social sciences dating to the early 1800s (such as Booth 1892-1897, cited in Hesse-Biber 2010), it has only really emerged as a separate orientation since the late 1970s when scholars accepted that no one methodology can

answer all questions and provide insights on all issues (Burns 1997; Teddlie & Tashakkori 2009). Early examples of mixed methods research include Sieber (1973) who integrated within a single study qualitative fieldwork and quantitative survey data. Jick (1979) introduced the term triangulation, later redefined by Morse (1991) as methodological triangulation.

Initially several terminologies were used to describe a mixed research approach, including qualitative and quantitative methods, integrated research, synthesis, multi-method, and mixed methodologies (Campbell & Fiske 1959; Creswell 1994; Greene 2008; Heiselt & Sheperis 2010; Jick 1979; Tashakkori & Teddlie 1998). Tashakkori and Teddlie (2003) published the first comprehensive overview of mixed methods research (*Handbook of Mixed Methods in the Social & Behavior Sciences*) that evaluated nearly 40 types of mixed methods designs. The name ‘mixed methods research’ is now the most frequently identified term for research being conducted using mixed methods designs. Figure 3-2 outlines a typical framework for mixed methods research.

**Figure 3-2: Comprehensive Approach to Mixed Methods Research**



Source: Hesse-Biber 2010, p. 12.

Hesse-Biber (2010) explains that mixed methodologies are derived from a researcher’s assumptions about the nature of existence (ontology). These assumptions, in turn, lead to the researcher’s perspective or philosophy, or set of philosophies, on the nature of knowledge building (epistemology) regarding fundamental questions, such as: who can know? what can be known? The mixed methods researcher also needs to consider additional factors, such as economic (funding), time constraints, stakeholder interests, and even serendipity, when formulating the research question.

Greene, Caracelli and Graham (1989) identified five specific reasons why researchers consider a mixed methods design. These include:

- i. Triangulation – is the most commonly cited reason for adapting a mixed methods research approach. Methods triangulation refers to the use of more than one method while studying the same research questions where the researcher is looking for a convergence of the data collected by all methods to enhance the credibility of the research findings. Triangulation (QUAN+QUAL) design is employed when a researcher seeks to validate quantitative statistical findings with qualitative data.
- ii. Complementarity – allows the researcher to gain a complete understanding of the research problem by using both quantitative and qualitative data, and not the numerical or narrative explanation alone.
- iii. Development – creates a synergistic effect, whereby the results from one method are used to help develop or inform the other method.
- iv. Initiation – where a study's findings may raise questions or contradictions that will require clarification, thus initiating a new study. The aim of the new study is to add new insights to existing theories on the phenomenon under investigation.
- v. Expansion – is intended to extend the breadth and range of inquiry.

Yauch and Steudel (2003) explain that both triangulation and complementarity designs are useful for cross-validation when multiple methods produce comparable data. The qualitative and quantitative analysis used in this research is not used to validate or compare the results from the different approaches. Therefore, the reason for choosing a mixed methodology approach for this research is other than the triangulation and complementarity types of investigation. In particular, this study expands on, further develops, and tests, the findings from the industry survey (qualitative analysis) using asset allocation modelling (quantitative investigation). The qualitative component initiates the formulation of research themes for the subsequent quantitative analysis phase. Thus, the choice of a mixed methods design for this research overlaps the development, initiation and expansion elements. However, it is acknowledged that there are challenges in using the mixed methods approach. These include the need for extensive data collection, and time required to analyse two sets of data (both text and numerical).

The research strategy, and methods of data collection and analysis, is discussed next.

### **3.4 Method**

#### **3.4.1 Mixed Methods Design**

In their groundbreaking publication, *Handbook of Mixed Methods in the Social & Behavior Sciences*, Tashakkori and Teddlie (2003) discussed nearly 40 types of mixed methods designs spanning from the health to education research fields. Creswell and Plano Clark (2007) consolidated this information into four major mixed methods typologies: triangulation, embedded, explanatory, and exploratory designs.

Table 3-3 provides a brief summary of the four mixed methods designs. The capitalised notation (for example, 'QUAL') indicates a weight or priority to one method over another. In mixed methods research, qualitative and quantitative data may be equally weighted (QUAL+QUAN), or one may be emphasised over another (example



QUAL→ quan). The ‘+’ symbol indicates a concurrent form of data collection where both quantitative and qualitative data is collected at the same time. The symbol ‘→’ indicates a sequential form of data collection, with one strand (such a quantitative data) building on the other (such as qualitative data).

**Table 3-3: Mixed Methods Typologies: Design Type, Variants and Notations**

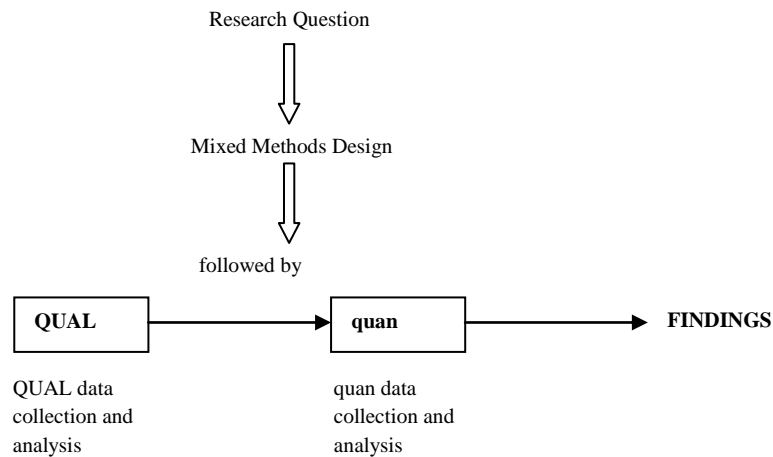
Design Type	Variants	Notation
Triangulation	Convergence	QUAN + QUAL
Embedded	Experimental/ Correlational	QUAN (qual) or QUAL (quan)
Explanatory	Follow-up explanation	QUAN→ qual
Exploratory	Instrument development Taxonomy development	QUAL→ quan

Source: Creswell and Plano Clark 2007; Teddlie & Tashakkori 2009, p. 162.

Triangulation design allows the researcher to simultaneously collect both quantitative and qualitative data, merge that data, and use the results to understand a research problem. The design takes the weakness of quantitative research (generalisation), and complements them with strengths of qualitative research (emerging design). Embedded design is where the research has primarily focused on one type of data, supported by the other type of data. Put simply, researchers insert a qualitative component within a quantitative design. The explanatory design is two-phase, mixed methods designs in which the qualitative data help explain initial quantitative results. The exploratory design is similar to the explanatory design in that it is also a two-phase method in which qualitative results are obtained first, followed by quantitative data that informs the qualitative data (Creswell & Plano Clark 2007; Heiselt & Sheperis 2010; Teddlie & Tashakkori 2009).

Edmonds and Kennedy (2013) explain that with mixed methods designs, the timing of the strand is relevant; that is, whether it is implemented concurrently, sequentially, nested (embedded), or multilayered. Therefore, each of the four mixed methods designs identified in Table 3-3 has several multistrands (or sub-designs); for example, parallel mixed designs, sequential mixed designs, conversion mixed designs, multilevel mixed designs, and fully integrated mixed designs. The type of multistrand design used in this research study is sequential mixed design. Heiselt and Sheperis (2010) explain that sequential studies occur in a chronological order, with one strand emerging from, or following, the other.

Given the nature of investigation in this research – industry survey (qualitative), followed by the asset allocation modelling phase (quantitative) – this research can be classified within the ‘sequential exploratory’ mixed methods design. Figure 3-3 outlines the typical sequential exploratory research design framework.

**Figure 3-3: QUAL → quan sequential exploratory research design**

Source: Hesse-Biber 2010, p. 71.

According to Hesse-Biber (2010), sequential exploratory mixed methods designs allow the researcher to gain a more robust understanding of the qualitative results. With this approach, the theory generated from the initial QUAL phase of the study helps formulate the research themes that are integrated, tested, elaborated or expanded on during the subsequent QUAN phase. Teddlie and Tashakkori (2009) explain that although the QUAL phase is generally more privileged in the sequential exploratory research design, either the qualitative or quantitative phase (or both equally) may be the primary emphasis of the research study.

This study privileges both the QUAL and QUAN phases equally. The reason for collecting the qualitative data first is to identify the theory on Australian managed funds' property asset allocation strategies, decision-making processes, frameworks and models. In the Australian context, information on strategic property allocation models and variables are not widely available, and there is little guided theory related to the subject. Once the property asset allocation strategies, decision-making frameworks, variables and models are identified, this information in turn forms the pillars for the subsequent quantitative investigation. Having established the type of mixed method research design used for this research, the strategies of inquiry (data collection and analysis techniques) are discussed next.

### 3.4.2 Data Collection Strategy

Tashakkori and Teddlie (2010) stated that while methodological principles guide the general conduct of studies, the research questions determines the specific methods of data collection (QUAN, QUAL, or mixed methods research) used within a study. Several other publications (Balkin 2010; Bergman 2008; Brannen & Moss 2012; Leech 2012; Leech & Onwuegbuzie 2010) also discuss the importance of research questions in a study.

Table 3-4 outlines a researcher's typical data collection, analysis and interpretation framework, specific to each type of research method. Generally, qualitative research includes broad, open-ended questions that answer the 'how' and 'what' about a particular phenomenon. Qualitative research is an emerging design that allows the study to take shape as information is gathered and does not constrict where information might lead. In contrast, quantitative research questions are directional because they state either a relationship between two or more

independent variables, or a comparison between two or more groups of dependent variables. Unlike qualitative questions, which are generally broad, quantitative researchers use specific research questions. Mixed methods research questions must address both the quantitative and qualitative aspects of the research (Creswell 2009; Sheperis, Young & Daniels 2010).

**Table 3-4: Quantitative, Mixed and Qualitative Methods Data Collection**

Quantitative →	Mixed Methods	← Qualitative Methods
<ul style="list-style-type: none"> <li>• Pre-determined method.</li> <li>• Instrument based questions.</li> <li>• Performance data, attitude data, observational data, and census data.</li> <li>• Statistical analysis.</li> <li>• Statistical interpretation.</li> </ul>	<ul style="list-style-type: none"> <li>• Both pre-determined and emerging methods.</li> <li>• Both open-ended and closed-ended questions.</li> <li>• Multiple forms of data drawing all possibilities.</li> <li>• Statistical and text analysis.</li> <li>• Across databases interpretation.</li> </ul>	<ul style="list-style-type: none"> <li>• Emerging methods.</li> <li>• Open-ended questions.</li> <li>• Interview data, observation data, document data, and audio-visual data.</li> <li>• Text and image analysis.</li> <li>• Themes, patterns and interpretations.</li> </ul>

Source: Creswell 2009, p. 15.

Creswell (2009) explains that data differs in terms of open-ended versus closed-ended responses. In addition, some forms of data, such as surveys and interviews, can be either quantitative or qualitative, depending on how open (qualitative) or closed (quantitative) the response options might be in the interview or survey questionnaire.

Each research strategy (QUAN, QUAL or mixed methods) has its own specific approach to collecting and analysing empirical data. For example, the quantitative design can be one, or a combination, of descriptive, correlational, quasi-experimental and experimental. Qualitative research designs can include a combination of biography, ethnography, oral history, phenomenological, case study, and grounded theory. Yin (2009) explains that the choice of data collection strategy is a function of the research situation (for example, how, what, why) and the degree of control over events, both past and current. Yin (2009) categorically provided examples of data collection strategies versus their characteristics, as summarised in Table 3-5.

**Table 3-5: Research Strategies versus Characteristics**

Strategy	Forms of research questions	Requires control over behavioural events?	Focuses on contemporary events?
<b>Experiment</b>	How, why?	Yes	Yes
<b>Survey</b>	Who, what, where, how many, how much?	No	Yes
<b>Archival Analysis</b>	How, why?	No	Yes/No
<b>History</b>	How, why?	No	No
<b>Case Study</b>	How, why?	No	Yes

Source: Yin (2009, p. 8).

This research uses the exploratory design and focuses on the ‘who’, ‘what’, ‘how’ ‘why’ and ‘how much’ types of questions. In particular, the purpose of this research is to identify whether Australian fund managers view property as a key investment asset class, to determine how these institutions formulate their property allocation decisions, and to suggest ways to improve institutional allocation to property assets.

Yin (2009) explains that the research questions within the exploratory designs need survey or archival analysis to find the answers. Compared to other strategies, such as the experimental design, exploratory data collections designs do not require control over the behavioural events. However, with exploratory design there is a greater level of focus on contemporary events, particularly for surveys. The data collection strategy used in this research is mixed methods: survey questionnaires and unobtrusive measures (or secondary data).

Heiselt and Sheperis (2010) explain that for two-phase studies, such as exploratory design used in this research, the process of identifying research themes beforehand can be somewhat difficult. In two-phase studies, the first phase (qualitative component) questions are developed first. The second part of the research elaborates on the first phase. Therefore, the researcher can only provide questions from both phases after the study is complete. This is the approach employed in this research. The research objectives and themes for the quantitative analysis themes were only identified once the qualitative analysis was completed and validated.

#### **3.4.2.1 Survey Questionnaire**

Aggarwal (1993) suggested that it is important for academics to continue to develop theories and concepts independently of what is being done in practice, but that an ongoing dialogue with practicing professionals is necessary to fully understand areas of practice that continue to rely on qualitative judgement and subjective assessment. Several studies (Creswell 2009; Flick 2006; Kumar 2005; Teddlie & Tashakkori 2009) note the effectiveness of survey questionnaires to ascertain the participant’s ‘self-reported’ attitudes, beliefs and feelings toward a topic of interest.

This study involved a survey questionnaire, based on the grounded theory strategy, to address the following research objectives:

- iv. To identify key factors influencing Australian fund manager’s property allocation decisions.
- v. To identify Australian fund manager’s property asset allocation strategies and decision-making frameworks.
- vi. To identify and evaluate leading local and overseas investment techniques and strategies which includes an asset allocation to property.

The aim of the survey is to establish theory on institutional investor strategic property asset allocation processes and decision-making frameworks in Australia. The data will help identify how fund managers’ property asset allocation decision-making process has evolved over time in Australia, with reference to prior research. In addition, the information will form the basis for comparing property allocation strategies and frameworks used overseas. The information collected from the survey will also provide the grounded theory for the subsequent quantitative analysis phase in this research.

The industry survey is undertaken using mail questionnaires posted to 130 institutions located in different capital cities in Australia. The use of mail questionnaires was the preferred method of primary data collection given the vast geographic distribution of the study population and the nature of investigation. The use of mail questionnaire also ensured that the research was undertaken within budget allocation for the research. In addition, the nature of respondents' job function (fund managers, investment officers, chief executive officers, and asset consultants) mean that respondents would be more forthcoming if guaranteed confidentiality and anonymity given the competitive nature the Australian managed funds market.

Kumar (2005) and Teddlie and Tashakkori (2009) explain that a questionnaire can be qualitative (open-ended/unstructured), quantitative (closed-ended/ structured), or mixed methods (semi-structured). Open-ended questions capture the respondent's answers in his or her own words. Open-ended questions are useful in seeking the opinions, attitudes and perceptions of the respondents. Closed-ended questions provide 'ready made' categories within which respondents reply to the questions asked by the researcher. Closed-ended questions are useful in eliciting factual information or data. The questionnaire design used in this research was a mixed methods questionnaire (semi-structured) that includes both closed-ended and open-ended items.

The survey involved two versions of the questionnaires: fund manager and asset consultant versions (see Appendices 12 & 13). In total, the fund manager questionnaire required the respondents to complete 27 questions, and the asset consultant version involved 22 questions. For most closed-ended questions, rank order scales were used. The respondents were presented with several characteristics simultaneously and asked to rank them in terms of priority or importance. The open-ended questions required the respondents to either elaborate on the closed-ended questions, or to provide narrative information and flowcharts/diagrams on the organisation's property asset allocation decision-making strategies, frameworks and models.

A pilot study was undertaken to determine the feasibility of the research exercise. Maxwell (2009) explains that pilot studies in qualitative studies are essential to generate an understanding of the concepts and theories held by the people being studied when little or no knowledge is available on the phenomenon being studied. The review of literature (Chapter Two) highlighted that there is limited research in the area of strategic property allocation in Australia. Given this background, it was important that a small-scale study was undertaken to test if it was worth carrying out a detailed investigation.

Kumar (2005), Fowler (2009), Mangione and Van Ness (2009), explain that mailed surveys are the most common approach to administering a questionnaire, and are less expensive to conduct than in-person interviews. However, there is a requirement for the researcher to constantly follow-up with non-respondents. This is because questionnaires are notorious for their low response rate; that is, people fail to return them (Amaratunga et al. 2002). According to Kumar (2005), it is rare for researchers who use mail questionnaires to obtain a 50% response rate, with a response rate of anything above 20% seen as a favourable outcome.

To offset the possibility of a low response rate, all questionnaires in this research were posted using pre-paid, self-addressed envelopes. In addition, respondents were promised a copy of survey findings (research papers/

journal publications) for successfully completing and returning the questionnaires. As part of the survey recruitment process, all targeted respondents were contacted via telephone and email prior to the questionnaire being mailed out. The survey pack included the questionnaire and plain language statement which was approved by the RMIT Human Research Ethics Committee. To improve the response rate, respondents were followed-up constantly via email and telephone.

#### **3.4.2.2 Asset Allocation Modelling**

An unobtrusive measure is a terminology commonly used for secondary data collection, such as written public records, written private records, and archived databases (Teddle & Tashakkori 2009). The quantitative analysis phase in this research involves unobtrusive measure to undertake the following research objectives:

- iv. To prepare and evaluate asset allocation models that optimises direct and listed property asset classes.
- v. To suggest ways of improving institutional investor's asset allocation decisions towards property investments.

This research examines the historical performance of seven asset classes over a 17 year period (1995-2011) under the conventional strategic asset allocation (SAA) balanced investment portfolio approach used by the A\$302 billion Australian industry superannuation funds. The industry fund Strategic portfolio performance is then compared with ten alternative asset allocation models prepared for this research, including the Buy and Hold, Equal Weighted, Traditional, Turning Points, Optimal, Tactical, and Dynamic, investment techniques. The Optimal, Tactical and Dynamic strategies are modelled both on an unconstrained and constrained basis, similar to the industry fund Strategic portfolio. In comparing the different strategies, the optimal property asset allocation components are also examined.

Teddle and Tashakkori (2009) explain that the key advantage of using unobtrusive measures is that it allows the researcher to gather data and report it in the original format, compared to the self-reported measures (such as questionnaires and interviews) where the accuracy of the responses can be skewed. However, it needs to be acknowledged that there are problems associated with this type of data collection, such as data series being incomplete because of selective reporting or recording, the possibility that data is dated, and access to some types of content being difficult.

The defined benchmark asset classes used for the asset allocation modelling in this research include asset data series for Australian equities, international equities, Australian fixed income securities, international fixed income securities, property, cash, and alternatives. For the alternative asset class data series, the Australian managed fund industry appears to have a range of benchmark data series which seems incomplete given the spread of assets included in the alternative asset class. The alternative index in this research includes infrastructure and utilities, hedge funds, private equity, and commodity prices, constructed from the commencement of selected Australian data series. The data source and representations are detailed in Chapter Six.

### **3.4.2.3 Sampling Technique**

Sampling is the process of selecting a few (a sample) from a bigger group (the sampling population) to become the basis for estimating or predicting the prevalence of an unknown piece of information regarding the bigger group. Quantitative data often involve random sampling, so that each individual has an equal probability of being selected. In contrast, qualitative data collection is mainly purposeful sampling, where individuals are selected because they have experienced the central phenomenon. A mixed methods design can include both purposive and probability sampling and involve various strategies of inquiry including observations (structured/unstructured), interviews (open-ended/closed-ended), focus groups and questionnaires (Henry 2009; Teddlie & Yu 2007).

Tashakkori and Teddlie (2009) grouped mixed methods sampling techniques within three categories including:

- i. Sequential sampling – where sampling from the first phase informs the second phase; for example, purposive sampling followed by probability sampling.
- ii. Parallel mixed methods – where both purposive and probability sampling procedures are used simultaneously.
- iii. Multi-level sampling – where sampling occurs in two or more levels of units of analysis; that is, probability and purposive sampling techniques are used at different levels of the study.

The type of mixed methods sampling design used in this research is sequential sampling: purposive followed by probability sampling.

Purposive or judgemental sampling is a non-random/non-probability sampling technique in which the researcher's sample selection relies heavily on expert opinion; that is, the judgement of the researcher as to who can provide the best information to achieve the objectives of the study (Hesse-Biber 2010; Kumar 2005). For the purpose of the industry survey, only a selected group of Australian fund managers and asset consultants were contacted. In particular, only people involved in the property asset allocation decision-making process were targeted as potential respondents, such as chief investment officers, portfolio managers, property fund managers, chief executive officers, investment analysts and asset consultants. The number and type of organisations targeted for the research, and how the survey sample was attained, is discussed in detail in Chapter Four.

The quantitative component of the research (asset allocation modelling) involves probability sampling which is characterised by mathematical formulas. Edmonds and Kennedy (2013) explain that probability sampling is planned to select a large number of cases that are collectively representative of the population of interest. Within the scope of this research, the asset allocation modelling phase involves collection and analysis of the Australian industry superannuation fund historical benchmark asset class performance data. Industry funds are the largest institutional superannuation sector in Australia (see sub-section 2.2.5.1 in Chapter Two) and thus provide a good representation of the Australian superannuation industry and the wider managed funds industry property allocation trends.

Teddlie and Tashakkori (2009) explain that there are no rules for sample size in qualitative studies. Purposive samples are typically small (usually 30 cases); however, sample size may vary depending on the type of qualitative research being conducted, and the research questions. Generally for grounded theory (the type of qualitative research design used in this study), estimated sample size required is 20-50 participants. The number of respondents targeted for the industry survey in this research is 130, including a wide cross-section of Australian fund managers (superannuation funds, investment management funds and property funds) and asset consultants.

Representativeness is the general rule used for probability sampling (Wetcher-Hendricks 2011). The quantitative analysis in this research involves collating performance (total return) and asset weight benchmark data for the Australian industry superannuation fund balanced investment option, covering seven asset classes spanning 68 quarters (June 1995-December 2011). Industry standards generally require a minimum of 20 quarterly period data points for investment analysis (Bacon 2008, p. 64).

### **3.4.3 Data Analysis Techniques**

This research uses a sequential mixed data analysis strategy (QUAL→QUAN). Creswell (2009), and Teddlie and Tashakkori (2009), have explained that mixed methods data analysis technique can be both thematic and statistical, whereby the quantitative and qualitative data analysis strategies are combined, connected, or integrated in a single research study.

Qualitative data analysis is the analysis of various forms of narrative data. Qualitative data analysis is often referred as 'inductive' because it is used typically to discover emergent themes that are grounded in the data; that is, grounded theory (Teddlie & Tashakkori 2009). In this research, the qualitative (descriptive/narrative) responses for the industry survey questions were categorised and analysed manually through the content analysis process. The categorical (quantitative) responses were transferred into numerical values and analysed using Microsoft Excel 'PivotTables'. In addition, flowcharts and diagrams were used to describe the fund manager and asset consultant property allocation decision-making processes. The qualitative and quantitative information from the survey was then grouped and presented under five major themes (see Chapter Four) using tables, graphs and flowcharts, supported by narrative responses (aggregate format) and commentary. The results validation is discussed in Chapter Five.

Quantitative data analysis is simply the analysis of numerical data using a variety of statistical techniques (descriptive and inferential). Teddlie and Tashakkori (2009) explain that quantitative data analysis is most often 'deductive' because it is used to test predictions or hypotheses. The descriptive aspect of statistics allows researchers to summarise large quantities of data with the intention of discovering trends and patterns, using measures that are easy to understand and communicate (Burns 1997). Teddlie and Tashakkori (2009) have explained that the main outcomes from descriptive statistics include results such as means and correlations, grouped as 'inferential' statistics. Normally, inferential statistics are used to confirm or disconfirm the results obtained from the descriptive results, such as analysis of variance (ANOVA) and analysis of covariance (ANCOVA), to compare the means of two or more samples, and to determine if relationships between variables (correlation coefficient or regression slopes) are truly different from zero (such as *t* test, F tests).



The information collected (raw data) from both the primary and secondary sources was first processed to ensure that it was 'clean'; that is, the data is free from inconsistencies and incompleteness. Kumar (2005) described this process as editing data. Following editing, the data analysis and results were presented. The types of statistical analysis used in this research are both descriptive and inferential, performed using the Microsoft Excel program. The descriptive statistical analysis measurements used to summarise the Australian industry superannuation fund historical asset weight and performance data, include mean (total return), standard deviation (risk), range, variance, kurtosis, and skewness. The covariance and correlation matrix was developed to analyse the asset diversification benefits. The key parameters from past market data provided the platform for analysing the recorded benchmark for Australian industry superannuation funds' Strategic allocation model against the suitability of ten different investment strategies.

The asset allocation modelling design used in this research can be described as 'predictive' in nature. Tashakkori and Teddlie (2010), and Watson (2010), have explained that predictive design within the mixed methods domain is a form of correlational research that uses calculated information about the relationships between variables to forecast future outcomes. For this research, the reason for preparing and evaluating the different asset allocation models is to predict the optimal allocation to property assets for Australian institutional multi-asset portfolios. All asset allocation models are developed within the MPT framework, using the Australian Government 10-year bond as the risk-free rate. The Sharpe ratio is used as the risk-adjusted performance measure. The analysis is presented within three major themes (see Chapter Six), using tables and graphs supported by commentary. The industry implication for the model recommendations are discussed in Chapter Seven.

### **3.5 Summary**

The research design used in this study is built on three key phases: literature review, industry survey, and asset allocation modelling. The review of literature (Chapter Two) has provided the theoretical framework for the subsequent data collection designs. This chapter examined the philosophical orientation, methodology and design for the data collection and analysis phases. The nature of investigation overlaps the property (built environment), and investment and finance disciplines within the social sciences field of study. The research uses a 'sequential exploratory' mixed methods design and is classified within the pragmatist worldview. Creswell (2009), and Teddlie and Tashakkori (2009), explain that pragmatists use both objective and subjective points of view to understand the research problem.

Tashakkori and Teddlie (2009), and Teddlie and Tashakkori (2012) explained that research is considered 'mixed' if it uses qualitative and quantitative approaches in one or more of the following ways:

- i. Two types of research questions (qualitative and quantitative approaches).
- ii. Two types of sampling procedures (example probability and purposive).
- iii. Two types of data collection procedures (example surveys and experiments).
- iv. Two types of data (example numerical and textual).
- v. Two types of data analysis (statistical and thematic).

The research design used in this research involves a first phase of qualitative data collection and analysis (industry survey), followed by a second phase of quantitative data collection and analysis (asset allocation

modelling) that tests, elaborates and expands on the results from the first phase. With this approach, the qualitative component is important for generating emergent theory for the subsequent quantitative (asset allocation modelling) investigation. The method used privileges both the qualitative and quantitative components equally. Each strand has different research objectives and themes (see Table 3-1). The data collection strategy is also mixed methods: survey questionnaires and unobtrusive measures (or secondary data). A sequential mixed method sampling design is used: judgemental or purposive sampling for the industry survey, followed by probability sampling for the asset allocation modelling investigation. The type of data analysis technique used is also mixed methods, involving both thematic (textual) and statistical (numerical) analysis.

The research design used in this study is emergent in nature; that is, the research objectives and themes for the quantitative components (asset allocation modelling) were not identified until the findings from the qualitative component (industry survey) was completed and validated. This approach is supported by Creswell (2009), and Heiselt and Sheperis (2010), who explain that identifying research questions for two-phase studies beforehand is difficult as, generally, the themes for the second phase of the research are either unknown or somewhat unclear until the analysis from the first phase is completed.

The first phase of data collection involved a mixed methods (semi-structured) mailed questionnaire that examined Australian fund manager and asset consultant property allocation strategies and decision-making frameworks. This provided the grounded theory for the subsequent quantitative analysis phase that: i) examines the historical performance of the A\$302 billion Australian industry superannuation fund conventional Strategic balanced investment option portfolio, ii) compares the performance of industry fund Strategic portfolios to ten alternative asset allocation models prepared for this research, and iii) examines how the property allocation component changes with different asset allocation models.

The results are presented in the order of investigation: qualitative strand (Chapter Four and Chapter Five), followed by the quantitative strand (Chapter Six and Chapter Seven). Refer to Figure 1-2 (Chapter One) for the full thesis outline. The approach is supported by Leech (2012), and Teddlie and Tashakkori (2010), who have explained that sequential design reports can be presented in the order they were conducted, or the way the questions were answered; that is, if the qualitative component was conducted first, it would be presented first and the quantitative component would be presented afterwards, and vice versa.

The next chapter provides analysis and discussion from the industry survey.

## CHAPTER FOUR: CURRENT STATUS OF PROPERTY ALLOCATION STRATEGIES AND DECISION-MAKING PROCESS: A SURVEY OF AUSTRALIAN FUND MANAGERS AND ASSET CONSULTANTS

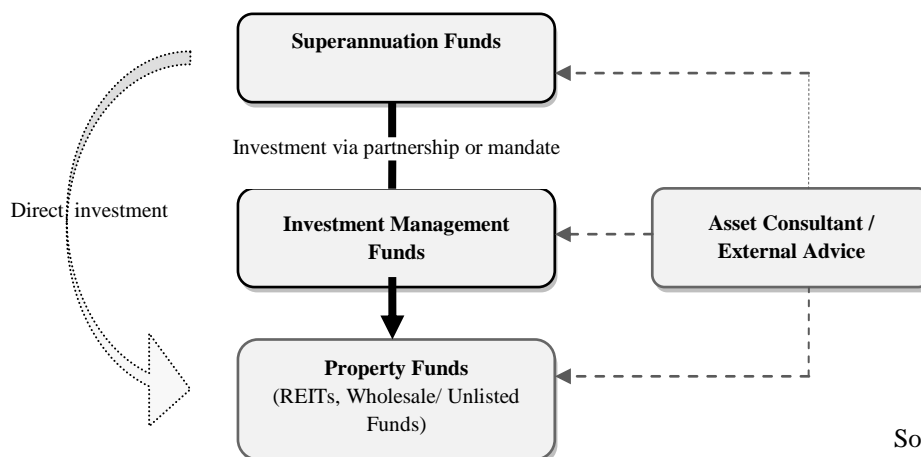
### 4.1 Introduction

The main objective of this chapter is to investigate and document the current status of property allocation strategies and decision-making process of Australian fund managers and asset consultants. In particular, the research examines how these institutions determine the optimal property allocation component, the use of strategic, tactical and dynamic asset allocation strategies for property, and the property allocation decision-making frameworks. The research also identifies the key assumptions, industry information, and factors that influence the property allocation decision-making process. Reddy, Higgins and Wakefield (2014), and Reddy (2012a) are academic refereed papers published from this chapter (see Appendix 20 for a copy). In addition, Reddy (2012b; 2012c) are papers presented from this chapter at international conferences.

At the time of the research, the global economy was still recovering from the effects of the late 2000s Global Financial Crisis (GFC), with the allocation to property in a state of change (particularly direct property and listed property composition). It is important to identify whether the use of qualitative analysis has become more important post GFC, when quantitative models failed to predict the consequences on property performance. Therefore, the research aims to identify any changes in paradigm or philosophy in Australian fund managers' property allocation strategies and decision-making processes due to the changing nature of financial and investment market conditions.

Figure 4-1 illustrates a typical Australian managed fund property asset allocation structure. The allocation structure is developed from the superannuation fund perspective, the largest fund managers in Australia.

**Figure 4-1: Superannuation Fund Property Investment Structure**



Source: Author.

Each managed fund type has distinct property asset allocation strategies and investment processes. In addition, the managed fund asset allocation and investment strategies can also be based on asset consultant or external advice. Hence, the industry survey undertaken as part of the data collection process for this research targeted a cross-section of industry experts from superannuation funds, investment managed funds, property funds, and asset consultants. This approach allowed both fund specific analysis, and general or industry evaluation, of how Australian fund managers determine optimal property asset allocation strategies and decisions. While there are several studies on the level of property allocation in multi-asset portfolio, this is the first research paper that covers the actual asset allocation decision-making process at strategic level for all major groups in the Australian managed funds industry, including superannuation funds, investment managed funds, property funds, and asset consultants.

The research was undertaken in May-August 2011 using semi-structured questionnaires administered by mail. The responses are categorised into five key topics: i) determining the current optimal allocation to property, ii) property allocation strategies, iii) fund manager and asset consultant property allocation decision-making frameworks, iv) factors influencing property allocation decisions, and v) optimising future property allocation levels. The results provided the basis for comparing local and overseas asset allocation strategies for property. In addition, the study identified how the fund managers' property asset allocation decision-making process has evolved over time in Australia, with reference to prior research in the area.

The next section details the research design and commentary on the survey questionnaire, and provides information on survey respondents.

## **4.2 Survey Design, Administration and Response Rate**

The survey research was designed to ascertain information on Australian fund managers' property allocation strategies and decision-making processes. To do this, a semi-structured survey questionnaire was mailed to a target sample of 130 institutional fund managers and asset consultants within Australia. Previous institutional surveys (Newell, Stevenson & Rowland 1993; Rowland & Kish, 2000) on the subject, similar to the research topic, have generally targeted a sample size of 100 participants.

The survey has two versions. The fund manager version was targeted at superannuation funds, investment management funds, and property funds, and participants were required to answer 27 closed and open ended questions. The questionnaire was divided in two major sections aimed at collecting both qualitative and quantitative data about the institution's property asset allocation strategies and decision-making processes. The first section mainly focused on gathering fund investment information, their current property allocation level and target range, and how they invest in property assets. The second section sought information on how these fund managers evaluated property investment risk/return profile, and the factors that influence their stock selection and property allocation decisions. In addition, the respondents were asked to describe their property asset allocation decision-making processes using flowcharts/diagrams. The asset consultants' version had the same questions, but related to their wholesale clients' property asset allocation strategies and decisions. See Appendix 18 and Appendix 19 for copies of the final version of the fund manager and asset consultant survey questionnaires.

The project received clearance from the RMIT Human Research Ethics Committee (HREC) in January 2011. After university ethics approval, both versions of the survey questionnaire were tested during the pilot study phase (February 2011-March 2011). The pilot questionnaire was sent to three fund managers, two asset consultants, and three property researchers, who were known to the author and the research supervisors. After receiving comments from the pilot study group and making amendments, the questionnaire was mailed to the target respondent group, which included superannuation funds (60), wholesale investment management funds (40), property funds (15) and asset consultants (15).

The respondent selection was based on purposive or judgemental sampling. The institutions surveyed were identified on the basis that they held or managed significant investments in real estate assets (both direct and indirect). The sample respondent list for superannuation funds was drawn from the Australian Prudential Regulation Authority's publication, 'Superannuation Fund-Level Profiles and Financial Performances: June 2010'. The Excel data file provides comprehensive information about individual superannuation fund investment levels, including their exposure to property assets by value and proportion of total funds under management. The list of wholesale investment management funds and property funds for the survey was identified from the Australian Trade Commission's publication, 'Investment Management Industry in Australia: June 2010'. The asset consultant firms surveyed were those listed as service providers for the targeted superannuation funds.

An initial list of 200 probable target respondent institutions was identified from these documents. The individuals targeted to complete the questionnaires included chief executive officers, chief investment officers, asset managers, portfolio managers, investment analysts, and investment consultants. After consulting with industry experts, a total of 130 respondents was shortlisted for the survey. The industry experts included two property researchers, a former fund manager, and superannuation industry executive. The research supervisors played an essential role in identifying potential respondents for the survey, and in industry liaison.

The survey data was collected between May and August 2011. All institutions were contacted by telephone before the survey questionnaire was mailed. Of the targeted 130 institutions, 125 agreed to participate in the research. Participation was voluntary. The questionnaire was only mailed to institutions that agreed to be part of the survey. Only 125 questionnaires were sent out. Table 4-1 details the response rate for the survey.

**Table 4-1: Survey Response Rate**

<b>Institution Type</b>	<b>Completed Response</b>	<b>Refusal</b>	<b>Non-response</b>
Superannuation Fund*	21	19	
Investment Management Fund	15	6	
Asset Consultant**	8	1	
Property Fund	7	2	
<b>Total Number of Respondent</b>	<b>51</b>	<b>28</b>	<b>46</b>
<b>Proportion of total response</b>	<b>41%</b>	<b>22%</b>	<b>37%</b>

\* Includes public sector funds (9), industry funds (7), corporate funds (3) and retail funds (2).

\*\*Includes response for two institutions that had recently merged but operate the business functions separately.

In total, 79 institutions responded to the survey, including 51 completed response and 28 refusals. The 51 completed responses included superannuation funds (21), wholesale investment management funds (15), property funds (7), and asset consultants (8). From the 28 institutions that did not agree to be part of the survey, 19 were superannuation funds that mainly outsourced their property asset allocation functions to asset consultants or external managers. Some funds were also in the process of merging with other superannuation funds. In most instances, those superannuation funds that outsourced their asset allocation functions and could not take part in the survey provided details of the asset consultants to complete the survey. The eight asset consultant firms that completed the survey provide asset consultancy advice to superannuation funds (mainly retail, industry, corporate and public sector funds), public sector insurers, and asset managers (property funds and investment management funds).

Overall, the completed response rate for the survey was 41%, refusals 22%, and non-response rate 37%. The list of survey respondents/compiler included chief executive officers (8), chief investment officers (18), asset/portfolio managers (14) and analysts/consultants (11). The response rate is comparable to previous Australian institutional surveys (Newell, Stevenson & Rowland 1993; Rowland & Kish, 2000) that recorded 41-43 (or 43-50%) useable responses.

All quantitative and multiple choice data was analysed using Microsoft Excel 'PivotTable Tools'. The graphs, tables and diagrams were produced using Microsoft Excel and Microsoft Word software. For confidentiality reasons, all information is reported in an aggregate format and no information on individual organisations is disclosed. The responses from the fund managers and asset consultants were merged and categorised in five key topics:

- i. **Section 4.3.1: Determining the Current Optimal Allocation to Property** – details the property allocation level of funds surveyed, fund manager property allocation history and target range, how these funds invest in property assets and analyse the asset risk/return profile, the number of property personnel, and how the fund managers and asset consultants determine the optimal view about property allocation.
- ii. **Section 4.3.2: Property Allocation Strategies** – details the fund managers and asset consultants use of strategic asset allocation (SAA), dynamic asset allocation (DAA), and tactical asset allocation (TAA) policies for the property allocation process. This section also provides information on how different asset allocation functions are performed by the institutions surveyed.
- iii. **Section 4.3.3: Fund Manager and Asset Consultant Decision-Making Frameworks** – provides detailed property asset allocation decision-making frameworks/models for superannuation funds, investment management funds, property funds, and asset consultants.
- iv. **Section 4.3.4: Factors Influencing Property Allocation Decisions** – lists the key quantitative and qualitative factors, market variables, industry benchmarks, and tools, that affect the fund manager and asset consultant property allocation decision-making processes.
- v. **Section 4.3.5: Optimising Future Property Allocation Level** – details respondents' thoughts on future property allocation trends and how the property asset allocation decision-making frameworks can be improved.

To avoid bias results, responses from property funds were excluded from some survey analysis. This is because when the analysis relates to asset allocation, property funds generally have 100% of their funds invested real estate assets.

### 4.3 Survey Results and Discussion

#### 4.3.1 Determining the Current Optimal Allocation to Property

##### 4.3.1.1 Property Allocation Level of Funds Surveyed

The funds under management of institutions surveyed (excluding asset consultants) were approximately A\$576 billion, distributed approximately 50% in superannuation funds, 39% in investment management funds, and 11% in property funds (PFs). The property exposure for these institutions was approximately A\$115 billion. The total property exposure, excluding property funds, was A\$53 billion. Table 4-2 provide details of the Australian fund managers' property asset allocation level in relation to their funds under management.

**Table 4-2: Property Allocation Level for Funds Surveyed**

Property Type (% of FUM*)	Superannuation Funds (21)	Investment Management Funds (15)	Average**
<b>Direct Property</b>	<b>4%</b>	<b>2%</b>	<b>3%</b>
Indirect Property			
REITs	3%	4%	4%
Unlisted Property Fund	5%	1%	3%
<b>Total indirect property</b>	<b>8%</b>	<b>5%</b>	<b>7%</b>
CMBS	0%	1%	0%
<b>Total Property Exposure</b>	<b>12%</b>	<b>8%</b>	<b>10%</b>

\*FUM refers to funds under management.

\*\*Total valid sample size was 36 (excluding property funds and asset consultants).

Property formed 12% of the superannuation funds' portfolios, and 8% of the investment management funds' portfolios. The average property asset allocation level for superannuation funds and investment management funds surveyed was 10% (3% direct and 7% indirect). On average, superannuation fund property composition was 9% direct/ unlisted property and 3% REITs. The investment management funds had a higher allocation to REITs (4%), while direct/unlisted property allocation was 3%. The results are consistent with earlier studies (Armytage 2002; Newell, Stevenson & Rowland 1993; Newell 2008; Rowland 2010) and show that in recent decades the allocation to property has remained unchanged (average of 10% or lower) for Australian managed funds.

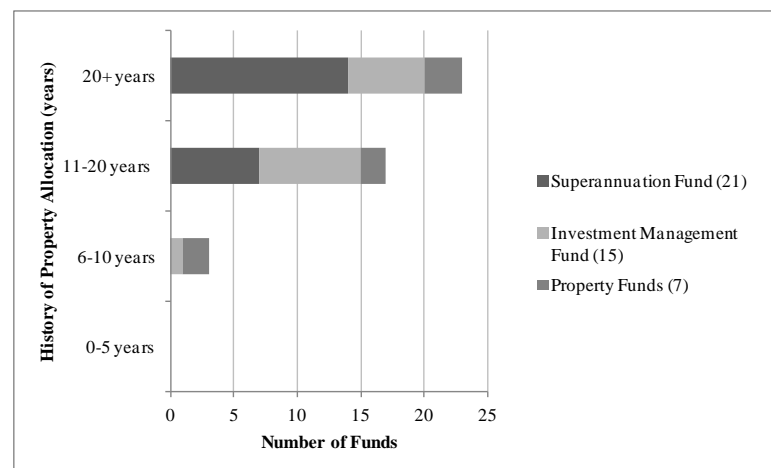
The level of property in superannuation funds in Australia is one of the highest by pension funds in the major developed countries. Newell (2008, p. 670) found that pension fund property allocations in other countries were Netherlands (10%), Germany (7%), US (6%), UK (5%), France (4%) and Japan (2%). In most countries, pension fund allocation to property is mostly through direct property, with only Netherlands (5%) and US (1%) having significant exposure to listed property assets.

The size of the funds under management has a direct impact on the property allocation decisions of fund managers. Table 4-2 shows those superannuation funds which tend to have greater funds under management (50% of total funds of those surveyed) have a higher allocation to property (12%), when compared to investment management funds holding 39% of the funds under management and having an allocation of 8%.

#### 4.3.1.2 Fund Manager Property Allocation History

The results indicate that the institutions surveyed have a tradition of investing in property assets. Figure 4-2 exhibits the institution's property investment history.

**Figure 4-2: Fund Manager's Property Allocation History**



A majority of funds surveyed have invested in property assets for 20+ years. On average the funds surveyed have held investments in property for 11-20 years. Surprisingly, none of the institutions surveyed have held investments in property for less than five years. With the exception of property funds, superannuation funds are the other major long-term investors in the Australian property market.

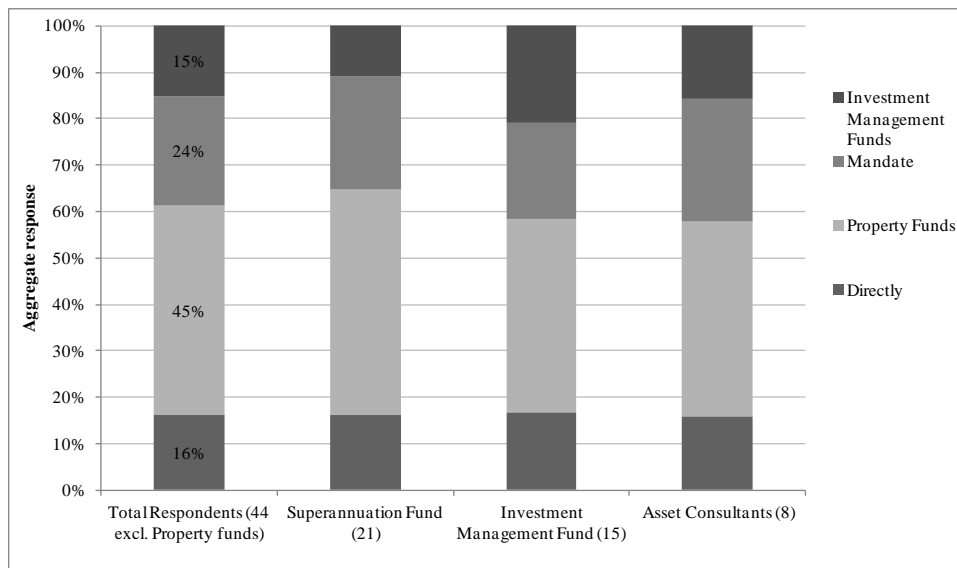
#### 4.3.1.3 How Fund Managers Invest in Property Assets?

In terms of the investment strategy, only 16% of the institutions surveyed invested in property assets directly, with the majority investing via property fund vehicles (45%), mandate (24%), and investment management funds (15%). Small fund managers had minimal involvement in property investment, with exposure mainly via passive REIT trusts within the fund's indexed equity products and mandates.

Figure 4-3 illustrates how Australian fund managers invest in property assets. Respondent comments indicate that there is disparity in how institutions surveyed classify different property assets. Approximately 30% of the fund managers surveyed now categorise direct property within the unlisted band, together with infrastructure assets. REITs are increasingly banded within the equities asset class. Other respondents argued that the mindset needs to change, stating that fund managers/investors need to understand the function and dynamics of real estate and to keep REITs out of the general equities classification.



**Figure 4-3: Fund Managers' Property Allocation Medium**



#### 4.3.1.4 Property Personnel

The level of fund exposure to property assets, and the related investment strategies, largely depends on the number of property professionals employed. The average number of property professionals employed to make property allocation decisions for the institutions surveyed is three (excluding PFs). This figure generally includes one senior manager and two analysts, each contributing 50% or more of their time. Funds that do not employ any property professionals outsourced their property allocation and investment managed functions to asset consultants, or via other partnerships. Table 4-3 provides a cross-tabulation of results for the number of property professionals employed by fund managers versus their level of property exposure and related property investment strategy.

**Table 4-3: Cross Tabulation: Number of Property Professionals Employed vs Property Exposure**

Property Professional Employed:	0	1 to 3	3+
Superannuation Fund (21)	11	7	3
Investment Management Fund (15)	1	12	2
Percentage of funds surveyed (36 excl. PFs)	33%	53%	14%
<b>Property Exposure \$ Billion</b>			
Average	0.4	1.6	3.2
Lowest	0.1	0.2	0.2
Highest	1.1	4.0	8.0
<b>Property Investment Medium:</b>			
Direct Property	0%	21%	43%
Indirect/ Securitised Property	100%	79%	57%

Of the 36 managed funds surveyed (excluding PFs), 33% do not employ any property staff, 53% employed 1-3, and only 14% had more than three property personnel. A superannuation fund in-house team generally consists of two property professionals. From the total 21 superannuation funds surveyed, 11 did not employ any property professional staff to assist with the fund's property asset allocation decisions or property investment

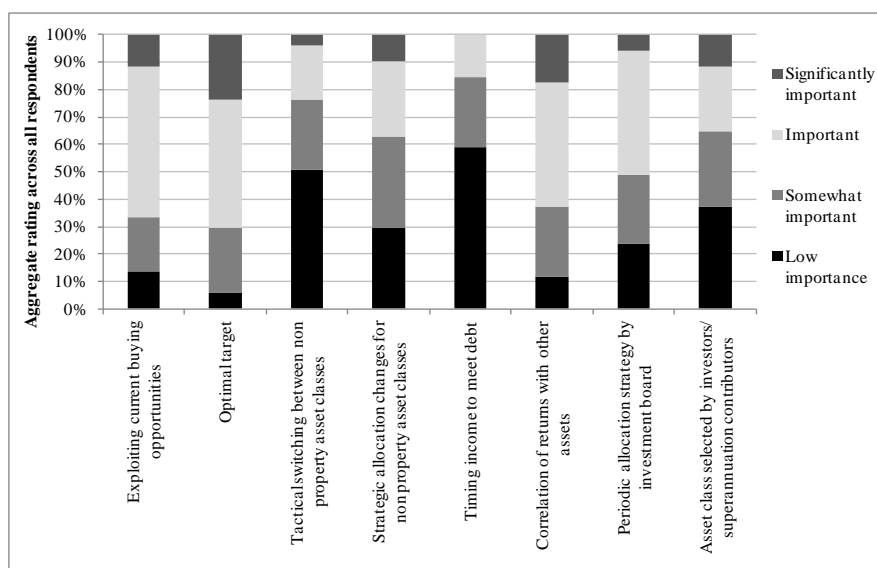
management functions. These funds generally outsourced the functions to asset consultants. Investment management funds employ an average of three individuals with property background. Fourteen investment management funds surveyed have a team of property experts that undertakes property allocation and investment management functions for the institution. The only investment management fund that did not employ any property staff outsourced its asset allocation and property investment management functions via partnership.

The funds that did not employ any property professionals had a nominal average property investment of A\$0.4 billion. In contrast, funds that employed staff with property background generally had property investments in the range of A\$1.6-3.2 billion (average). The property team for these institutions generally includes two portfolio managers, senior analyst (unlisted markets) and senior analyst in listed A-REITs. Funds with fewer than three property staff were likely to invest predominantly in the indirect or securitised property sector. Funds with a higher number of property personnel (3+) were likely to invest actively in both direct and indirect property investment sectors. The cross-tabulation results indicate that the number of property personnel employed by an institution has a direct impact or influence on a fund's level of property asset allocation, and its property investment strategy. The results indicate that funds with greater levels of property expertise are likely to invest more actively in both direct and securitised property markets. Funds with no property expertise were limited in their property exposure, particularly direct property investments.

#### 4.3.1.5 What Influences Property Investment Decision?

The institutions surveyed were also asked to rank the importance of a set of key factors that are likely to influence how much property their institution holds. The results are illustrated in Figure 4-4.

**Figure 4-4: Factors Influencing Property Allocation Target**



For superannuation funds, all factors were ranked as important except 'tactical switching between asset classes' and 'timing of income to meet debt'. The response was similar from investment management funds which ranked almost all factors within the 'somewhat important' to 'important' band, except 'timing of income to meet debt' which was ranked as low importance. Property funds have identified as 'not important' factors, 'correlation

of returns with other assets’ and ‘periodic allocation strategy by investment board’. This was expected given that property funds are 100% weighted in property assets. Ranking of other factors by property funds was similar to other institutions surveyed. Asset consultant firms ranked all factors within the ‘somewhat important’ to ‘important’ band. Refer to Appendix 14 for information on average factor importance by respondent types.

Overall, the dominant factor likely to influence how much property an institution holds is the exploitation of current buying opportunities. Interestingly, tactical switching between asset classes was ranked as a low importance factor. Rowland and Kish (2000), in an earlier study of Australian property fund managers, identified tactical switching between asset classes as the most important factor likely to influence the level of property weight in a portfolio. The current results reflect the changes in property asset allocation tactics for Australian fund managers amid a competitive and uncertain market. Another factor with low importance ranking was ‘timing of income to meet debt’. Respondent comments indicate that post the 2007 GFC, institutions have strengthened their debt structures (lower gearing levels), with the focus now more on portfolio stability, asset quality, and liquidity.

#### 4.3.1.6 How Fund Manager’s Evaluate Property Risk/Return Profile?

Institutions surveyed were asked to rank a series of risk and return evaluation measures that were important to their optimal property asset allocation decision. Figure 4-5 provides the results from the survey for property return evaluation measures most commonly used by Australian fund managers and asset consultants.

**Figure 4-5: Important Property Return Evaluation Measures/Hurdles**

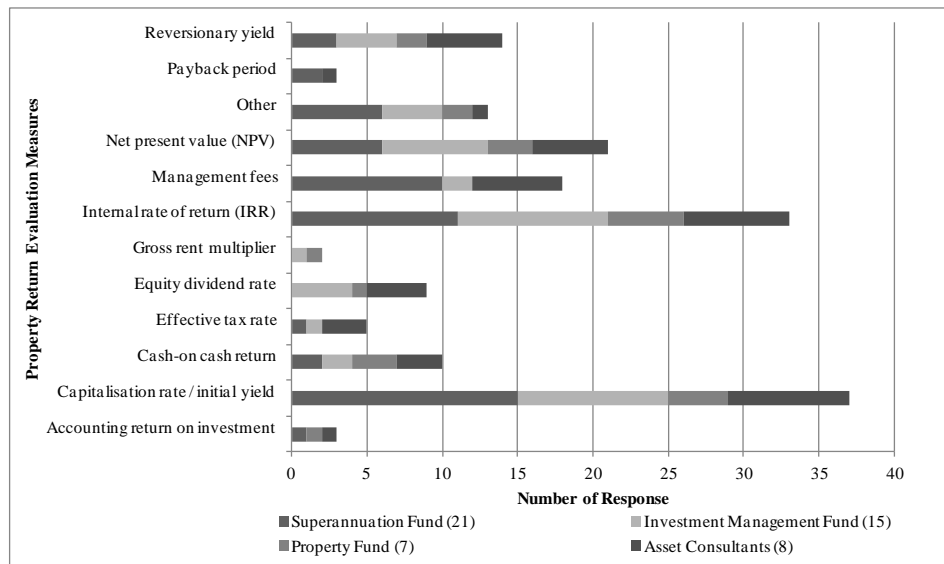


Figure 4-5 shows capitalisation rate (21%), followed by IRR (20%) and net present value (NPV) 13%, were the most popular property return evaluation measures. The least used techniques were gross rent multiplier (2%), accounting rate of return (2%), and payback period (1%). The top three ranked return evaluation measures for investment management funds and property funds were capitalisation rate, IRR, and NPV. The results were highly correlated for superannuation funds and asset consultants, with both institution types also ranking management fees as one of the top three return elevation measures. Superannuation funds generally outsource their property allocation and investment management functions to asset consultants or via partnership, which in

part explains their higher ranking of management fees. Respondent comments indicate that institutions refer to peer group performance and equity and bond market returns, when comparing property performance. See Appendix 15 for information on important property return evaluation measures by priority order for each respondent type.

The higher weighting to capitalisation rate and IRR reflects the importance placed on valuation methods by Australian fund managers. Respondent comments indicate that the change in investment conditions due to the recent GFC warrants additional valuation tools, or the need to develop better proprietary or in-house valuation and forecasting models.

Overall, the results are consistent with earlier Australian studies (Boyd, MacGillivray & Schwartz 1995; Newell, Stevenson & Rowland 1993; Rowland & Kish 2000) that mainly ranked IRR and capitalisation rate as the most important return evaluation measures. However, the variables driving Australian fund managers' property investment processes differ slightly from those employed overseas. A similar study conducted in the US by Farragher and Savage (2008) found that IRR and cash-on-cash rate of return were the most important return measures. However, cash-on-cash return evaluation measure was ranked fairly low by the Australian fund managers.

The use of risk assessment methods varied across different property sectors. Figure 4-6 illustrates the key risk assessment methods predominantly used by the institutions surveyed for property allocation decisions.

**Figure 4-6: Important Property Risk Assessment Evaluation Techniques**

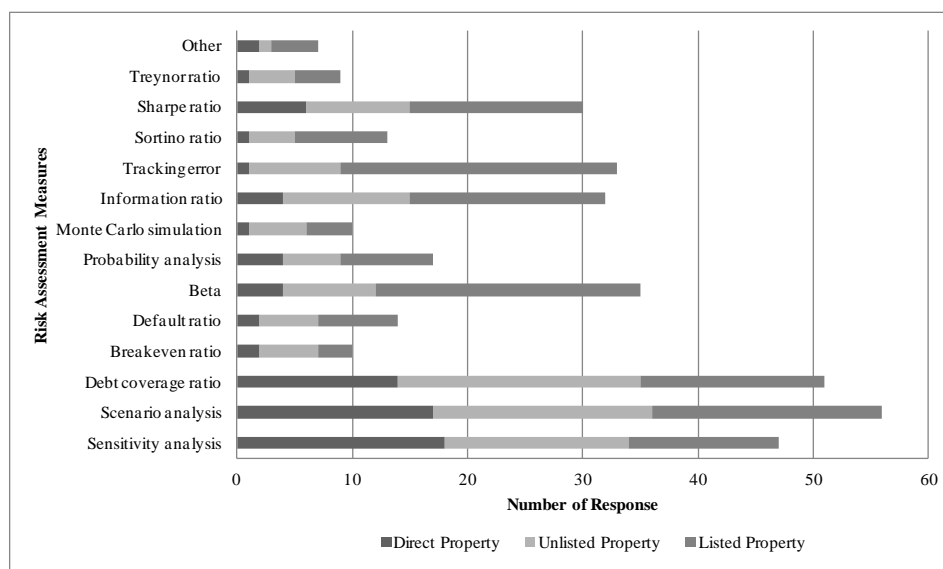


Figure 4-6 indicates that for direct property, sensitivity analysis (23%) is the dominant risk assessment method. Scenario analysis (16%) was the most used risk assessment method for unlisted property investments. The least popular risk assessment method for direct and unlisted property was the Monte Carlo simulation approach. Beta (14%) and tracking error (14%) were the most important risk assessment methods for listed property. The least popular risk assessment method for listed property was the breakeven ratio.

The top risk assessment methods for superannuation funds were debt coverage ratio (direct and unlisted property) and tracking error (listed property). Investment management funds and property funds generally use scenario analysis and sensitivity analysis for direct and unlisted property, and beta and debt coverage ratio for listed property. The risk assessment methods predominantly used by asset consultant firms for their wholesale clients' property investment evaluation include sensitivity analysis (direct and unlisted property) and beta/tracking error (listed property).

Overall, scenario analysis (17%), followed by debt coverage ratio (15%) and sensitivity analysis (15%), are the prominent risk assessment methods for Australian fund managers. The use of information ratio and Sharpe ratio risk analysis method was evident across all sectors (see Appendix 16). Respondents also identified interest cover ratio and standard deviation as other important risk assessment techniques for property. There is limited use of techniques such as the Treynor measure, Monte Carlo simulation, and breakeven ratio. The results are generally consistent with earlier Australian studies (Boyd, MacGillivray & Schwartz 1995; Newell, Stevenson & Rowland 1993; Rowland & Kish 2000) and overseas research (De Wit 1996; Farragher and Savage 2008), which also identified sensitivity analysis, debt coverage ratio, and scenario analysis as the most used quantitative risk assessment techniques for property asset allocation decisions. Recent studies by Parker (2011; 2013) also found that the use of quantitative analysis tools, such as Monte Carlo simulation, is limited in property fund asset allocation decisions.

#### 4.3.1.7 Property Allocation Target Range

Table 4-4 provides a breakdown of the fund managers' current property asset allocation target range. The target property allocation range represents the combined listed and unlisted property components.

**Table 4-4: Property Allocation Range for Funds Surveyed**

<b>Fund Type</b>	<b>0-5%</b>	<b>6-10%</b>	<b>11-15%</b>	<b>16-20%</b>
Superannuation Fund	1	14	6	0
Investment Management Fund	4	7	3	1
<b>Total (36 excl. PFs)</b>	<b>14%</b>	<b>58%</b>	<b>25%</b>	<b>3%</b>

The survey results indicate that Australian fund manager's property asset allocation model generally fell within the 6-10% range. The maximum property allocation level for the superannuation funds was 15%, and the minimum 4%. The maximum property allocation level for the investment management funds was 17%, and the minimum 1%. From the total 36 superannuation funds and investment management funds surveyed, only ten (or 28%) have property asset allocation targets above 10%.

Of the total number of institutions surveyed, 28% expect their property allocation target to move within the 11-15% range within the next five years. This expected higher allocation to property reflects funds seeking greater portfolio stability post the 2007 GFC. The results are consistent with a PCA (2009) report which forecasts allocation to property to increase to 10-15% for some Australian managed funds.

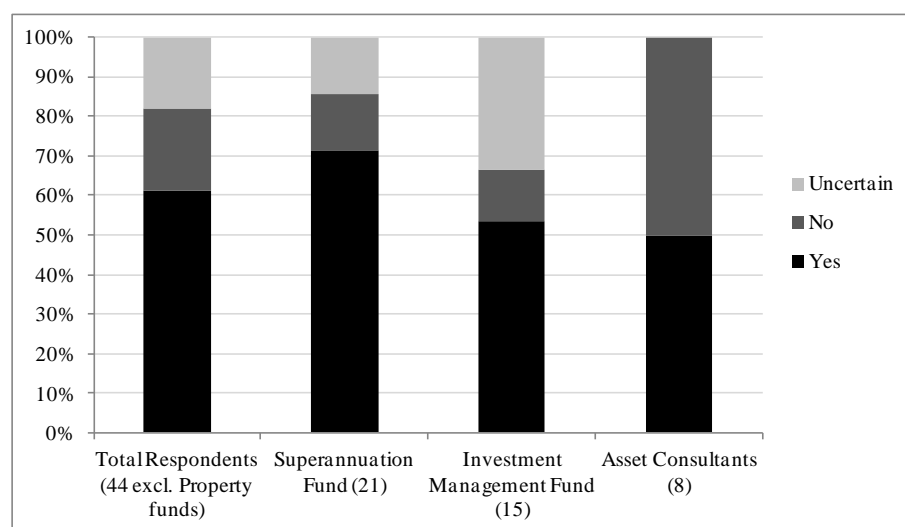
Funds Managers were also asked if there were written rules that restrict what percentage of their investment portfolio can be allocated to property assets. Of the 21 superannuation funds surveyed, 13 (or 62%) have specified limits to their property allocation levels. Similarly, 67% of the investment management funds surveyed, and 63% of the asset consultants surveyed, are restricted by their (or their clients') investment policy statements when determining optimal allocation to property assets. The responses indicate that for some funds there may not be restrictions placed specifically on property assets, but unlisted investments generally. The written rules governing target allocation to property assets can be amended by the investment committee.

The asset allocation team of the managed funds surveyed generally consists of 4-12 committee members, with 1-2 property staff represented. Other representations on the asset allocation committee were from the equities and bonds team. Some fund managers and asset consultants surveyed were uneasy with the low level of property personnel presence within the fund asset allocation team. The key concern was that their lack of understanding of local and overseas property products or markets indirectly limited the fund's exposure to property assets.

#### 4.3.1.8 Is Current Allocation to Property Optimal?

Figure 4-7 illustrates respondents' views on whether the current level of allocation to property is optimal for their funds.

**Figure 4-7: Respondents' Views on whether Current Allocation Level to Property is Optimal**



A majority of the institutions surveyed (61%) were comfortable with their current level of property asset allocation. However, approximately 39% of respondents believed that the current allocation level to property was not sufficient, or they were uncertain. Interestingly, approximately 50% of the asset consultants surveyed indicated that the current level of allocation to property for their clients was not optimal.

Respondents felt that the allocation level to property for their funds was optimal based on the institution's asset liability modelling, portfolio construction process, risk/return profile, advice received from asset consultants, and property's relative attractiveness compared to alternative assets. Some respondents stated that the below optimal position in property was even due to the rally in the value of alternative asset classes, and higher portfolio weighting to high risk, opportunistic investments. In most cases, the institutions have pre-agreed investment

constraints, and thus manage their property optimisation process within those constraints. A large 64% of the institutions surveyed (excluding PFs) believed that their optimal property allocation decision is constrained. Most fund managers indicated that a maximum limit is placed on the holdings in property due to liquidity and modelling limitations. Respondent comments highlight liquidity as the predominant constraint to optimal property allocation decisions. Although some fund managers felt that their allocation to property was less than optimal, they were not willing to take additional liquidity risk due to the fund's daily redemption request.

Apart from liquidity, other constraints on optimal property allocation include management fees, limitations on modelling, limits on listed/unlisted split, difficulty in obtaining stock, declining market conditions, funds available to invest, entry restrictions, and time and staff. Institutions with no property expertise were more likely to view their exposure to property as optimal given their limited ability to undertake detailed quantitative analysis. The funds' level of allocation to property assets was also constrained by their investment strategy or objectives, and the need to meet benchmark performance or a certain 'hurdle rate'. For property funds, the sectoral allocation requirement was the key constraint. Some property fund managers indicated that their fund was only allowed to invest in large scale commercial real estate and certain types of retail property in order to meet clients' long-term return preferences.

An interesting factor was that some fund managers surveyed felt that their institution's allocation level to property was optimal based on the assumption that it equated to a neutral market allocation of 10%. This conforms to research conducted in the UK (French 2001; Gallimore & Gray 2002) which highlighted that institutions may determine future property allocation by initially anchoring on their current allocation or information, based on the views of others in the market. As direct property is a long-term investment with large capital outlay, including property within a portfolio assists with diversification and it will be expensive for organisations to change their investment strategies.

#### **4.3.1.9 Determining Optimal Property Allocation**

The institutions surveyed determine their optimal allocation view for property assets based on the fund's asset allocation strategy, external advice, and a series of quantitative analyses and qualitative overlays. Generally, funds would have a capital markets or investment research team that provided analysis and ran optimiser models (both historic and forecast integrated such as efficient frontier) for each investment asset class. The fund's asset allocation committee would review both in-house and external recommendations for determining the institution's optimal allocation to property assets.

Table 4-5 provides a summary of the key determining factors that guide Australian fund managers' property asset allocation decisions. For most superannuation funds surveyed, external advice and asset liability modelling were the key determinants of optimal allocation to property assets. Asset consultants' optimal allocation view was customised to their clients' investment objectives. Like superannuation funds, the investment management funds surveyed determined their optimal property allocation view based on a series of quantitative analyses and qualitative overlays. However, their analysis is predominantly undertaken in-house. External advice (mainly from asset consultants) was limited to setting up funds' SAA targets on 3-5 year intervals. Asset consultants

stated that the optimal property allocation view varies from client to client, depending on the investment objectives.

**Table 4-5: Key Determinant Factors Influencing Funds' Optimal Allocation View for Property**

Key Determinate	Drivers/ Inputs
Asset Allocation Committee meeting	Investment choices by plan members
Asset consultant advice	Fund member profile (such as age)
Investment policy statement	Funds available to invest
Product disclosure statement/ Prospectus	Client investment mandates/ objectives or expectations/ constraints
Fund investment strategy	Investment philosophy (active, risk managing)
Quantitative and qualitative analysis	Risk tolerance
	Risk/return forecast
	In-house view on asset classes/ opportunities
	Characteristics of property (assessment of liquidity)
	Liability matching (superannuation funds)
	Economic trend
	Market view/peers
	Regulatory compliance – ASIC/Corporation Act

Institutions surveyed were asked to rank internal and external factors that were likely to influence their property allocation decisions, following the method used by Dhar and Goetzmann (2005). Table 4-6 illustrates the results by institutions surveyed by average rank. The ranking is organised by internal/external factor type rather than by respondent groups.

**Table 4-6: Internal and External Factors Influencing Property Asset Allocation Decisions: Average Rank by Institutions Surveyed**

Factors Influencing Property Asset Allocation Decision	Overall (51)	Superannuation Fund (21)	Investment Management Fund (15)	Property Fund (7)	Asset Consultant (8)
<b>Internal factors:</b>					
Advice from internal investment team	5	5	5	4	5
Relative external asset manager skills	4	5	3	2	5
General skills/intuition of decision-maker	4	4	4	4	4
Intended investment period	4	4	4	4	4
<b>External factors:</b>					
Recent trends in the property market	4	4	4	4	4
External/independent advice	4	4	3	3	4
Regulatory/legislative environment	4	4	3	3	4
Economic environment/outlook	4	4	4	4	4
Financial market conditions	4	4	4	4	4
Market demand and supply factors	4	4	4	4	4
Actions taken by industry peers	3	3	3	2	3
Market sentiment	3	3	3	2	3

Note: Degree is median score on a scale of 1 to 5 (1 not important; 2 low importance; 3 somewhat important; 4 important; 5 significantly important).



Generally, responses on a fund specific level were parallel, with *advice from internal investment team* rated as the most important internal factor likely to influence the property asset allocation decision-making process. The *general skills/intuition* of the decision-maker was also ranked as important. The key external factors likely to influence a fund's property asset allocation decision were *market demand and supply*, *economic environment and outlook* (inflation, interest rate, and exchange rate), *financial market conditions*, and *recent trends in the property market*.

Table 4-6 shows the correlation of results was high between the superannuation funds and asset consultants (1.00), with both also ranking *relative external asset manager skills* as significantly important. The factors rated as less significant or somewhat important for Australian fund manager's property asset allocation decision-making process included *actions taken by industry peers*, and *market sentiment*. The correlation matrix for investment management funds and property funds surveyed was also high (0.84), see Appendix 17. This is expected given that both investment management funds and property funds hold property assets on behalf of institutional clients as described earlier in Figure 4-1. Respondent comments indicated that while actions taken by industry peers may be considered by fund managers, it does not drive their own property asset allocation process.

Overall, the results were comparable to similar studies conducted overseas (Dhar & Goetzmann 2005; Gallimore & Gray 2002; Worzala & Bajtelsmit 1997) that highlighted relative skills of external manager, intuition, statistical estimates of risk and return, and long-term historical performance, as the key factors influencing institutional investors' property allocation decisions. However, these studies also placed greater importance on peer comparison and market sentiment.

The property asset allocation strategies and decision-making frameworks are discussed next.

## 4.3.2 Property Allocation Strategies

### 4.3.2.1 Fund Manager's Asset Allocation Strategies for Property

The fund managers and asset consultants surveyed were asked to identify and describe their institution's property asset allocation strategies. The response indicates that Australian managed funds' property asset allocation models generally run on a 7-10 years (strategic allocation), and on a 1-3 years (active allocation) time horizon. The decision-making process for these long and short-term strategies is the same, but the timing within which decisions are made or reviewed differs (annually, quarterly or monthly/weekly). Asset allocation strategies for funds are driven by member preference and profile. Table 4-7 provides details of the asset allocation strategies adopted by Australian fund managers and asset consultants for property assets.

**Table 4-7: Fund Managers' Property Asset Allocation Strategies**

<b>Institutions</b>	<b>SAA</b>	<b>DAA</b>	<b>TAA</b>
Superannuation Fund (21)	54%	26%	20%
Investment Management Fund (15)	63%	17%	21%
Property Fund (7)	70%	0%	30%
Asset Consultants (8)	47%	35%	18%
<b>Total Respondents (51)</b>	<b>58%</b>	20%	22%

Table 4-7 illustrates that SAA is the dominant asset allocation strategy used by the fund managers for property; this reflects the nature of the property asset class (illiquid and long-term investments). The use of active strategies, although not as prominent as SAA, is also common among Australian fund managers for property asset allocation decisions.

Fund managers described SAA as the institutions' longer term (3-10+ years) 'through the cycle' optimal position with no regard to current or future over or under valuations. Consistent with theory, the Australian fund manager's strategic property allocation policy is not designed to beat the market. The main objective of SAA policy for funds surveyed is to meet the long-term investment objectives and risk/return requirements of fund investors. The consensus was that the strategic allocation to property is 10%, with a permissible range of +/- 5%. The response indicates that this range is unlikely to vary greatly for funds surveyed in the near future. Some respondents argue that SAA should not be a 'buy and hold' or 'set and forget' strategy: it needs to be reviewed continuously to address significant changes in marketplace.

TAA was described as short-term, opportunistic policy moves, linked to the fund's annual plan review. According to the respondents, the main objective of TAA policy is to take advantage of inefficiencies in the market. With TAA, fund managers attempt to forecast the property cycle more accurately to increase or decrease their asset weighting in advance of market pricing signals. Due to its active investment approach, respondents suggested that in practice TAA is only relevant to listed property. While the market conditions may provide opportunities for investments in direct property, these may be limited. TAA committee meetings are normally convened monthly, or on a more frequent basis (weekly) in some funds. TAA is generally an investment committee decision although final decision rests with the board. The use of TAA policy is limited among Australian fund managers and asset consultants. In total, 15 of the 51 institutions surveyed do not use TAA as part of their property asset allocation decision-making process.

DAA is a more common active property asset allocation strategy among Australian fund managers, with the exception of property funds, where only 18% (9) institutions surveyed do not use DAA. Fund managers described DAA as a medium term 'tilt', to or from their fund's strategic policy, set to defend against or exploit market extremes. According to the respondents, DAA is important to get the timing, magnitude and directions right. DAA policy is price driven and involves judgement of short to medium term (1-3+ years) outlook. Fund managers set DAA strategies with consideration of current valuation, or the likelihood of reversion towards fair value in future, and other factors, such as asset performance outlook, market sentiment, structural issues, and cash flows, versus opportunistic change in allocation level. Other factors considered include costs, taxes and market conditions.

Funds surveyed consider DAA tilts during quarterly or bimonthly investment committee meetings. From the asset consultant viewpoint, the primary focus of managing any medium term asset allocation strategy should be the management of risk. Asset consultants further stated that fund managers will need to consider how the new investment opportunities will perform in current and emerging conditions, and whether such strategies are implementable given the cost and other constraints.

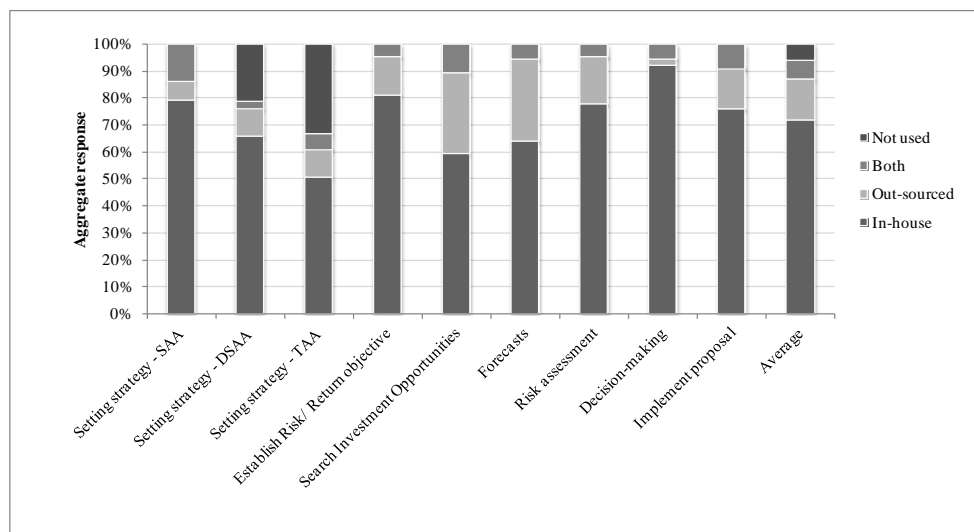
Some fund managers and asset consultants have stated that due to the illiquid nature of property, active management strategies such as DAA and TAA are inefficient sources for adding value and, therefore, should not be used for property asset allocation decisions. However, other respondent comments indicate that shorter term strategies (DAA, TAA), although not as prominent as SAA, are now viewed as more effective by fund managers. In particular, DAA structure has become more prominent for several funds surveyed due to its ability to react to the current market environment more effectively. Respondent comments indicate that post the 2007 GFC, investors are disbelieving of long-term data and, therefore, the industry is more tactical than in the past. It would appear that those organisations that employ a higher number of property professionals are more open to applying DAA strategies. Parker (2013) in a recent survey of nine leading unlisted property fund managers in Australia also found that tactical approaches received a low score in terms of property investment decision-making process. This is an area that requires further investigation.

The survey also identified that property allocation strategy can be a static process for some fund managers. Some fund managers stated that their exposure to property is significantly small in relation to the size of their total funds under management, and that given the small amount of property holding, the process of property allocation decision was made many years ago and is not something that prompts substantial resources or time being allocated to it thereafter.

#### 4.3.2.2 How Fund Managers Conduct the Property Allocation Process?

The asset allocation process includes setting strategy, establishing risk/return objectives, searching for investment opportunities, forecasts, risk assessment, decision-making and implementing the proposal. The survey investigated how the institutions undertook these processes in relation to property assets (that is, internally or by outsourcing). Figure 4-8 details the Australian superannuation funds and investment management funds property asset allocation process and how institutions undertook those functions.

**Figure 4-8: Asset Allocation Functions for Funds Surveyed**



The findings indicate that some funds do not adopt active asset allocation policies for property. Setting DAA and TAA policies were two functions that some fund managers did not use as part of their property asset allocation

decision-making process. The results also illustrate that while a majority of the fund managers' property asset allocation processes are carried in-house, identifying investment opportunities and running risk/return and market forecasts are two tasks most likely to be out-sourced. The funds that do implement active management strategies normally outsource the functions to asset consultants.

Of the 43 managed funds surveyed, approximately 79% carry out their property asset allocation functions in-house. Table 4-8 provides a more detailed analysis of how all fund managers (including property funds) carry out their property asset allocation functions. A significant number of superannuation funds surveyed (63%) carry out the asset allocation function in-house. However, the use of external managers and advisers is prominent for superannuation funds in all functions and processes (from setting the asset allocation strategy to implementing the proposal). Approximately 24% of the 21 superannuation funds surveyed outsourced their property allocation functions, and 8% use both internal and external managers. The functions likely to be outsourced by superannuation funds include 'searching for investment opportunity' and 'undertaking forecasts'. From the 21 superannuation funds surveyed, 10% do not use DAA strategy. In addition, TAA strategy is not part of the asset allocation process for 33% superannuation funds surveyed.

The level of influence from outside managers or asset consultants is limited in investment management funds' property allocation decisions. Only 7% of the investment management funds outsourced their property allocation function. Approximately 14% of the investment management funds surveyed do seek advice in setting the fund SAA strategy. Other asset allocation functions most likely to be outsourced by the investment management funds are 'searching for investment opportunity' and 'undertaking forecasts'. Similar to superannuation funds, 33% of the investment management funds do not use the DAA and TAA asset allocation policies.

In contrast to superannuation funds and investment management funds, a significant number of the property fund managers surveyed (94%) conducted the property allocation functions in-house. The only time that property fund managers sought external advice was when setting their SAA policy. Implementing proposals (stock selection and investments) and 'decision-making' functions are exclusively carried in-house by property fund managers. Some 7% of investment management funds, and 24% of superannuation funds, seek external advice during the stock selection and investment phase. In addition, only a limited number of investment management funds (7%) and superannuation funds (10%) do seek external advice for the 'decision-making' functions.

Of the total number of 51 institutions surveyed, only 15 (or 29%) outsourced their asset allocation models, with 11 being superannuation funds and four being investment management funds. Approximately 39% of the superannuation funds surveyed sought external advice in 'establishing risk/return objectives', while this function was exclusively conducted in-house by investment management funds and property funds. A significant majority (92%) of the institutions that outsource their property allocation and investment management processes do not provide complete discretion to outside managers or consultants.

**Table 4-8: Asset Allocation Functions for Funds Surveyed**

	Setting strategy – SAA	Setting strategy – DAA	Setting strategy – TAA	Establish Risk/ Return Objective	Search Investment Opportunities	Forecasts	Risk assessment	Decision -Making	Implement proposal	Average
<b>Superannuation Fund (21)</b>										
In-house	71%	71%	48%	62%	45%	48%	62%	90%	71%	<b>63%</b>
Outsourced	14%	14%	14%	29%	40%	48%	29%	5%	24%	<b>24%</b>
Both	15%	5%	5%	10%	15%	5%	10%	5%	5%	<b>8%</b>
Not used	0%	10%	33%	0%	0%	0%	0%	0%	0%	<b>5%</b>
<b>Investment Management Fund (15)</b>										
In-house	87%	60%	53%	100%	73%	80%	93%	93%	80%	<b>80%</b>
Outsourced	0%	7%	7%	0%	20%	13%	7%	0%	7%	<b>7%</b>
Both	14%	0%	7%	0%	7%	7%	0%	7%	13%	<b>6%</b>
Not used	0%	33%	33%	0%	0%	0%	0%	0%	0%	<b>7%</b>
<b>Property Fund (7)</b>										
In-house	86%	71%	86%	100%	100%	100%	100%	100%	100%	<b>94%</b>
Outsourced	14%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0%</b>
Both	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0%</b>
Not used	0%	29%	14%	0%	0%	0%	0%	0%	0%	<b>6%</b>

Figure 4-9 demonstrates the asset consultant influence on each stage of Australian fund managers' property allocation function.

**Figure 4-9: Asset Consultant Influence on Fund Manager Property Allocation Functions**

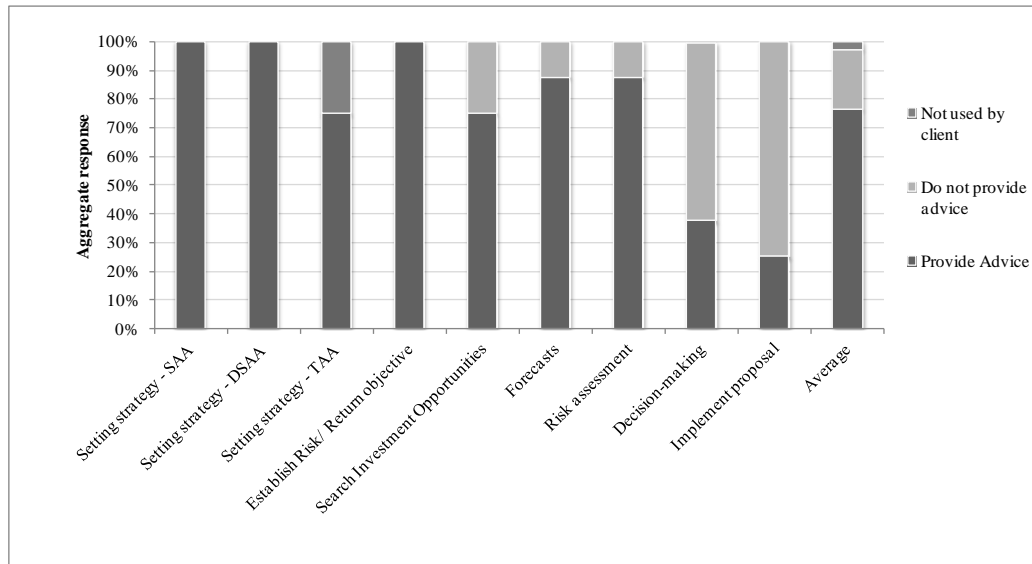


Figure 4-9 illustrates that asset consultants provide advice to Australian fund managers on approximately 80% of the asset allocation functions, including setting strategy, establishing risk/return objectives, searching for investment opportunities, forecasts and risk assessment. The influence of asset consultants is lower during the decision-making processes and when implementing proposals (stock selection and investment). Only 38% of the eight asset consultants were involved in the decision-making phase, and 25% provided stock selection advice. Approximately 25% of the asset consultants' clients do not use TAA strategy for property asset allocation. The next section details the Australian fund managers' property allocation decision-making frameworks.

### 4.3.3 Fund Manager and Asset Consultant Decision-Making Frameworks

The survey investigated the institutions' property asset allocation decision-making frameworks. The institutions surveyed were asked to describe their property asset allocation decision-making frameworks using commentary and flowcharts or diagrams. In addition, institutions surveyed were asked to explain their SAA, DAA and TAA process. Table 4-9 provides details of the level of response for institutions surveyed that offered commentary and frameworks/diagrams describing their property asset allocation decision-making process.

**Table 4-9: Property Allocation Decision-making Framework Response Rate**

Institutions Surveyed	Allocation Framework	SAA Process	DAA Process	TAA Process
Superannuation (21)	13	14	11	10
Investment Management Fund (15)	6	4	3	2
Property Fund (7)	4	3	2	2
Asset Consultant (8)	3	3	3	3
<b>Total Number of Respondents</b>	<b>26</b>	<b>24</b>	<b>19</b>	<b>17</b>
<b>Response Rate</b>	<b>51%</b>	<b>47%</b>	<b>37%</b>	<b>33%</b>

In total, 51% or 26 institutions surveyed provided commentary and flowcharts describing their property asset allocation decision-making framework. This included 13 superannuation funds, six investment management funds, four property funds, and three asset consultants. Approximately 50% of the institutions surveyed provided insight to their SAA process. However, responses describing the DAA and TAA processes were limited at 37% and 33% respectively. This can be attributed to the limited use of these policies for property asset allocation decisions (see Table 4-7).

#### **4.3.3.1 Superannuation Fund Decision-Making Framework**

Figure 4-10 outlines the typical Australian fund manager's property asset allocation framework, the key decision-makers, and the inputs involved in the process. This model represents nine large superannuation funds that employ 1-3+ property professionals, and have an aggregate of A\$1.6-3.2 billion of funds invested in property assets. The large superannuation funds invest in both direct property and listed property sectors (refer to Table 4-3). These funds have the capacity to manage direct property assets in-house, and also through mandates and partnerships.

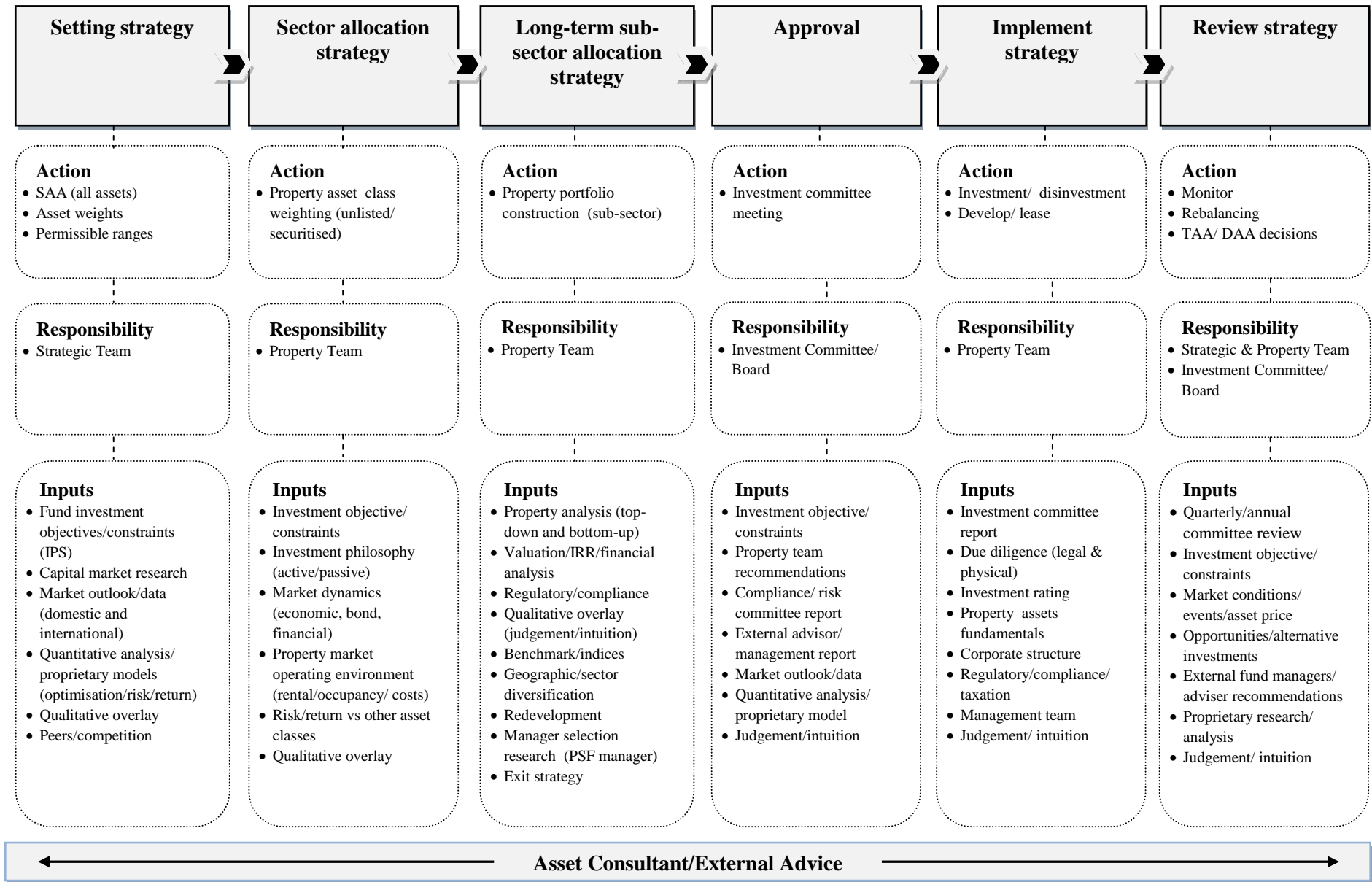
Australian fund managers' property allocation decisions are an interactive, sequential and continuous process, involving a range of decision-makers (both internal and external). The key stages in the allocation to property assets include strategy setting, establishing risk/return objectives, searching for investment opportunities, undertaking asset performance and market forecasts, risk assessment, decision-making, implementing the proposal, and reviewing investment strategies. The process of establishing investment policies is the function of the fund's strategic team, generally in consultation with the plan's external adviser and with consideration of internal capital markets team research. The key factors considered include, but are not limited to, liquidity, risk/return preference for fund members (Investment Policy Statement or IPS), and sector outlook for each investment asset class, including property.

The strategic team runs models and simulations to create performance outlooks for each asset class, and to determine whether there is a need to increase allocation to property and other assets, and by what range. Funds set broad asset class weights and permissible ranges during this process. Once the fund's long-term asset class weights are established, reports and recommendations are presented to the property team for consideration. The property team considers whether it is viable to pursue investments, and in which asset class and sub-sector. The property team's reports and recommendations are then presented at the investment committee meeting for approval. The fund investment committee and board make the final decision on whether or not to increase allocation to property assets. If the decision is to increase allocation then the property division is allocated the funding. The Property Team is then tasked to undertake the due diligence and make the investment decision.

The findings illustrate that the level of allocation to property assets depends on the investment objectives of the fund (whether it is set up to meet the investor's short or long-term investment goals). The fund's property asset class investment decision (whether to allocate to unlisted or listed property) depends on three key factors:

- i. Which option is cheaper (listed property or direct property)?
- ii. The outlook for the sector.
- iii. Whether the fund wants to buy and manage the investment directly or through external managers.

Figure 4-10 Property Asset Allocation Decision-Making Framework for Funds Surveyed





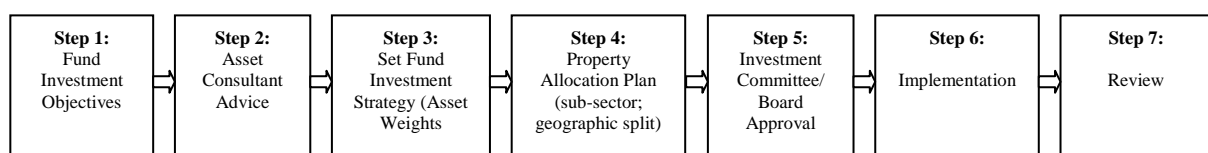
Fund managers surveyed also deal with the choice between property asset sub-classes (such as retail and office), and core and opportunistic investments. If funds elect to invest in property assets via mandates and partnership with external managers, then manager selection research is also undertaken. In most cases, selecting external investment managers is based on asset consultant advice.

Once the property asset allocation policies are implemented, asset performance and market conditions are continuously monitored. Each portfolio performance is tracked on a relative basis to a specific benchmark. The Property Team submits regular reports with changes to investment strategy at TAA/DAA meetings. The investment committee considers reports and recommendations from external advisers and managers during the review process. Any tactical changes or re-evaluation of asset weighting must be approved by the fund investment committee and board. Superannuation fund asset allocation strategies are reviewed annually. The review process also suggests tactical changes to the portfolio to reflect expected shorter term economic and property market factors. These recommendations also form the basis for any changes to the fund's long-term (Strategic) asset allocation policies. The board of directors has final approval rights for setting strategic policies and related changes, or rebalancing.

Some Australian fund managers and asset consultants are now adopting internal procedures where the investment committee needs to provide a report citing specific reasons why certain asset allocation recommendations were not approved. The 'rights of refusal' could have legal implications if fund performance is affected by poor asset allocation choices. Asset consultants provide quarterly SAA advice, including a view on the relative attractiveness of the property asset.

The research provides evidence that the property asset allocation process varies, depending on the type and size of the fund managers. Figure 4-11 displays the property asset allocation decision-making process for small superannuation funds. The model represents four superannuation funds that do not employ property professionals, and with investment in the range of A\$0.1-1.0 billion in property.

**Figure 4-11: Property Allocation Decision-Making Process: Small Superannuation Funds**



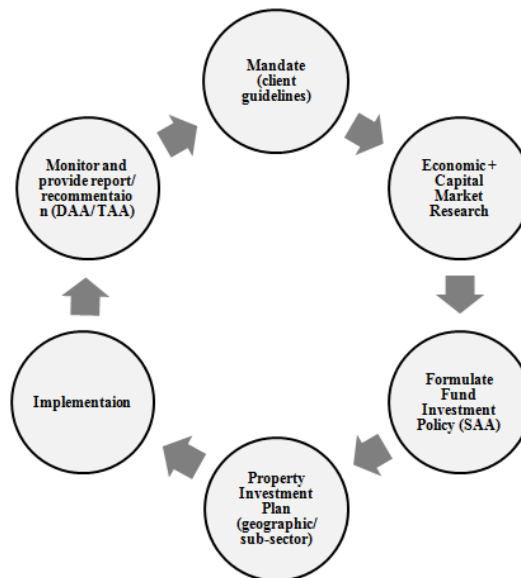
Generally, superannuation funds with limited exposure to property do not have property teams. The small funds do not have the capacity to invest and manage property assets directly and mainly hold interest in indirect property funds, such as REITs (see Table 4-3). Some funds do not even have a set asset allocation strategy for property assets. For these small funds, the investment committee's property allocation decisions are guided by external advice (mainly asset consultants). The level of asset consultant influence on each stage of the property asset allocation process was discussed in detail in the previous section (4.3.2.2). Similar to large superannuation funds, these funds establish the investment objectives based on member risk/return preference and profile. However, due to limitations of staff and resources, the fund managers need to engage external advisers to

formulate the investment policy and asset allocation plans, including that for property assets. The investments are managed mainly by external managers. It is common that asset consultants and external managers (property fund managers and other investment managers) attend the fund's Investment Committee meetings. The final decision on the property allocation component in multi-asset portfolios is determined by the Board. The review process is similar to the larger superannuation funds. However, any TAA/DAA policy shifts are implemented through external fund managers. Decision-making processes for small funds are mostly qualitative because of limits on the quality of data and the limited staff to undertake quantitative analysis.

#### 4.3.3.2 Investment Management Fund and Property Fund Decision-Making Framework

The asset allocation process for investment management funds and property funds differ slightly from that of superannuation funds. Figure 4-12 provides details of a typical investment management fund and property fund asset allocation framework. The model represents six investment management funds, and four property funds, that have dedicated property teams.

**Figure 4-12: Investment Management Fund and Property Fund Asset Allocation Framework**



The property allocation decisions and strategies for investment management funds and property funds are mainly driven by the client investment mandate and predominantly are based on proprietary analysis and models. Generally, the use of external advisers (such as asset consultants) is restricted to formulating IPS. The investment management fund's strategic policy is generally set at a 3-5 year timeframe. Like superannuation funds, the investment management fund's weighting for each class, including property, is based on the fund's IPS and internal/capital market assumptions. Investment management funds and property funds rely on asset consultant/external research advice to formulate the fund's asset allocation plan. Funds generally have a predetermined or permissible range, and allocations are confined to the set ranges around the benchmark. Liquidity again is the major determinant. Unlike superannuation funds, investment management funds ranked peer comparison or market competition as highly important for their property asset allocation decisions. Respondents also highlighted subjective judgement as another key factor guiding their property asset allocation decisions.

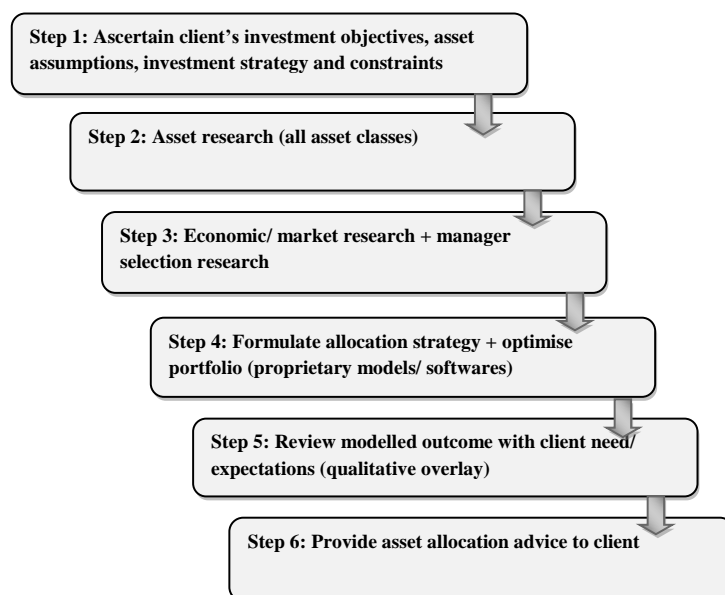
Property funds provide a common means of investment in property for both superannuation funds and investment management funds. Like investment management funds, generally property funds are guided by investment mandates from large institutional investors. As property funds are purely invested in property assets, their asset class weighting decision is mainly confined to direct or unlisted allocation, or sub-sector/geographic allocation strategies. The market analysis and portfolio optimisation models for property specific funds are conducted in-house by the fund's securities analysts and portfolio managers. Respondent comments indicate that qualitative overlay (management expertise/views) is an important part of property fund asset allocation decision-making processes.

Both the investment management funds and property funds monitor property asset performances, and conduct regular reviews to ensure the allocation policies align with client investment objectives and mandates. The funds provide reports and recommendations (buy/sell/hold rating) on a monthly or quarterly basis to clients. Any changes or tilts to the fund's long-term investment policy depend on the market environment, opportunities and the cost associated to those opportunistic changes. For the investment management funds that do not employ any property personnel, the asset allocation and asset selection functions are outsourced to external advisers.

#### 4.3.3.3 Asset Consultant Property Allocation Recommendation Framework

The findings so far illustrate that the Australian fund managers' property allocation decision-making processes and frameworks are influenced to a large extent by the thought process of external managers and advisers, particularly asset consultants. The framework for asset consultants' property asset allocation advice differs from client to client. Figure 4-13 outlines the asset consultant property asset allocation advice model for institutional investment managers. The model was developed based on responses from three asset consultant firms.

**Figure 4-13: Asset Consultant Property Asset Allocation Advice Process**



Asset consultants' property asset allocation advice processes start with the consultant determining the client's investment objectives and constraints. In addition, the asset consultants need to ascertain the fund's asset

assumptions and investment strategy (active or passive), liquidity requirements, member/ investor demography, investment management preference (internal or external), and the client's preferred markets for investment (local or offshore). The asset consultant will then undertake asset based research, including that for property (comparison of listed and unlisted property – benefits, opportunities, risk/return forecasts). The common approach is the 'top-down' investment investigation. Asset consultants undertake extensive economic/market research and take other considerations into account (regulatory, benchmark, peer comparison). In addition, asset consultants undertake investment manager selection research for their clients. Asset consultants formulate a client's asset allocation plan and test the models against the client's investment needs and expectations using both proprietary models and commercial softwares. Both quantitative and qualitative factors are considered during the process. The asset consultant's investment committee considers all analysis, reports and recommendations prior to approving the client property asset allocation advice.

#### 4.3.4 Factors Influencing Property Allocation Decisions

##### 4.3.4.1 Quantitative and Qualitative Analysis

The institutions surveyed were asked whether they used quantitative, qualitative or a combination of methods to ascertain their property asset allocation decisions. From the total number of 51 respondents, only 2% used purely quantitative models, 8% relied only on qualitative factors, whilst the majority (90%) use a combination of both quantitative and qualitative analysis for property asset allocation decisions. Table 4-10 provides a summary of quantitative analysis methods and qualitative overlay used by the institutions surveyed for property allocation.

**Table 4-10: Analysis Techniques Influencing Property Asset Allocation Decisions**

Methods	Key Inputs
<b>Quantitative</b> Valuation modelling (cap rate) Scenario analysis Efficient frontier based on historical returns Mean variance optimiser Covariance Monte Carlo simulations Risk/return analysis Volatility analysis Correlation matrix Factor analysis Financial models (cash flow; P&L; DCF) Financial ratios (REIT specific) Econometric models Asset liability modelling Portfolio construction models/portfolio optimiser Relative return models vs alternative investments	Portfolio construction process (investment objective/strategy) Asset consultant advice Investment committee meetings External fund manager meetings Softwares Market understanding (in-house research) <ul style="list-style-type: none"> <li>▪ property market fundamentals</li> <li>▪ property market forecast (expected long-term fluctuations in values)</li> <li>▪ top-down and bottom up analysis (property and economic)</li> <li>▪ economic forecast</li> <li>▪ historical data</li> <li>▪ capital markets assumptions</li> </ul> Factsheet/data from managers (e.g. returns, leverage) Market investment opportunities Investment timeframe Funds available to invest
<b>Qualitative</b> Judgement ('gut feeling') Manager skill and quality Asset quality General discussions with managers Client/ member views (surveys) Investor/shareholder meetings Fund manager experience/ understanding Industry peer comparison	

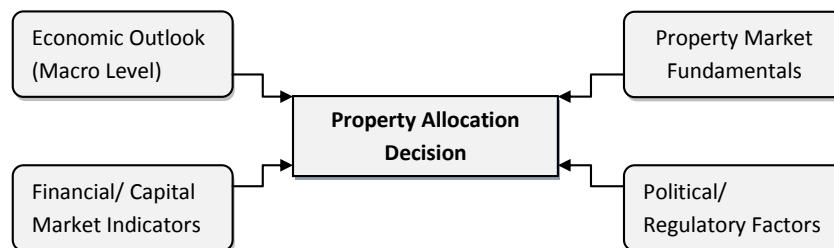
The results show that Australian fund managers use a combination of quantitative and qualitative analysis as part of their property asset allocation decision-making process. The type of quantitative analysis that generally aids Australian fund managers' property asset allocation decisions includes valuation, financial/investment analysis models, and economic analysis. Asset allocation models used are efficient frontier analysis based on historical returns, and scenario analysis. Risk factor modelling such as 'Stress Test' is also becoming important in deciding the appropriate asset allocation. One of the most widely used methods of stress testing is the Monte Carlo simulation. Cuffe and Goldberg (2012) explain that stress testing is important for detecting a portfolio's vulnerabilities and assesses its expected reaction to market scenarios. Fund managers stress test their portfolios to analyse the impact of extreme events, such as the recent GFC. Funds generally want to select lower risk strategies. For example, superannuation fund asset allocation is tailored to meet liabilities and maximise the surplus, given an acceptable risk level.

Fund managers surveyed also placed greater importance on qualitative overlay to any quantitative output before decisions were finalised. The key qualitative overlays identified by the Australian fund managers included judgement ('gut-feeling'), experience and understanding of investing in property assets, feedback from clients or shareholders, fund manager skills, asset quality assessment and peer comparison. The results are comparable to similar studies conducted overseas (French 2001; Gallimore & Gray 2002; Worzala & Bajtelsmit 1997) that identified general experience/ intuition, judgement and the use of personal feel of the market, as key qualitative factors that influence institutional property allocation decisions in the US and the UK. Recent studies by Parker (2011, 2013) also identified factors such as judgement, intuition and experience as key qualitative factors that affect property fund manager investment decisions. In addition, these studies identified that reference to portfolio theory, capital market theory, and optimal portfolios, were rare.

#### 4.3.4.2 Market Factors and Industry Benchmarks

The survey investigated key market indicators and industry information that influence property asset allocation models. The property asset allocation decision-making process varies among different managed funds based according to fund size, investment objectives, and the number of research professionals employed. Regardless of these variables, generally the funds surveyed adopted a set of key market indicators/data and industry information in their asset allocation models. Figure 4-14 summarises the market factors that influence Australian fund manager and asset consultant property asset allocation decisions.

**Figure 4-14: Market Information Influencing Property Asset Allocation Decisions**



Generally, large managed funds surveyed had a team of in-house professionals dedicated to conducting industry research, and developing and maintaining databases on various markets and submarkets, such as economic,

political, capital and property markets. Such databases also track the performance of various property sectors and sub-sectors. The property market fundamentals considered include:

- i. Property statistics (rental, occupancy, vacancy rates, net absorption, outgoing, lease profile etc.).
- ii. Demand and supply forecasts (sector specific market rental and growth forecast).
- iii. Risk/return analysis (historical and forecast, yield).
- iv. Transaction volume.
- v. Valuation (capitalisation rate).
- vi. Construction/redevelopment costs.
- vii. Market indices/benchmark.
- viii. Factsheet/data from external asset managers.
- ix. Market data sourced from agents and industry institutions.
- x. Correlation matrix (property vs other assets).

Apart from property market fundamentals, fund managers also include macroeconomic data, such as interest rates, gross domestic product, consumer price index, unemployment, retail sales and demographic data. Local and global financial/capital market and political factors are also important in Australian fund managers' property asset allocation models. Reference to industry research reports, and market indices and benchmarks, is also common across all institutions surveyed. Generally decisions to invest in REITs are based on stockbroker research notes and financial ratios (price/NTA, dividend yield, payout ratio, gearing ratio, net asset value, liquidity ratios, and return on equity). Long-term government bond rate forecasts are important for direct property allocation analysis.

Generally, managed funds that did not employ any property professionals, or had small research teams, based their property asset allocation decisions on analysis conducted by industry consultants. The property industry market reports are sourced from agents such as Jones Lang LaSalle Australia (JLL), Colliers International, CB Richard Ellis Australia (CBRE), Knight Frank, and institutions such as the Housing Industry Association, Australian Bureau of Statistics (ABS), Property Council of Australia (PCA), Australian Property Institute (API), and Investment Property Databank (IPD). Generally, economic market reports were obtained from Access Economics, BIS Shrapnel, Reserve Bank of Australia (RBA), state governments, federal government, ABS, and banking/financial institutes. Australian fund managers investing globally also consider information such as transparency index, exchange rate, and global property market performance indicators.

The fund managers and asset consultants use a number of forecast models and software (property, capital markets, financial markets, mathematical, covariance, and portfolio optimisation) to aid their property asset allocation decisions. In addition, the institutions surveyed used a number of market indices (both domestic and global) as benchmarks for different property sectors, while evaluating property assets for investment or portfolio allocation purposes. Table 4-11 highlights the market indices predominantly used by the institutions surveyed.

**Table 4-11: Market Indices Influencing Property Asset Allocation Decisions**

Direct/Unlisted Property Benchmark Indices	Listed Property Benchmark Indices
IPD/Mercer Direct Property Index	S&P/ASX 200 A-REIT Accumulation Index
IPD/Mercer Unlisted Property Index	S&P/ASX 300 A-REIT Accumulation Index
PCA Sector Indices	FTSE/ NAREIT Global Property Index
PCA/IPD Investment Performance Index	FTSE EPRA/ NAREIT Global REIT Index
Intech Direct Property Index	FTSE EPRA/ NAREIT Developed Real Estate Index
S&P Citigroup World Property Index	S&P Citigroup Global REIT Index
UBS Global Real Estate Investors Index	
Mercer Unhedged Property Index	
Rainmaker Financial Standard Property Index	

The key direct and unlisted property market benchmark indices include IPD/Mercer, PCA, Rainmaker, and Intech (domestic), and S&P Citigroup and UBS (global). For the listed property sector, fund managers used the S&P/ASX A-REIT Accumulation Index as the domestic benchmark. For offshore exposure fund managers used a series of global REIT indices such as FTSE/NAREIT, FTSE EPRA/NAREIT and S&P Citigroup Global REIT Index. Institutional investment in global markets is predominantly through listed property funds or REITs. Findings also revealed that institutions develop and follow proprietary (or in-house) indices and benchmarks. The key inputs in their models include the 10 year bond rate (absolute return relative to bonds) and consumer price index (CPI+ benchmark). Australian managed fund industry has consistently used similar property market benchmark in recent years. Newell (2008) also highlighted the S&P/ASX A-REIT Accumulation Index and the Mercer Unlisted Property Index as key domestic property measures and EPRA/NAREIT Global Property Securities Index for global property investments.

#### 4.3.5 Optimising Future Property Allocation Level

Despite the current low allocation level, indications are that a majority of the funds are likely to increase their investments in property assets. Figure 4-15 provides details of whether the institutions surveyed expect any change to their level of property asset allocation in the next five years.

**Figure 4-15: Do institutions expect change in property allocation in the next 5 years?**

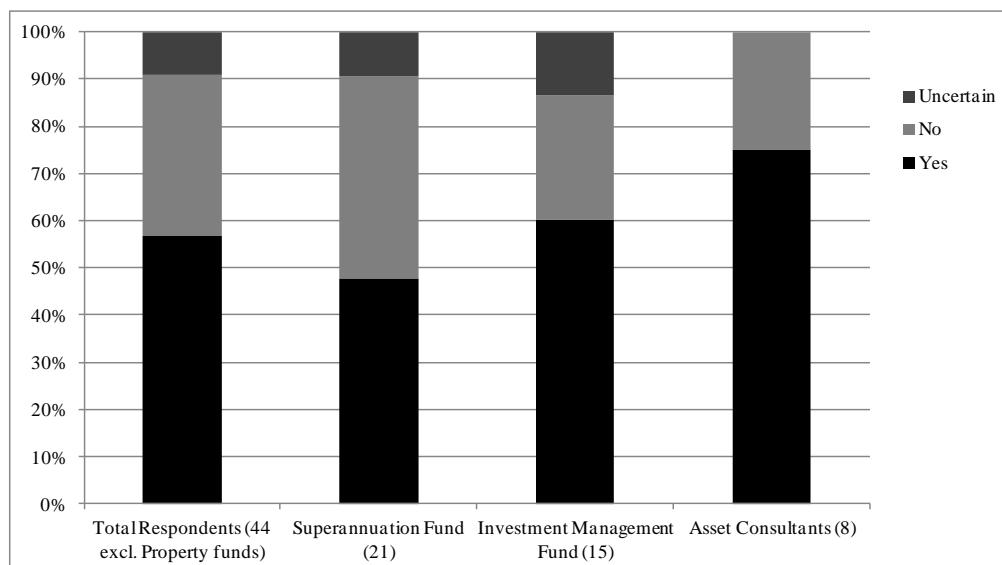


Figure 4-15 shows that approximately 56% of the funds surveyed expect to see changes in their property asset allocation level in the next five years. Of the 15 investment management funds surveyed, nine expect changes to their property asset allocation levels. Similarly, 75% of the asset consultant firms surveyed were confident of changes in property asset allocation levels for their wholesale clients in the next five years. However, superannuation funds were split in their response: 49% expected changes to their property allocation level, with the rest either indicating no change or uncertainty about the issue.

The institutions that indicated a change in their property asset allocation level were driven by property's attractive risk/return outlook. According to the survey respondents, property's mid to low risk asset classification, and its strong inflation hedging characteristics, are likely to continue to attract investors in future.

The key reasoning behind the expected change in property asset allocation level includes:

- i. A move away from listed market – the current trend is to diversify away from REITs, with higher allocations to direct property and unlisted property funds due to the stability of income.
- ii. Examining international property opportunities – allocating additional property investment offshore due to factors such as the growth in Asian markets, higher Australian dollar, and lack of opportunities locally. Also potential move towards global REITs from Australian A-REITs.
- iii. Portfolio diversification and stability – funds need to attain more stable risk-adjusted return portfolios.

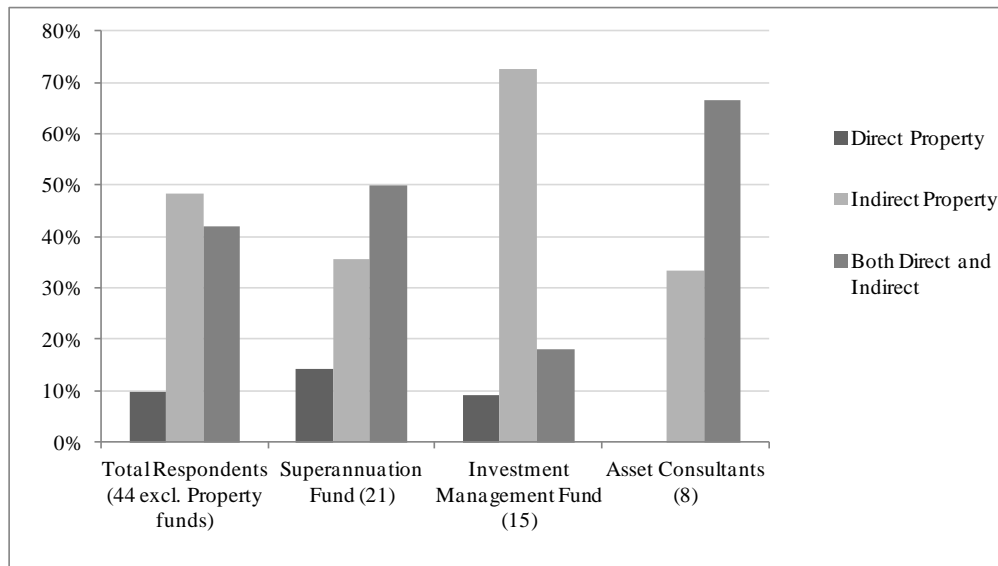
The respondent comments were similar across the managed funds concerning their future property allocation direction. The asset consultants surveyed also expect a minor increase in the level of property allocation for their wholesale clients, due mainly to market factors such as the stabilisation of the property fund industry. Their view is that increases in allocation levels are likely to target the direct/unlisted property market. The other key issues that are likely to affect their clients' property allocation levels are the need to meet liabilities when due, and the quality of property fund managers. Respondent comments indicate that currently there is a limited market for opportunistic investments in Australia. Investors prefer secure income streams; therefore, going forward property is highly favoured. The preference is for local rather than global property, mainly in core sectors through unlisted property funds.

More than 21 funds (excluding PFs) stated that there will be a change in the institutions' indirect or securitised property allocation level. In addition, 18 funds expect changes to both their direct and indirect property asset allocation levels. Figure 4-16 provides details of the sector targeted for funds' property asset allocation in the next five years. Respondent comments indicate a downgrade of securitised property allocation, with most institutions expected to retain the status quo or increase their level of allocation to direct property investments. Fund managers surveyed have also indicated their desire to have more control in how they invest in property assets. Funds are more focused on core assets and owning property directly to reduce risk. Although indications are that Australian managed funds will become more direct players in property, the investments will mainly be via partnerships and mandates. Respondents stated that the preference for direct is due to the ability to control key decisions relating to the assets. The consensus view was that fund managers were only interested in making key decisions. They do not want to be involved in the day-to-day operation of the assets; that is, they do not want to be asset managers. This will be a slight change from current allocation strategies where managed funds have



largely allowed external managers to make the key property asset selection, investment and disinvestment decisions.

**Figure 4-16: Property Sector Targeted by Respondents for Future Allocation**



Institutions surveyed were also asked to explain if they expected any changes to their current property allocation decision-making frameworks. Although a majority of the institutions (88%) indicated no change to the current property asset allocation framework/decision-making process, the key factor identified for improvement is the need for institutions to develop better forecasting and risk management models. The institutions that recommended changes to the property asset allocation decision-making process included two superannuation funds, three investment management funds, and one asset consultant firm. Institutions surveyed had highlighted that the changing markets and the recent GFC warranted additional valuation tools, or the need to develop a better valuation framework for the property sector, to enable better prediction of market turning points. Some respondents argued that to improve allocation decisions, the mindset of ‘if it has performed well in the past, it must be a good fit’ needs to change.

#### 4.4 Summary

The research investigated the property asset allocation strategies, processes and decision-making frameworks of the Australian fund management industry. The results from an industry survey of leading fund managers and asset consultants in Australia illustrates that there has been a shift in Australian fund managers’ property asset allocation views and strategies, driven mainly by the funds’ need to adapt to the continued uncertain global financial and investment market conditions. Although SAA remains the dominant property allocation strategy, shorter term strategies, in particular DAA structure, has become more prominent for several funds due to its ability to react more effectively to the current uncertain market environment.

The techniques and analysis that drive the Australian fund manager’s property asset allocation decisions are sophisticated and comparable to those utilised by US and UK fund managers. The decision-making frameworks developed from the research illustrate that property asset allocation is a sequential and continuous process

involving a complex system of interdependent decisions (internal and external), complete with feedback loops, guided by the fund's investment objectives and policies and the need to meet industry benchmarks. In addition, Australian fund managers' property asset allocation is a dynamic and methodological process involving both qualitative and quantitative analysis tools and techniques. The key quantitative asset allocation analyses include efficient frontier analysis based on historical returns and scenario analysis. Fund managers also placed significant importance on qualitative overlay, mainly judgement ('gut feeling') and experience. The process involves constant interaction between the fund managers and their external advisers.

The research also provided evidence that the property asset allocation decision-making process in Australia varies depending on the size and type of managed fund. In addition, there are variances in techniques for direct property, unlisted property and securitised property asset allocations. Although aided by proprietary (internally developed) tools/models and research, the results indicate that asset consultants now play a notable part in the thought process of Australian fund managers' property asset allocation decisions. This was particularly evident for superannuation funds, where almost half of the funds surveyed outsourced their asset allocation function to asset consultants. The level of asset consultant influence on investment management fund and property fund asset allocation decisions is limited, mainly confined to setting the fund's SAA policies.

Fund managers surveyed were generally comfortable with the current level of property allocation, based on their institution's asset liability modelling, risk/return profile, and advice from asset consultants. It is interesting to note that the neutral market view (10%) drives optimal property allocation decisions for some funds. In most cases, fund managers have predetermined investment constraints, and thus manage their property optimisation process within those constraints. Liquidity was the predominant constraint to optimal property allocation decisions.

A cross-tabulation of results indicates that the number of property personnel employed by an institution had a direct impact or influence on the fund's level of property exposure and its property investment strategy. The results highlight that funds with a greater level of property expertise have a greater exposure to property. There is also a disparity in how Australian fund managers classify different property assets. Some fund managers surveyed now categorise direct property within the unlisted band, together with infrastructure assets. REITs are increasingly banded within the equities asset class.

Although the level of allocation to property assets remain low (8-12% of portfolio) for institutions surveyed, going forward property is expected to continue to attract investor attention due to its relatively low volatility when compared to equities, its inflation hedging qualities, and its ability to provide stable income. Of the total number of institutions surveyed, about one third expects their property allocation target to move within the 11-15% range within the next five years.

Australian fund managers are now downgrading indirect/securitised property exposure, with higher weighting to direct property. Fund managers are also seeking greater international property exposure due to factors such as higher Australian dollar and limited opportunities locally. This may result in some managed funds adopting a

more in-house approach with larger investment teams involving more property expertise to drive fund property asset allocation analysis and decisions. Although indications are that Australian managed funds will become more direct player of property, the investments will mainly be via partnership and mandates. Overall, the push towards direct property reflects the need to achieve greater portfolio stability, and the need for funds to have more control over key decisions relating to their assets (strategic and investment level).

The conceptual frameworks and models developed from the research will help enhance academic theory and understanding in the area of property asset allocation decision-making. In addition, the findings provide small fund managers and industry practitioners with important insight into institutional fund manager and asset consultant property asset allocation analysis, evaluation and decision-making processes. The identification of these key factors will both assist and educate investors and the industry to better understand the overall strategic property allocation methodology. This could flow on to support the continuing growth of the property investment sector, and provide a platform for institutional investors to improve fund allocation to property investment products.

The industry survey results validation discussion is provided in the next chapter.

## **CHAPTER FIVE: INDUSTRY DISCUSSION AND KEY ISSUES**

### **5.1 Introduction**

Between October and December 2011, the results from the industry survey and associated property allocation decision-making models were presented to six leading fund managers and one asset consultant firm in Australia. These industry experts had initially been part of the survey pilot study program. The objective of this exercise was to: i) validate the survey findings, ii) test the industry applicability of property allocation decision-making frameworks/models, iii) identify any gaps in the survey analysis, and iv) identify whether the results conform with the industry's future property allocation plans. This chapter provides a summary of the industry panel comments, feedback, and recommendations for further research.

### **5.2 Industry Panel Comments**

The general feedback from the survey was that the industry experts conformed to most of the survey findings. Table 5-1 provides a summary of the industry comments and recommendations for the survey results by section (4.3.1 to 4.3.5), as discussed earlier in Chapter Four.

The industry panel indicated that the future property asset allocation trend will favour direct property, mainly core sector (proportionally 80% to core property assets and 20% non-core, predominantly domestic allocation). The preference for direct property is due to the need to achieve stable returns and the desire for more control over investments. In addition, fund managers are reprofiling how assets are classified, based on risk/return profile, market and operational characteristics, rather than generic classifications. Listed property and listed infrastructure are allocated in the equities portfolio in some funds. Unlisted infrastructure is included in unlisted property portfolios by some fund managers. With regards to asset allocation strategies, the industry panel felt that tactical policies, particularly the dynamic asset allocation strategy (DAA), are most effective in current uncertain market environment.

The feedback generally indicates that factors needing further investigation included entry restrictions (wholesale property funds), and the influence of fund member age profile on property allocation decisions. Particularly for superannuation funds, the choice of direct property and listed property is driven by member age (younger members invest in REITs, and the 60+ group normally prefer direct property). The industry panel also highlighted that the use of an asset consultant is almost a mandatory requirement for some funds. However, some consultants have limited understanding of property markets (local and global) and thus limit their recommendation to equities and bonds. This is an area that needs extensive research consideration in future.

Going forward, the industry panel felt that fund managers are focusing on investment sectors where they have a lot of control. Some superannuation funds are creating mandates and partnerships together to invest or set up

investment management funds. In addition, as funds become bigger through mergers and acquisitions, there is likely to be an increase in the number of property personnel; this means more and more asset allocation decisions will be made internally by the funds. On the property investment side, funds are now looking more closely at market data and the performance of individual cities. Due to the Global Financial Crisis (GFC), funds are focused on investments by location rather than property sector. Cities that demonstrate strong economic growth are favoured. In addition, fund managers are now focused on developing proprietary valuation models so that they have a more accurate view of the value of their properties.

### 5.3 Panel Recommendations

Although a number of the comments from Table 5-1 have now been incorporated within the ‘Survey Result and Discussion’ section in Chapter Four, most are areas that can be investigated extensively as part of further research. In particular, there are three major industry panel recommendations which align with the objective of this PhD research. These include:

- i. **Investment Strategies and Property Allocation:** The panel identified that post GFC, most funds disbelieve long-term data forecast models, and that the industry has become more tactical. The survey results highlight that some fund managers may have a static approach to property allocation, even determining the property allocation component based on neutral market view of 10% allocation. In addition, both the review of literature and the industry survey highlight that the use of active asset allocation strategies is limited in Australia. In addition, portfolio construction research in relation to property allocation is scarce. Therefore, there is a need to test the performance of the conventional SAA portfolio model and alternative asset allocation models. In comparing the results, it is important to evaluate if the property allocation component changes with the different asset allocation strategies.
- ii. **Reprofiling the Property Portfolio:** The industry panel highlighted that the property allocation trend in the short to medium period will predominantly favour direct property as funds seek stable portfolio returns, and as they pursue their desire to have control over their investments. In addition, some funds are reprofiling the asset classification on risk/return profile, market and operational characteristics, rather than on a generic basis. REITs are increasingly regarded as part of the equities portfolio, and infrastructure is pooled in the unlisted property portfolio. The literature review also highlighted that the ongoing, limited supply of quality real estate is likely to see funds seek higher allocation to alternative sectors in future, such as infrastructure. Therefore, there is a need to evaluate the performance and asset allocation component of direct property and listed property assets within the setting of different mixed-asset portfolios. In addition, industry experts recommend that the long-term performance and diversification benefits of property and alternative assets needs to be tested.
- iii. **Dynamic Asset Allocation Strategy and Property Allocation:** The level of exposure to property assets is also affected by investment timeline. The investigation of asset allocation strategies identified that DAA is highly favoured by Australian fund managers and asset consultants. The industry panel believed that DAA provides the best way to react to the current uncertain market environment, and that its medium term timeframe is effective for both direct and listed property investment. The medium term timeframe also means that market forecast data is more realistic. The literature review highlighted that research on the effectiveness of DAA strategies is lacking in Australia. Thus, there is a need to evaluate

the performance of DAA portfolios against the conventional SAA investment approach. In addition, the asset allocation component of different property assets needs to be tested within DAA models.

The next chapter will examine the above issues using the performance data of industry superannuation balanced fund asset classes over a 17 year period (1995-2011). These three quantitative research themes will address the gaps in literature and suggest ways of improving institutional investors' asset allocation decisions towards property investments.

## **5.4 Summary**

The industry survey results were presented to a panel of six leading fund managers, and one asset consultant firm. This was done to validate the survey findings and assess the industry applicability of property allocation decision-making frameworks/models. The industry experts mostly conform to the survey results. The industry panel indicated that the future property asset allocation trend will favour direct property, mainly core sector. In addition, fund managers are reprofiling how assets are classified based on risk/return profile, and market and operational characteristics, rather than generic classifications. With regards to asset allocation strategies, the industry panel felt that tactical policies, particularly the DAA strategy, are most effective in the current uncertain market environment. The industry panel provided important feedback, comments and recommendations for further study. Most have been incorporated in the 'Results and Discussion' section in Chapter Four.

A number of important recommendations were made as potential areas of further research. From the recommendations, three quantitative research themes were identified that meet the objective of this Thesis. These include:

- i. Investment Strategies and Property Allocation.
- ii. Reprofiling the Property Portfolio.
- iii. Dynamic Asset Allocation Strategy and Property Allocation.

The next Chapter will examine the above issues using the performance data of industry superannuation balanced fund asset classes over a 17 year period (1995-2011). The aim is to investigate the performance of different asset allocation models and compare the results with the industry fund conventional SAA policy. In addition, the role of property and allocation components will form the nucleus of the quantitative investigation. The analysis is important to address the gaps in literature review and to suggest ways of improving institutional investors' asset allocation decisions towards property investments.

**Table 5-1: Industry Panel Comments and Recommendations**

Results Section	Comments	Recommendations
<b>4.3.1: Determining the Current Optimal Allocation to Property</b>	<ul style="list-style-type: none"> <li>▪ Since GFC, allocation to core property assets has increased, proportionally 80% (core) and 20% (non-core), predominantly domestic allocation.</li> <li>▪ Funds preference for direct property has increased due to stability of returns and desire for more control over investments. <ul style="list-style-type: none"> <li>- Fund managers do not want to be asset managers but invest in direct property through joint ventures and mandates.</li> </ul> </li> <li>▪ Funds are re-profiling how assets are classified based on risk/return profile, market and operational characterises rather than generic classifications. <ul style="list-style-type: none"> <li>- Listed property and listed infrastructure are part of the equities portfolio in some funds.</li> <li>- Unlisted infrastructure included in unlisted property portfolios by some fund managers.</li> </ul> </li> <li>▪ Lack of property personnel restricts allocation to certain property sectors. <ul style="list-style-type: none"> <li>- Generally funds with no property personnel only invest in REITs.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Evaluate long-term performance of property and alternative assets.</li> <li>▪ Evaluate performance of REIT and direct/unlisted property.</li> <li>▪ Check if no property staff directly leads to lower property allocation. Provide cross-tabulation of fund property investment size, number of property staff and how funds invest in property.</li> </ul>
<b>4.3.2 Property Allocation Strategies</b>	<ul style="list-style-type: none"> <li>▪ The property allocation strategy is generally static for small funds.</li> <li>▪ Industry is now more tactical than in the past (people are disbelieving of long-term data).</li> <li>▪ DAA strategy provides the best way to react to current uncertain market environment.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design different asset allocation models (SAA portfolio versus alternative models).</li> <li>▪ Evaluate DAA strategy.</li> <li>▪ Determine if property allocation components change with different asset allocation models.</li> </ul>
<b>4.3.3 Fund Manager and Asset Consultant Decision-Making Frameworks</b>	<ul style="list-style-type: none"> <li>▪ New development in the decision-making process is the ‘Right of Refusal’ where the Investment Committee needs to provide a report with specific reasons why certain asset allocation recommendations were refused approval. The rights of refusal could have legal implications if fund performance is affected by poor asset allocation choices.</li> <li>▪ Feedback loops (recommendations from the review phase form the basis for future SAA changes).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Include right of refusal in comments/frameworks.</li> <li>▪ Discuss feed-back loops in decision-making models.</li> </ul>

<b>4.3.4 Factors Influencing Property Allocation Decisions</b>	<ul style="list-style-type: none"> <li>▪ Amount of fund available to invest and entry restrictions (wholesale property funds) affect property allocation decisions.</li> <li>▪ Fund member profile (age) is an important factor for superannuation funds. The choice of direct property and listed property is driven by member age (younger members invest in REITs and the 60+ group normally prefer direct property).</li> <li>▪ Asset liability matching is important for superannuation funds.</li> <li>▪ Fund managers need to consider the overlay of return expectations versus property market fundamentals.</li> <li>▪ Use of asset consultant is a mandatory requirement for some funds. However, some consultants have limited understanding of property markets (local and global) and thus limit their recommendation to equities and bonds.</li> <li>▪ Decision-making process for small funds is mostly qualitative because of limits of quality data and limited staff to undertake quantitative analysis.</li> <li>▪ Funds are now looking at market data and performance of individual cities when making property investment decisions. Due to the GFC, funds are focused on investments by location than property sector. Cities that demonstrate strong economic growth are favoured.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Investigate member age profile and property allocation trend.</li> <li>▪ Evaluation of asset choice versus liability matching.</li> <li>▪ Assessing skill-set of property professionals in asset consultancy firms.</li> <li>▪ Assessing if there is any change in the level of property expertise in organisations and the level of property analysis undertaken.</li> <li>▪ Evaluation of whether investing by location versus sector provides improved property portfolio performance.</li> </ul>
<b>4.3.5 Optimising Future Property Allocation Level</b>	<ul style="list-style-type: none"> <li>▪ Funds are now focused on developing proprietary valuation models to have a more accurate view of the value of their properties. The downside of outsourcing this function is management fees (fees based on valuation).</li> <li>▪ Post GFC, some funds are focusing on property debt markets.</li> <li>▪ Shift in fund size – as funds become bigger through mergers and acquisitions, there is likely to be an increase in the number of property personnel which means more and more asset allocation decisions will be made internally by the fund.</li> <li>▪ Funds focusing on investment sectors where they have a lot of control. Some superannuation funds are ‘clubbing’ or creating mandates and partnership together to invest or set-up investment management funds (control element).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Innovation of better valuation and risk management tools.</li> <li>▪ Investigation of the current status and influence of CMBS market on property sector.</li> </ul>



## **CHAPTER SIX:**

# **INVESTMENT STRATEGIES AND PROPERTY ALLOCATION MODELS**

### **6.1 Introduction**

The review of the literature highlights that institutional investors view property as a key investment asset class that offers considerable benefits in a mixed-asset portfolio. Previous studies have concluded that property allocation should be within the 10-30% range and that higher allocation to property significantly enhances the multi-asset portfolio risk-adjusted return profile. However, there seems to be wide variation in theory and practice. Historical market data and the survey of leading Australian fund managers and asset consultants (see Chapter Four) highlight that institutional property allocation in Australia averages only 10%. This is seen by many in the property profession as a subjective measure and needs further investigation.

Portfolio construction research has focused mainly on traditional assets such as equities, bonds and cash. The literature review confirms that despite the significant developments in the Modern Portfolio Theory (MPT) over the last 60 years, property allocation decision-makers have begun only recently to use standard techniques from the broader investment market, such as diversification and other risk management tools. Past theoretical studies in the context of property allocation have been undertaken mainly on passive investment strategies, such as the 'buy and hold' model. In contrast, this research presents a unique perspective by investigating the optimal allocation to property assets within the context of more active investment strategies, where portfolio asset weights can be rebalanced constantly. To do this, the research investigates the asset allocation strategies of the A\$302 billion industry superannuation funds, the largest not-for-profit superannuation sector in Australia.

To achieve long-term performance, industry superannuation balanced funds typically invest in a range of defined asset classes based on a strategic asset allocation (SAA) approach. The default balanced fund is the most popular investment option, accounting for 67% of the industry funds' investments (APRA 2013b, p.7). Balanced funds offer stable income returns and capital growth derived from a diversified range of asset classes. The common defined benchmark asset classes include Australian equities, international equities, Australian fixed income securities, international fixed income securities, property, cash, and alternative assets (index comprising infrastructure, hedge fund, private equity and commodity).

Using quarterly benchmark data, this chapter examines the performance for seven asset classes over a 17 year period (1995-2011) of industry superannuation fund's balanced portfolio. The research then analyses the performance of the balanced investment option against ten different investment strategies, and how the property allocation changes with different asset allocation models. Reddy (2013a), Reddy et al. (2013a) and Reddy et al. (2013b) are journal papers published from this chapter (see Appendix 20 for copies). In addition, Reddy (2014), Reddy (2013b) and Reddy et al. (2013c) are papers from this chapter presented at international conferences.

The industry survey results highlight that Australian fund managers commonly apply the SAA technique, with a modelling parameter that follows MPT, guided by predetermined investment guidelines, asset target ranges, and policies. Fund managers normally make regular adjustments to the strategic policy to reflect changes in investment markets. However, more recently, the volatile behaviour of the global financial markets has made it difficult for institutions to follow long-term strategies and policies. Consequently, Australian fund managers are increasingly changing their asset allocation strategies to shorter term timeframes. Therefore, detailed analysis will be undertaken of different asset allocation models, including passive investment strategies (such as the Buy and Hold and Equal Weighted approaches), and more active strategies (such as Traditional, Turning Points, Optimal, Tactical and Dynamic strategies, with and without pre-determined asset weight constraints). The performances of these different asset allocation techniques is evaluated against the more conventional industry fund Strategic investment approach. In examining the different investment strategies, the role of property is considered as part of the research.

The literature review and industry survey findings demonstrate that research on the effectiveness of different asset allocation strategies (strategic, tactical and dynamic) is limited in Australia and focused mainly on short-term highly liquid investments. Therefore, the analysis of the various asset allocation models would enhance portfolio construction research, particularly in the context of property allocation. Another key issue identified is that the current industry property allocation trend is to diversify away from REITs with higher allocation to direct/unlisted property funds, due to the stability of income. In addition, some fund managers are reprofiling asset classes, with REITs allocated to the equities portfolio and infrastructure and direct property placed in the unlisted real asset classification. This chapter will investigate these issues by evaluating the diversification benefits and asset allocation components of different property assets (direct property and listed property) within the setting of two asset and multi-asset portfolios, including the industry funds' conventional strategic investment approach. The selected passive and active allocation models are set within the MPT framework using Australian 10 year bonds as the risk-free rate. The Sharpe ratio is used as the key risk-adjusted return performance measure.

Section 6.2 of this chapter provides an overview of the eleven asset allocation models, including their key characteristics and operational features. Section 6.3 details the data sources and research methodology, including the different portfolio construction techniques and assumptions. Section 6.4 provides the results and discussion. The results are presented in two parts, looking firstly at the historical performance of the industry superannuation funds' seven defined asset classes. This is followed by an analysis of the asset allocation models and the role of property in the different investment strategies under three major themes:

- i. **Section 6.4.2: Australian Superannuation Funds Investment Strategies and Property Allocation** – compares the conventional SAA approach used by superannuation funds to eight alternative investment strategies.
- ii. **Section 6.4.3: Reprofiling the Property Portfolio** – examines the diversification benefits of direct property and listed property separately in both two asset and different multi-asset asset allocation models.

- iii. **Section 6.4.4: Dynamic Asset Allocation Strategy and Property Allocation** – compares the performance of the industry funds' strategic investment approach against two dynamic asset allocation (DAA) models.

The results from the survey of leading Australian fund managers and asset consultants (Chapter Four) and industry panel comments (Chapter Five) indicate that the dynamic models are now seen as more effective asset allocation strategies under current and continuing uncertainty in the investment market environment. Therefore, the DAA strategies are evaluated separately to other asset allocation models.

## 6.2 Asset Allocation Models

The literature review (Chapter Two), and the industry survey (described in Chapter Four and Chapter Five) found that Australian fund managers and asset consultants regard the SAA as the dominant asset allocation model used in the industry. However, it was identified that due to the continuing uncertainty in investment markets, some Australian fund managers are increasingly changing to shorter term strategies, such as the TAA and DAA. Therefore, in addition to the industry funds' conventional SAA model, this research critically evaluates a series of ten alternative investment strategies to determine the optimal allocation to property assets. Table 6-1 details the eleven asset allocation techniques used in this research.

**Table 6-1: Eleven Asset Allocation Models – Key Characteristics and Operational Features**

<i>Asset Allocation Strategies</i>	<i>Model Characteristics</i>	<i>Transaction Costs</i>	<i>Management Costs</i>	<i>Liquidity Benefits</i>	<i>Default Risk</i>
Strategic	Industry fund conventional long-term strategy.	Medium	Medium	Medium	Low
Buy and Hold	Asset weighting remains constant for the investment horizon.	Low	Low	High	Low
Traditional	Allocation restricted to equities, bonds and cash.	Low	Low	High	Medium
Optimal – No Constraints	Mean-variance optimisation with no asset weight constraints.	High	Medium	Medium	High
Optimal – Weight Constrained	Mean-variance optimization with predefined weight parameters.	High	Medium	Medium	Medium
Turning Points	Allocation based on cyclical movement of GDP.	High	High	Low	High
Equal Weighted	Equal weighting to all assets.	Low	Low	Medium	Low
Tactical – No Constraints	Short-term asset rebalancing with no asset weight constraints.	High	High	Low	High
Tactical – Weight Constrained	Short-term asset rebalancing with predefined weight parameters.	High	High	Medium	Medium
Dynamic – No Constraints	Medium term asset rebalancing with no asset weight constraints.	Medium	High	Medium	High
Dynamic – Weight Constrained	Medium term asset rebalancing with predefined weight parameters.	Medium	High	Medium	Medium

Source: Author; Reddy et al. (2013a).

Table 1-1 details the industry fund management operational issues with the selected asset allocation strategies. The theory, formulation and industry application of the various asset allocation models were discussed in detail in Chapter Two and Chapter Four of this thesis. The Strategic allocation is a representation of the industry funds' conventional asset allocation model. The Buy and Hold and Equal Weighted strategies are passive techniques. The Optimal strategies seek the highest risk-adjusted returns; a technique known in the field of MPT as Markowitz mean-variance portfolio optimisation. The Traditional strategy is constrained to equities, bonds and cash. The Turning Points allocation is based on the cyclical movement of GDP. The Tactical strategies are based on risk parity and the momentum investment technique. The mean-variance portfolio optimisation formulation is used to construct the Dynamic investment strategies on a medium term (three year rolling) timeframe.

Generally, institutions prefer investments with low transaction and management costs, along with high liquidity. The Traditional, Buy and Hold, and Equal Weighted strategies are less management intensive with low transaction costs and medium to high liquidity benefits. The underlying nature of the Traditional portfolio (equities, cash, and bonds) means that it is the most cost effective and liquid technique. Most of the active asset allocation techniques encompass medium to high transaction and management costs, and generally offer low to medium liquidity benefits. The more frequent rebalancing of asset weights means that Tactical strategies are management intensive and involve significant transactions costs.

The default risk relates to consideration of diversification, as some asset allocation models have high exposure to a specific asset class at specific points of time. The Optimal – No Constraints, Tactical – No Constraints, and Dynamic – No Constraints models overweight assets with low variance, and thus involve high default risk. Although consideration of operational features are important, industry funds are primarily measured on performance.

The Markowitz (1952, 1959) classical mean-variance portfolio selection model serves as the starting point for constructing optimal asset allocation models. In practice, the Markowitz mean-variance framework is altered with various types of constraints that follow the institution's investment guidelines and investment objectives. This is because the classical mean-variance portfolio optimisation can often result in extreme allocation in specific assets. Therefore, in addition to the SAA policies, industry superannuation funds also formulate a range of permissible investable asset weights as a primary risk management tool. Including holding constraints leads to a more industry practical application of the mean-variance optimisation problems. Table 6-2 illustrates the assumed predetermined weight constraints for industry superannuation fund balanced portfolios.

**Table 6-2: Industry Superannuation Funds Asset Weight Parameters, December 2011**

Asset Class	Minimum Weight	Maximum Weight
Australian Equities	20%	40%
International Equities	10%	30%
Property	0%	20%
Australian Fixed	0%	20%
International Fixed	0%	15%
Cash	0%	15%
Alternatives	0%	25%

Source: Author.

Table 6-2 details the benchmark Australian industry superannuation fund asset allocation range across the recognised asset classes. The level of allocation can relate to historical performance, liquidity, and transaction costs. This information is prepared based on consensus data from six leading industry superannuation funds with A\$146 billion of funds under management. Industry superannuation fund asset allocation parameters appear to place high weighting on the equity markets. The property allocation range is set as 0-20%. Except for the Optimal – No Constraints, Tactical – No Constraints and Dynamic – No Constraints investment techniques, all strategies are modelled within the above predefined asset weight parameters.

Previous studies (Lee & Byrne 1995; Stevenson 2000) have also examined the role of property within unconstrained and constrained mixed-asset portfolios, with the upper limit to property set at 20% for constrained strategies. However, these studies were mainly confined to the SAA and mean-variance optimisation techniques. In contrast, this research will expand the analysis to the TAA and DAA portfolio construction techniques.

## 6.3 Data and Methodology

### 6.3.1 Data

Asset data for this study covers a 17 year period, 1995-2011, and comprises 67 quarterly data points. Industry standards generally require a minimum of 20 quarterly period data points for investment analysis (Bacon 2008, p. 64). The asset data and benchmark representations for the research are detailed in Table 6-3.

**Table 6-3: Summary of Sourced Asset Allocation Data**

Asset Class	Representation	Source
Cash	Interbank Rate	Reserve Bank of Australia
Australian Fixed Income (Aust fixed)	CBA Bond: All Series, All Maturities	Commonwealth Bank of Australia
International Fixed Income (Int fixed)	Citigroup World Global Bond Index (Local)	Citigroup Inc.
Australian Equities (Aust eq)	ASX All Ordinaries Accumulation	Australian Securities Exchange
International Equities (Int eq)	MSCI WORLD Standard (Large+Mid Cap) Index (AU\$)	Morgan Stanley Capital International World Inc.
Property		Investment Property Databank Australia
- Direct Property (Direct Prop)	PCA/IPD Composite Property Index	
- Listed Property (Listed Prop)	S&P/ASX 200 A-REIT Index	Australian Securities Exchange
Alternatives Assets (Altern'ves)	Infrastructure and Utilities; Hedge Funds; Private Equity; Commodity Prices	UBS Wealth Management; Dow Jones Credit Suisse; AVCAL & Cambridge Associates; Reserve Bank of Australia

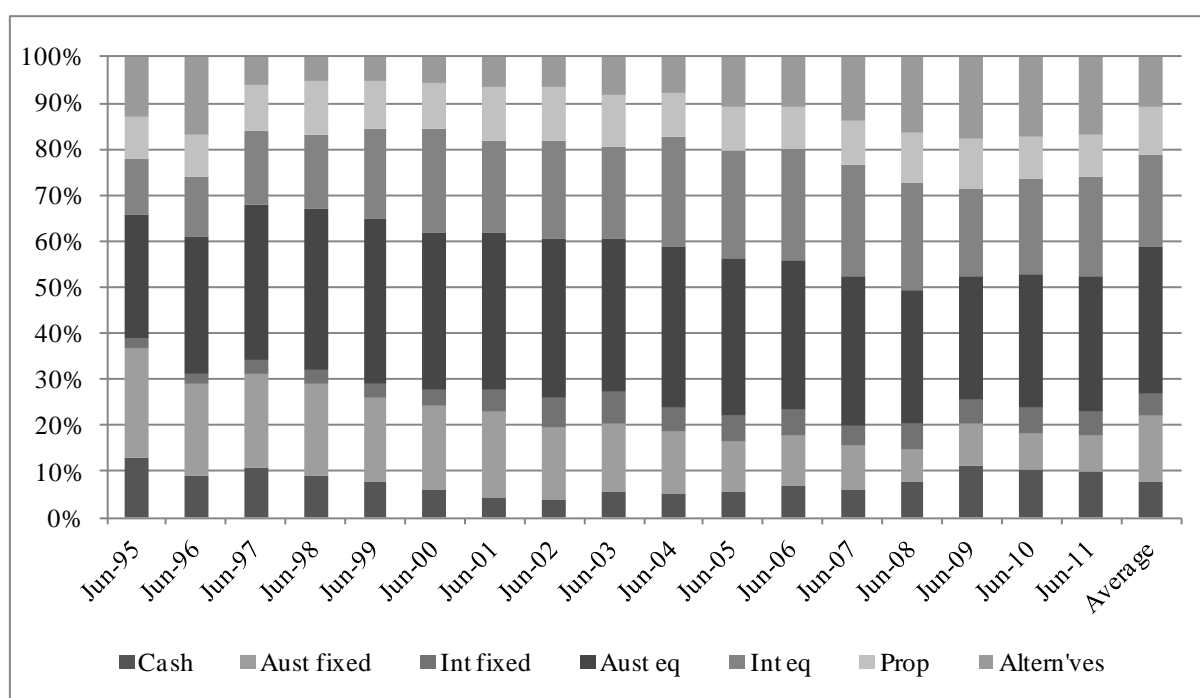
Table 6-3 details the benchmark data series for the selected asset classes. The property data used to construct the different asset allocation models are raw and not de-smoothed property, which is in line with industry practice. The sourced overseas data was converted to Australian dollars, based on the prevailing exchange rate. For the alternative asset class data series, the Australian managed fund industry appears to have a range of benchmark

data series which seem incomplete compared to the assets included in the alternative asset class. It is appreciated that there was difficulty in sourcing and establishing the alternative asset class definition and related index composition. This is because in Australia there is no recognised alternatives index available to industry. The index in this research is constructed from the commencement of selected Australian data series for Infrastructure and Utilities, Hedge Funds (AU), Private Equity, and Commodity Prices (AU) based on an equal weighted formula, which follows the UK alternative asset class index structure (Bond et al. 2007a).

The benchmark allocation series data for the seven asset classes in industry superannuation balanced funds was sourced from the Rainmaker Group, a leading superannuation service provider in Australia. Each quarter, Rainmaker Group surveys and publishes asset allocation data for the Australian industry and retail superannuation funds.

Figure 6-1 shows the changes in asset allocation weighting for the industry superannuation default balanced funds.

**Figure 6-1: Industry Superannuation Balanced Fund Asset Weights, 1995-2011**



Source: Rainmaker Group 2012.

Figure 6-1 shows the varying benchmark asset allocation weighting for the industry superannuation balanced funds. The aggregated average over the study period (17 years) was: Australian equities 32.2%, international equities 20.4%, Australian fixed income 13.8%, international fixed income 4.7%, alternatives 11.2%, property 10.3%, and cash 7.4%. Property allocation includes both direct/unlisted property, and listed securitised property (REITs).

The range of asset allocation is exhibited in Table 6-4.

**Table 6-4: Industry Superannuation Balanced Fund Range of Asset Allocations, 1995-2011**

	<b>Aust eq</b>	<b>Int eq</b>	<b>Prop</b>	<b>Aust fixed</b>	<b>Int fixed</b>	<b>Cash</b>	<b>Altern'ves</b>
<b>Average</b>	32.2%	20.4%	10.3%	13.8%	4.7%	7.4%	11.2%
<b>Minimum</b>	24.3%	12.0%	8.7%	5.3%	2.0%	3.3%	3.6%
<b>Maximum</b>	37.0%	27.6%	14.0%	24.0%	7.9%	13.0%	21.0%
<b>Range</b>	12.7%	15.6%	5.3%	18.7%	5.9%	9.7%	17.4%

Source: Rainmaker Group 2012.

Table 6-4 shows that Australian fixed income had the highest asset allocation range (19%), followed by alternatives (17%). Allocation to property ranged between 9-11%, having peaked at 14% in September 1998, which corresponded with the push by REITs to offshore property investment. The lowest allocation to property was recorded at 9% in March 2010. This was during the recent Global Financial Crisis (GFC) that led to major falls in REIT prices and property valuations. The allocation to the alternative asset class has grown steadily from 1998 to the peak level of 21% in 2009. It now represents the third largest asset group for industry superannuation funds.

## 6.3.2 Methodology

### 6.3.2.1 Portfolio Construction and Modelling Assumptions

To determine the optimal portfolio weights it is important to calculate the industry funds' balanced investment option portfolio mean return, standard deviation, correlation coefficient and covariance matrix. The portfolio risk/return performance, correlation and covariance measures for this research are based on quarterly ex-post data. The key parameters from past market data provide the platform for the analysis of the recorded benchmark industry superannuation funds' strategic allocation against the suitability of different asset allocation models. The portfolio construction formulation and performance measures/methodology were covered extensively in Chapter Two. The standard MPT approach is applied with the efficient frontier, mean-variance optimisation using Australian government 10 year bonds as the risk-free rate. All asset allocation models are proprietary developed and constructed using the Microsoft Excel program.

The portfolio return for all asset allocation models was calculated using Equation 6-1.

$$R_p = w_1 R_1 + w_2 R_2 + \dots + w_G R_G$$

**Equation 6-1: Portfolio Return**

Equation 6-1 states that the return on a portfolio ( $R_p$ ) of  $G$  assets is equal to the sum over all individual assets' weights in the portfolio multiplied by their respective return (Fabozzi et al. 2012). For all eleven asset allocation models, the individual asset return is represented by the time-series benchmark return data (see Table 6-3). Detailed individual asset return performance statistics are provided later in the 'Results and Discussion' section. The individual asset weighting data is detailed in Figure 6-1. Except for the industry fund Strategic portfolio, the asset weight data for the ten alternative asset allocation models are modified to suit the different investment styles. The different asset allocation modelling assumption and limitations include:

- Strategic** or SAA portfolio – forms the foundation for superannuation funds' asset class allocation and is the industry fund original balanced investment option. The SAA portfolio includes investments in equities (Australian and international), fixed income (Australian and international), cash, property

- (direct and listed), and alternative assets. The SAA portfolio is also used as the benchmark against which the alternative portfolio performances are evaluated.
- ii. **Buy and Hold** – is a passive investment strategy, where superannuation fund buys and holds the assets over the long-term. The asset weights were determined at the start of the investment period (June 1995) and remained constant throughout the investment period.
  - iii. **Traditional** portfolio – includes investments in equities (Australian and international), fixed income (Australian and international), property (direct and listed), and cash. Consequently, the industry fund balanced portfolio is reweighted to the four traditional assets. For example, the weighting for traditional assets as at 30 June 1995 was: equities (39%), fixed income (26%), cash (13%), and property (9%). The reweighted traditional portfolio to 100% was: equities (45%), fixed income securities (30%), cash (15%), and property (10%).
  - iv. **Optimal – No Constraints** model – assigns funds to asset classes based on highest risk-adjusted returns without restrictions on the level of investment in individual asset classes. The Optimal model is based on the MPT mean-variance portfolio construction technique. In theory, the portfolio optimisation (or mean-variance setting) generates a maximum Sharpe ratio portfolio based on the expected return, volatility and pairwise correlation parameters for all assets to be included in the portfolio. The classical mean-variance formulation was discussed earlier in Chapter Two. For  $n$  number of assets in the portfolio, the asset allocation is optimised by minimising portfolio risk for a given level of expected return using Markowitz's (1952) quadratic programming problem (see Equation 6-2).

$$\begin{aligned} \text{Minimise } \sigma_p^2 &= \sum_{i=1}^n \sum_{j=1}^n x_i x_j \sigma_{ij} \\ \text{subject to } \mu_p &= \sum_{i=1}^n x_i \mu_i \\ \mu_p &\geq \mu_o \end{aligned}$$

**Equation 6-2: Quadratic Mean-Variance Function**

where  $x_i$  = proportion of portfolio allocated to asset  $i$ .

$\mu_p$  = expected portfolio return.

$\mu_i$  = expected return on asset  $i$ .

$\mu_o$  = given level of expected return.

$\sigma_{ij}$  = covariance between asset  $i$  and asset  $j$  returns.

The covariance and correlation coefficient matrix tests the portfolio diversification benefits for the industry fund balanced investment option asset classes. Day (2001) detailed the technique of constructing optimum portfolios using the Microsoft Excel program. The Microsoft Excel spreadsheet 'Solver' function, a what-if analysis tool, is used to find the optimal weightings at a risk minimised and targeted expected portfolio return value. The key inputs include the historical total return and standard deviation data. The use of Solver allows application of constraints to restrict the values the program can use in the model.

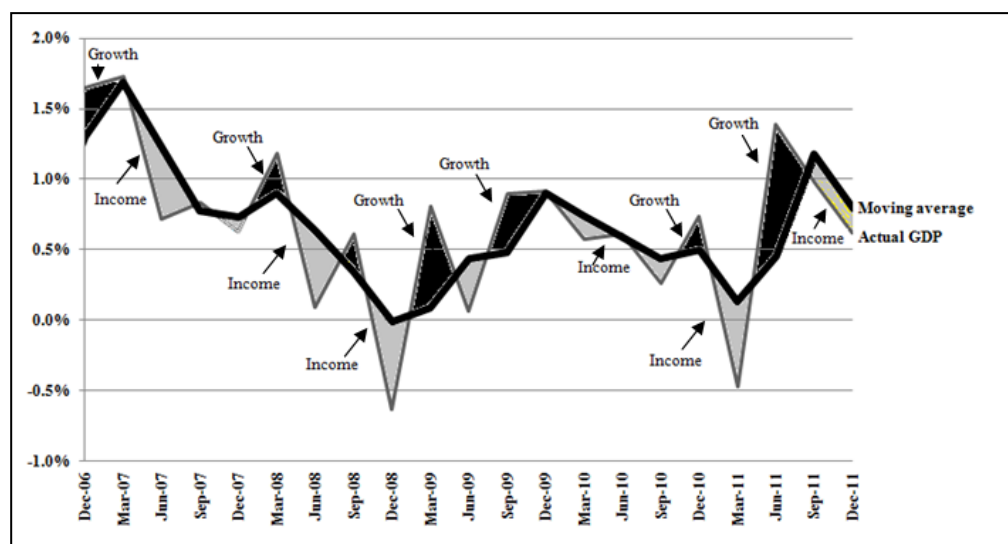
The individual asset weights were constrained to being positive (greater than or equal to zero), and the total portfolio weight should sum to 100%. The model does not allow short selling. The optimal asset



allocation model is reviewed annually. The construction of the efficient frontier involved calculating the possible portfolio weighting at a 10% interval for return and standard deviation. The Australian government 10 year bonds are used as the risk-free rate. There is no weight restriction on the level of investment for individual asset classes.

- v. **Optimal – Weight Constrained** – this strategy assigns funds to asset classes based on highest risk-adjusted returns, but within a defined asset weight range set by the industry superannuation funds. The strategy is the same as the Optimal – No constraints model except that it is modelled using minimum and maximum holding constraints (see Table 6-2). The minimal and maximal weight constraint formula and use in the context of the mean-variance portfolio optimisation was discussed in Chapter Two.
- vi. **Turning Points** model – is based on the cyclical movement of Australian Gross Domestic Product (GDP) to the long-term moving average. Figure 6-2 illustrates Australian GDP (actual and moving average trend) for a five year period.

**Figure 6-2: Australian GDP – Actual, Moving Average, 2006-2011**



Source: Author, adapted from ABS 2012b.

Figure 6-2 illustrates a turning point asset allocation model where switching in asset portfolios depends on economic conditions. The industry fund balanced portfolio is reweighted to either growth or income focused assets on a quarterly basis, similar to the Traditional model. Funds are allocated to growth focused assets (equity, alternatives, and property) during improved economic conditions. Income focused assets (fixed income, cash, and property) are selected in declining market conditions.

- vii. **Equal Weighted** model – allocates equal weighting to all asset classes. For the seven asset industry fund balanced investment portfolio, individual asset weight was approximately 14% throughout the investment period.
- viii. **Tactical – No Constraints** – the industry fund Tactical asset weight shift was determined on a quarterly basis using the ‘Risk Parity & Momentum’ portfolio construction technique. Gray et al. (2012) investigated different TAA models and identified ‘Risk Parity & Momentum’ as the best performing technique.

Risk parity (a simple volatility-weighted technique) over-weights less volatile assets and under-weights more volatile assets. Exposure to assets with negative quarterly returns is reduced to zero with the weight redistributed to cash. This allows increases in risk-adjusted return (higher Sharpe ratio) in the long run because of capital preservation. The Momentum portfolio construction technique then ranks each asset class based on its respective quarterly momentum signal. This ranking is used to determine the tactical weights.

For asset class  $i$ , the weight ( $W_m$ ) is calculated using the formula:

$$W_m(i) = \text{Base}(i) + R \times [\text{rank}(i) - \text{average}(\text{rank})] \quad \textbf{Equation 6-3: Tactical Momentum Ranking}$$

For the chosen seven asset class portfolio, the average rank (by definition) is 4. The changes to asset classes are always within the  $-3xR$ ,  $-2xR$ ,  $-R$ ,  $0$ ,  $R$ ,  $2xR$  and  $3xR$  based on rankings from 1 to 7.  $R$  is a parameter that can be changed depending on the investor's risk preference. A higher value of  $R$  means higher risk (Gray et al. 2012; Wang & Kochard 2011). For the purpose of this exercise,  $R$  is set as the risk-free rate (Australian government 10 year bonds). There are no predefined asset weight constraints for this strategy.

- ix. **Tactical – Weight Constrained** – is an active investment strategy where assets are regularly over-weighted or under-weighted to benefit from short-term market movements within a defined asset range set by superannuation funds. The strategy involves the Risk Parity & Momentum portfolio construction technique (similar to viii) but with predefined weight parameters for all asset classes (see Table 6-2).
- x. **Dynamic – No Constraints** – model is based on the MPT mean-variance portfolio construction technique on a three year rolling timeframe. This follows the Basak and Chabakauri (2010), and Nguyen and Portait (2002), approach of modelling DAA investment portfolios. The modelling formulation and parameters are same as the Optimal models (V). For the Dynamic – No Constraints strategy, there is no weight restriction on the level of investment for individual asset classes.
- xi. **Dynamic – Weight Constrained** – is a medium term asset allocation model where portfolio asset weighting is changed on a three year rolling timeframe. The strategy is the same as Dynamic – No Constraints, but is modelled using minimum and maximum holding constraints based on the industry fund strategic portfolio asset weight parameters (see Table 6-2).

The asset allocation model returns and asset weighting are susceptible to variations in the economic and financial market conditions. For example, in periods of financial market collapse, such as the 2007 GFC and 9/11 (September 2001), the Strategic portfolio is rebalanced with greater attention to stable investment sectors such as property and alternatives. In contrast, the early 1990s and mid 2000s periods were characterised by high investment returns, with the Strategic portfolio overweighted in assets such as equities and listed property (see Figure 6-1).

The performance variation for the different asset allocation models is also largely explained by their asset weighting. Changes in market conditions had no material impact on the Buy and Hold, and Equal Weighted, portfolio weights. In contrast, the Turning Points model asset weighting shifted constantly, based on movements

in GDP. The movement in investment markets had significant material impact on the optimal and tactical portfolio performance. The Optimal – No Constraints models are predominantly overweighted in assets that demonstrated the lowest volatility each quarter. The Tactical models (quarterly) and Dynamic models (three year rolling) are overweighted to the best performing assets (see Figure 6-3 for asset performance trend).

### 6.3.2.2 Statistical Analysis and Performance Measures

The key descriptive statistical analysis used in this research includes the mean and standard deviation measures. These statistical measures formed the basis for calculating the risk-adjusted performance profile of the different asset allocation strategies. In addition, other statistics used to describe the sample data were range, variance, kurtosis, and skewness. The use of descriptive business statistics is common in industry to present quantitative descriptions in a manageable form.

The *arithmetic mean*, typically referred as mean ( $\bar{X}$ ) is used in the research to measure the central tendency of a total return data set. The asset and portfolio mean total return are calculated by adding all 17 year sample quarterly data values and then dividing the sum by the number of values in the data set (67). In addition, the *geometric mean* rate of return ( $\bar{R}_G$ ) is used to measure the percentage changes on the industry superannuation fund balanced investment option individual asset classes over time (1-Year, 2-Year, 3-Year and so forth), using Equation 6-4.

$$\bar{R}_G = [(1+R_1) \times (1+R_2) \times \dots \times (1+R_n)]^{1/n} - 1 \quad \text{Equation 6-4: Geometric Mean Return}$$

where  $R_i$  is the rate of return in time period  $i$  (Berenson et al. 2007; Lind, Marchal & Mason 2002).

The industry superannuation fund portfolio risk is measured using the *standard deviation*. Risk analysis tools and formulas were extensively discussed in Chapter Two.

The industry practice is normally to report asset (or portfolio) total return and risk information in an annualised format. Therefore, the quarterly portfolio total return and standard deviation data are also presented in the annualised format in this research. The formulas used for annualising quarterly total return and standard deviation data are detailed in Equation 6-5 and Equation 6-6 respectively.

$$r_A = (1 + r_n)^n - 1 \quad \text{Equation 6-5: Annualised Return}$$

where  $r_A$  is annualised return.

$r_n$  = mean return for the return interval.

$n$  = the number of periods per the year.

The *annualised return* is the geometric mean of the returns for one year. The *annualised standard deviation* ( $\sigma_A$ ) is the standard deviation multiplied by the square root of the number of periods in one year.

$$\sigma_A = \sqrt{n} \sigma_n \quad \text{Equation 6-6: Annualised Standard Deviation}$$

where  $\sigma_n$  = standard deviation of the return interval

The multi-period standard deviation calculation assumes that each period's returns are independent and identically distributed (Berenson et al. 2007; Waggle & Moon 2006).

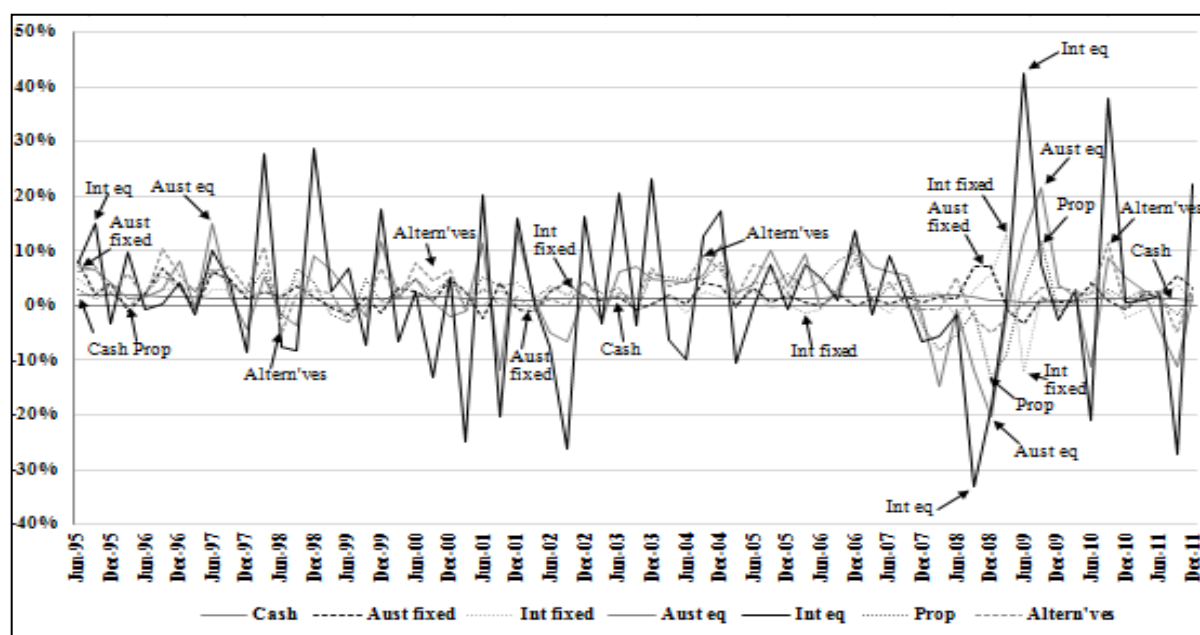
The individual asset and portfolio performances in this research are measured using the Sharpe ratio, tracking error, and information ratio. The Sharpe ratio is used as the risk-adjusted return measure. The formulation for these performance measures was discussed extensively in Chapter Two.

## 6.4 Results and Discussion

### 6.4.1 Historical Performance Analysis

Figure 6-3 shows the performance of the industry superannuation funds' seven defined asset classes over a 17 year period (1995-2011), using quarterly benchmark data for each asset class.

**Figure 6-3: Asset Class Quarterly Performance, 1995-2011**



Source: ASX 2012c; ASX 2012d; AVCAL 2012a; AVCAL 2012b; CBA 2012; Citigroup 2012b; Dow Jones Credit Suisse 2012; IPD 2012; MSCI 2012; RBA 2012a; RBA 2012b; UBS 2012.

Figure 6-3 illustrates the quarterly returns for the selected asset classes. It shows evidence of short-term volatility in the performance of asset classes. In particular, the figure shows sharp fluctuations in the Australian and international equity markets, compared to the relatively smooth cash and fixed income returns. This is further illustrated by examining the descriptive statistics shown in Table 6-5. Refer to table 6.3 for data sources. Property includes both direct/unlisted property and listed property.

Table 6-5 illustrates the quarterly performance of the asset classes. The research adopted the Australian Government 10-year bonds as risk-free rate. The mean quarterly total return for the seven asset classes ranged from 1.3-3.1% (5.4-12.8% annualised). The best performing asset on a risk-adjusted basis was the alternative asset class with an impressive risk-adjusted return (Sharpe ratio) of 0.44. Australian equities, international equities, and property, also recorded returns of more than 2%. Property allocation includes both direct/unlisted property, and listed securitised property (REITs) as per Rainmaker Group's quarterly asset weighted data series (see Figure 6-1). The performance data for direct property is representation of the PCA/IPD Composite Property

Index. Listed property is representation of the S&P/ASX 200 A-REIT Index. See Table 6-3 for asset performance data sources. Property (excluding the alternative asset class) outperformed all other asset classes with a risk-adjusted return of 0.21. International equities and Australian equities were the most volatile assets, with a standard deviation of 14.6% and 7.3% respectively. International fixed income displayed high kurtosis, reflecting a low even return distribution from its mean. Property and fixed income securities returns displayed attractive greater negative skewness.

**Table 6-5: Descriptive Statistics for Asset Performance – Quarterly Data, 1995-2011**

Asset Class	Mean Return	Standard Deviation	Risk-Adjusted Return	Kurtosis	Skewness	Annualised Return	Annualised Standard Deviation
Cash	1.32%	0.26%	-0.45	-0.09	0.28	5.37%	0.52%
Aust fixed	1.87%	2.35%	0.19	0.32	0.55	7.70%	4.71%
Int fixed	1.38%	2.80%	-0.02	10.94	-0.62	5.62%	5.60%
Aust eq	2.43%	7.28%	0.14	1.24	-0.56	10.07%	14.56%
Int eq	2.10%	14.59%	0.05	0.70	0.19	8.69%	29.17%
Prop	2.29%	4.12%	0.21	3.16	-1.19	9.50%	8.24%
Altern'ves	3.06%	3.65%	0.44	-0.08	-0.01	12.80%	7.30%

The performance of the alternative asset class can be explained by the increase in allocation in recent years to underlying alternatives sector assets – specifically private equity, infrastructure, and commodity investments. On average, the allocation to alternative assets within the industry superannuation fund portfolio has risen from 8% (prior to 2005) to 15% in 2012, having peaked at 21% in March 2009. Over a period of ten years (2001-2011), the alternative asset class has significantly outperformed all other asset classes with a mean return of 2.5%. Property was the only other asset to have recorded a mean return of more than 2% during this period.

Covariance computes the degree to which the two assets co-vary or change together. Covariance is not expressed in a particular unit, such as dollars or percentages. A positive covariance means that returns on two assets tend to move or change in the same direction. Negative covariance means returns tend to move in opposite directions. A value of zero means that there is no linear relationship between the two assets. Table 6-6 illustrates the co-movement of returns for different asset classes over the 17 year sample period.

**Table 6-6: Covariance Matrix: Asset Benchmark Returns – Quarterly Data, 1995-2011**

	Cash	Aust fixed	Int fixed	Aust eq	Int eq	Prop	Altern'ves
<b>Cash</b>	0.000007						
<b>Aust fixed</b>	0.000017	0.000546					
<b>Int fixed</b>	0.000008	0.000365	0.000771				
<b>Aust eq</b>	- 0.000017	- 0.000652	- 0.000750	0.005223			
<b>Int eq</b>	- 0.000061	- 0.001332	- 0.001565	0.007291	0.020958		
<b>Prop</b>	- 0.000001	0.000018	- 0.000251	0.001651	0.002144	0.001592	
<b>Altern'ves</b>	0.000023	0.000045	- 0.000101	0.001378	0.002938	0.000808	0.001313

The results in Table 6-6 show that Australian equities and international equities returns display the highest covariance matrix. Generally, the return for alternative assets moves in a direction similar to Australian equities and international equities. Property displays the lowest covariance matrix with all other asset classes.

The diverse movements in the asset classes can be further examined by correlation analysis, as shown in Table 6-7.

**Table 6-7: Correlation Matrix – Asset Benchmark Returns – Quarterly Data, 1995-2011**

	Cash	Aust fixed	Int fixed	Aust eq	Int eq	Prop	Altern'ves
<b>Cash</b>	1.00						
<b>Aust fixed</b>	0.28	1.00					
<b>Int fixed</b>	0.10	<b>0.55*</b>	1.00				
<b>Aust eq</b>	-0.09	-0.38	-0.37	1.00			
<b>Int eq</b>	-0.16	-0.39	-0.38	<b>0.69*</b>	1.00		
<b>Prop</b>	-0.02	0.01	-0.22	<b>0.58*</b>	0.37	1.00	
<b>Altern'ves</b>	0.24	0.05	-0.10	<b>0.52*</b>	<b>0.55*</b>	<b>0.55*</b>	1.00

\* significant correlation (P<5%)

Table 6-7 illustrates the diversification benefits of the selected asset classes. Asset classes with a strong correlation (>0.50) were linked to the same local and overseas asset class (for example, Australian and international Equities). In addition, the alternative asset class showed a relatively strong relationship with Australian and international Equities (>0.50). In part, this may relate to the underlying asset classes behind the performance of Private Equity and Hedge Funds. For property, the strong correlation (>0.50) with Australian Equities would relate, in part, to the allocation of REITs within the property asset class. Traditionally, REITs short-term performance is linked to the equity market. Likewise, property's strong relationship to alternative asset class can be due to similar underlying legal structures of assets, such as infrastructure, and providing a continuity of income.

#### **6.4.2 Australian Superannuation Funds Investment Strategies and Property Allocation**

The performance of industry superannuation funds is largely influenced by its asset allocation strategy. Table 6-8 details the performance of the nine asset allocation models used in this research.

Table 6-8 illustrates the quarterly performance of the various asset allocation strategies. Apart from the Buy and Hold, and Equal Weights strategies, each asset allocation strategy has an allocation range that can change over time. Tactical – Weight Constrained asset allocation strategy produced the highest mean total return (4.0%), followed by the Turning Points strategy (3.0%). Mean total returns for all other strategies were similar (around the low 2% mark). Traditional investment strategy, consisting of equities, fixed income, and cash, recorded the highest standard deviation (6.2%). Tactical – No Constraints strategy was the least volatile investment option with a risk level of less than 1.0%. The result is expected given that Tactical – No Constraints strategy is based on a risk parity model which over-weights assets with low volatility, such as cash, fixed income, and property, and under-weights assets with high volatility, such as equities. Tactical – No Constraints and Tactical – Weight

Constrained models recorded high risk-adjusted return profiles of 0.86 and 0.49 respectively. The worst performing asset allocation option on a risk-adjusted return basis was Traditional asset allocation strategy. With the exception of Traditional strategy, all other asset allocation strategies have outperformed the industry superannuation fund Strategic investment option.

**Table 6-8: Industry Fund Asset Allocation Strategies – Descriptive Statistics, Quarterly Performance Data, 1995-2011**

<b>Asset Allocation Strategy</b>	<b>Mean Return</b>	<b>Standard Deviation</b>	<b>Risk-Adjusted Return</b>	<b>Kurtosis</b>	<b>Skewness</b>	<b>Annualised Return</b>	<b>Annualised Standard Deviation</b>
Strategic	2.19%	5.25%	0.14	0.01	-0.38	9.04%	10.50%
Buy and Hold	2.15%	3.77%	0.19	-0.15	-0.35	8.86%	7.55%
Traditional	2.05%	6.15%	0.10	0.19	-0.36	8.45%	12.30%
Optimal – No Constraints	2.19%	2.86%	0.26	1.68	0.07	9.04%	5.72%
Optimal – Weight Constrained	2.17%	3.98%	0.18	0.57	-0.43	8.96%	7.96%
Turning Points	2.96%	5.21%	0.29	1.20	0.11	12.38%	10.42%
Equal Weighted	2.04%	3.42%	0.18	-0.20	-0.26	8.40%	6.84%
Tactical – No Constraints	2.25%	0.95%	0.86	19.77	3.36	8.98%	1.90%
Tactical – Weight Constrained	4.02%	5.30%	0.49	0.28	0.36	17.08%	10.60%

The data trend displays flat kurtosis for almost all the asset allocation strategies, indicating low and even distribution of results except Tactical – No Constraint. Results for Strategic, Buy and Hold, Traditional, Optimal – Weight Constrained, and Equal Weighted, asset allocation strategies were negatively skewed, meaning these allocation strategies have a greater chance of producing extremely negative outcomes. Results were positively skewed for the Tactical, Optimal – No Constraints, and Turning Points, asset allocation strategies.

Table 6-9 details the maximum and minimum weightings for the selected asset classes within the nine asset allocation models. Table 6-9 illustrates that the minimum and maximum allocation for different asset classes varies within each asset allocation strategy (except for Equal Weighted). The highest level of allocation was to cash at 94% in the Tactical – No Constraints, and Optimal – No Constraints, asset allocation strategies. The other assets to attain more than 50% allocation at some point during the 17 year sample period were alternatives (85%), property (75%), international equities (62%), international fixed (61%), and Australian equities (52%). All asset classes recorded a minimum asset allocation of 0% at some point during the analysis period, mainly in the Tactical – No Constraints, and Optimal – No Constraints, asset allocation strategies. Both Tactical – No Constraints, and Optimal – No Constraints, asset allocation strategies work on the premise of allocating most weighting to assets that display the lowest volatility in performance.

**Table 6-9: Asset Allocation Strategies – Maximum and Minimum Weightings**

Asset Allocation Strategy	Cash		Aust fixed		Int fixed		Aust eq		Int eq		Prop*		Altern'ves	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Strategic	3%	13%	5%	24%	2%	8%	24%	37%	12%	28%	9%	14%	4%	21%
Buy and Hold	13%	13%	24%	24%	2%	2%	27%	27%	12%	12%	9%	9%	13%	13%
Traditional	4%	17%	7%	31%	2%	10%	35%	44%	15%	38%	0%	0%	0%	0%
Optimal – No Constraints	0%	94%	0%	32%	0%	61%	0%	52%	0%	62%	0%	75%	0%	85%
Optimal – Weight Constrained	0%	15%	0%	20%	0%	15%	20%	40%	10%	30%	0%	20%	0%	25%
Turning Points	0%	32%	0%	51%	0%	20%	0%	52%	0%	33%	11%	35%	0%	27%
Equal Weighted	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Tactical – No Constraints	9%	94%	0%	86%	0%	71%	0%	9%	0%	6%	0%	22%	0%	44%
Tactical – Weight Constrained	0%	15%	0%	20%	0%	15%	20%	40%	10%	30%	0%	20%	0%	25%
<b>Average</b>	<b>5%</b>	<b>34%</b>	<b>6%</b>	<b>34%</b>	<b>2%</b>	<b>24%</b>	<b>16%</b>	<b>35%</b>	<b>8%</b>	<b>28%</b>	<b>5%</b>	<b>23%</b>	<b>3%</b>	<b>28%</b>

Note: With the exception of the Buy and Hold and Equal Weights strategies, all other asset allocation models were updated on a quarterly basis. The minimum and maximum weighting for each asset class represent allocations ascertained during modelling at different periods during the 17 year study period (June 1995-December 2011).

\* Prop = direct/unlisted property + listed property (A-REITs)



The average asset weightings range across all strategies were: cash (5-34%), Australian fixed (6-34%), international fixed (2-24%), Australian equities (16-35%), international equities (8-28%), alternatives (3-28%), and property (5-23%). Australian equities dominate all other asset classes in terms of the level of average minimum and maximum asset weighting. Excluding Optimal and Tactical unconstrained strategies, the allocation range for assets were: cash (6-15%), Australian fixed (9-22%), international fixed (3-11%), Australian equities (23-34%), international equities (12-25%), alternatives (5-16%), and property (5-13%). This is comparable to the industry superannuation fund conventional SAA approach guided by the weight parameters in Table 6-2.

Furthermore, the maximum allocation to the property and alternatives asset classes appeared similar for unconstrained and weighted constrained asset models. For example, Optimal – No Constraints maximum was property 75%, and alternatives 85%. Likewise, Optimal – Weight Constrained maximum was property 20%, and alternatives 25%. On evidence that these occurred at the same time, it would suggest that the strong correlation readings between property and the alternative asset class would lead to property and assets such as infrastructure being considered within a single asset class portfolio. Findings from the industry survey (Chapter Four and Chapter Five) highlighted that some funds now categorise direct property in the unlisted ‘real asset’ band, together with infrastructure assets. The diversification benefits of different property assets and alternative assets will be evaluated in detail in the next section.

The level of exposure to property also has an influence on the performance of the industry superannuation funds sector. Table 6-10 details the performance of the asset allocation models by including and excluding property in their portfolios. Overall, the results presented in Table 6-10 demonstrate that including property assets within a multi-asset portfolio improves returns, and provides stability by reducing the overall portfolio risk. This is evident both with conventional asset allocation models (such as Strategic, Buy & Hold, Traditional investment strategies), and more active asset allocation strategies. The industry superannuation fund Strategic investment strategy, with the inclusion of property assets, shows an 8.7% increase in risk-adjusted returns, and 6.6% reduction in portfolio risk. Property improved returns by 12.1% and reduced risk by 8.1% when included within the Traditional investment portfolio of equities, fixed income, and cash. The impact of property within the Buy & Hold, and Equal Weighted, strategies was positive, albeit minimal. With the inclusion of property, the optimal allocation strategies (Optimal – No Constraints, and Optimal – Weight Constrained) both illustrated a risk-adjusted return difference of 12-13%, and portfolio risk reduction of 8-10%. In addition, active asset allocation strategies (Tactical) demonstrated that portfolio returns can be improved by almost 30% with the inclusion of property assets. On a risk-adjusted return basis, portfolio performance improved by 1.5- 28.1% when property assets were included in a multi-asset portfolio. Except for the Tactical – No Constraints asset allocation strategy, all property inclusive strategies demonstrated reduced risk levels (0.5-10.9%) when compared to property excluded portfolios. Tactical – No Constraints is the only asset allocation strategy that illustrated higher portfolio risk with the inclusion of property. This is mainly because Tactical – No Constraints is based on the risk parity model which benefits from predominantly allocating higher portfolio weights to the least volatile asset, which in this research analysis was mainly cash.

**Table 6-10: Industry Fund Descriptive Statistics – Property Included and Excluded Portfolio Performance, 1995-2011**

<b>Investment Strategies</b>	<b>Property Inclusive Portfolio Performance</b>					<b>Property Excluded Portfolio Performance</b>					<b>Benefits of Including Property</b>		
	<i>Mean Return</i>	<i>Standard Deviation</i>	<i>Risk-Adjusted Return</i>	<i>Annualised Return</i>	<i>Annualised Standard Deviation</i>	<i>Mean Return</i>	<i>Standard Deviation</i>	<i>Risk-Adjusted Return</i>	<i>Annualised Return</i>	<i>Annualised Standard Deviation</i>	<i>Annualised Mean Return Difference</i>	<i>Annualised Standard Deviation Difference</i>	<i>Risk-Adjusted Return Difference</i>
Strategic	2.19%	5.25%	0.14	9.04%	10.50%	2.17%	5.60%	0.13	8.98%	11.20%	0.06%	-0.70%	0.01
Buy and Hold	2.15%	3.77%	0.19	8.86%	7.55%	2.15%	3.88%	0.18	8.87%	7.75%	-0.01%	-0.20%	0.01
Traditional*	2.07%	5.69%	0.11	8.55%	11.38%	2.05%	6.15%	0.1	8.45%	12.30%	0.10%	-0.92%	0.01
Optimal – No Constraints	2.19%	2.86%	0.26	9.04%	5.72%	2.16%	3.13%	0.23	8.93%	6.27%	0.11%	-0.55%	0.03
Optimal – Weighted Constraints	2.17%	3.98%	0.18	8.96%	7.96%	2.15%	4.34%	0.17	8.89%	8.68%	0.07%	-0.72%	0.01
Turning Points	2.96%	5.21%	0.29	12.38%	10.42%	3.10%	5.78%	0.29	12.99%	11.56%	-0.61%	-1.14%	0.00
Equal Weighted	2.04%	3.42%	0.18	8.40%	6.84%	2.03%	3.52%	0.17	8.35%	7.04%	0.05%	-0.20%	0.01
Tactical – No Constraints	2.25%	0.95%	0.86	8.98%	1.90%	1.95%	0.77%	0.67	7.79%	1.54%	1.19%	0.36%	0.19
Tactical – Weighted Constraints	4.02%	5.30%	0.49	17.08%	10.60%	3.85%	5.33%	0.45	16.30%	10.66%	0.78%	-0.06%	0.04

\*Property included with equities, fixed income, and cash

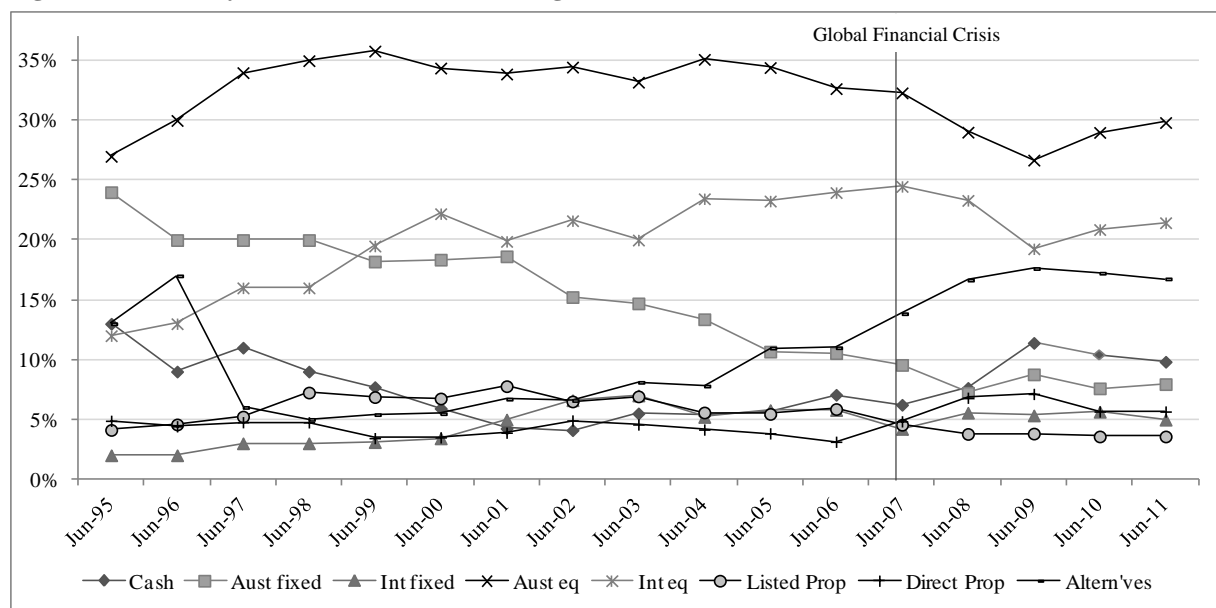
Overall, the analysis of the asset allocation models, with and without property assets, suggests that including property provides a substantial portfolio risk reduction, even with a limited risk-adjusted return difference of 1.5% (Turning Points strategy). The Turning Points portfolio allocation to property ranged from 11-35%. This high allocation suggests that property provides strong risk reduction features when compared to alternative asset classes. The results overall conform with earlier studies (Brown & Schuck 1996; Craft 2001; Hoesli, Lekander & Witkiewicz 2003; Worzala & Bajtelsmit 1997) which have argued that that allocation to property should be in the 10-30% range and that including property leads to a substantial improvement in portfolio performance.

### 6.4.3 Reprofiting the Property Portfolio

The analysis presented in Section 6.4.2 across the nine different asset allocation strategies indicates that property allocation for Australian superannuation funds can be within the range of 5-23%, and that including property provides substantial portfolio risk reduction and improved risk-adjusted returns. This section further analyses the diversification benefits of property assets by evaluating the direct property and listed property allocation components in the different investment models.

Figure 6-4 further details the industry superannuation fund balanced investment option asset allocation trend, with property allocation split into direct property and listed property components.

**Figure 6-4: Industry Fund Asset Allocation Weights, 1995-2011**



Source: Rainmaker Group 2012.

Figure 6-4 demonstrates that over the 17 year sample period, in the industry fund balanced investment portfolio, the aggregated average allocation to listed property was 5.3%, and direct property 5.0%. Generally, allocation to listed property has been higher than direct property in the pre-GFC period. Post 2007, allocation to listed property has declined from 6% to 3%. In contrast, the allocation level to direct property has improved significantly, from an average of 4% prior to 2007, to 7% at December 2011.

The historical performance trend for the industry fund balanced investment option was highlighted earlier in Figure 6-3. In addition, the direct property and listed property historical performance trend was provided in Figure 2-14 (Chapter Two). Table 6-11 provides the quarterly total return data for all asset classes at different time intervals, with the property allocation split between direct property and listed property components. Table 6-11 demonstrates that there is significant variance in quarterly total returns for most asset classes at different time intervals. The data display sharp fluctuations for the Australian equities, international equities, and A-REITs markets. The returns for cash, direct property, and fixed assets (Australian and international fixed), remained relatively stable. A-REITs recorded strong performance in 1995-2000, enjoying a 'golden era' with increased investments in offshore properties and increased debt during 2001-2007, recording the highest total return (4.4%). However, during 2007-2011 (the post GFC period), the sector declined to its lowest point, recording the only negative mean return (-3.1%). Although direct property performance lagged the A-REITS returns for most of the analysis period, it outperformed the listed property sector during 2007-2011.

**Table 6-11: Asset Total Return at Different Intervals – Quarterly Data, 1995 – 2011**

<i>Time Period</i>	<b>Cash</b>	<b>Aust fixed</b>	<b>Int fixed</b>	<b>Aust eq</b>	<b>Int eq</b>	<b>Direct Prop</b>	<b>Listed Prop</b>	<b>Altern' ves</b>
<b>1995 - 2000</b>								
Mean Return	1.4%	2.4%	1.9%	3.7%	4.5%	2.4%	3.0%	4.0%
Standard Deviation	0.3%	2.7%	1.7%	5.0%	10.9%	0.3%	4.7%	4.0%
<b>2001 - 2007</b>								
Mean Return	1.3%	1.4%	1.1%	3.3%	1.5%	3.2%	4.4%	3.6%
Standard Deviation	0.1%	1.9%	1.6%	6.1%	13.9%	0.8%	4.2%	3.0%
<b>2008 - 2011</b>								
Mean Return	1.2%	1.9%	1.2%	0.5%	0.4%	1.6%	-3.1%	1.4%
Standard Deviation	0.3%	2.6%	4.5%	10.0%	18.7%	2.2%	13.9%	3.7%

For the 17 year sample period, Table 6-12 details descriptive statistics on the performance of direct property and listed property in industry superannuation funds.

**Table 6-12: Direct Property and Listed Property Performance Statistics – Quarterly Data, 1995-2011**

<i>Asset Class</i>	<b>Mean Return</b>	<b>Standard Deviation</b>	<b>Sharpe Ratio</b>	<b>Kurtosis</b>	<b>Skewness</b>	<b>Annualised Return</b>	<b>Annualised Standard Deviation</b>
Direct Prop	2.46%	1.42%	0.72	4.16	-1.60	10.22%	2.85%
Listed Prop	1.76%	8.91%	0.04	5.06	-1.04	7.25%	17.82%

The results presented in Table 6-12 illustrate that over the 17 year period, direct property outperformed the listed property asset class. When read in conjunction with Table 6-5 (which details the performance analysis of all asset classes), the results also highlight that direct property is the best performing asset class in the industry superannuation fund balanced investment option. Property has the highest risk-adjusted return (0.72), followed by the alternatives sector (0.44). All listed assets displayed significant risk and variance. International equities recorded the highest standard deviation (14.59%), followed by listed property (8.91%), and Australian equities (7.28%). In contrast, cash and direct property displayed relatively low standard deviations, 0.26% and 1.42% respectively.

Table 6-13 details the covariance at different time intervals of direct property and listed property asset classes.

**Table 6-13: Covariance Matrix – Direct and Listed Property at Different Intervals**

<b>Covariance between:</b>	<b>1995-2000</b>	<b>2001-2007</b>	<b>2008-2011</b>	<b>1995-2011</b>
Direct Prop & Listed Prop	0.0000	0.0001	0.0005	0.0004
Listed Prop & Aust eq	0.0003	0.0008	0.0104	0.0040
Direct Prop & Aust eq	- 0.0000	0.0002	0.0003	0.0002

Table 6-13 demonstrates that the co-movement of returns between direct property and listed property is significantly low when compared to the A-REITs and Australian equities matrix. During 1995-2007, there is no evidence of a linear relationship between direct property and listed assets. Although in the post GFC period direct property and listed property return covariance has improved, it is still not as strong as the A-REITs and Australian equities co-movement. When read in conjunction with the covariance matrix of all other asset classes in the industry fund balanced investment option portfolio (Table 6-6), the results demonstrate that A-REITs displayed higher co-movement with equities (Australian and international) than with direct property. Direct property returns displayed low or zero linear relationships with all other asset classes.

The diversification benefits of direct property and listed property asset classes in the industry fund balanced investment option can be attained by examining the correlation matrix. Table 6-14 and Table 6-15 assess the correlation between direct and listed property and other assets over different time periods. This follows the Jones Lang LaSalle (2012) correlation reporting methodology for property assets. Each time period involved a different number of data points. For example, 1-year represents four quarterly data points in 2011, 2-year represents eight quarterly data points from 2010-2011, and 17-year represents 67 quarterly data points from 1995-2011. To better evaluate the correlation of different property assets to the specific alternative asset classes, alternative index assets are separated as infrastructure (Infr), hedge funds, private equity, and commodity (C'dity).

**Table 6-14: Correlation Matrix: Direct Property and Other Asset Classes at Different Intervals**

<b>Direct Property correlation to:</b>										
<b>Time Period</b>	<i>Cash</i>	<i>Aust fixed</i>	<i>Int fixed</i>	<i>Aust eq</i>	<i>Int eq</i>	<i>Listed Prop</i>	<i>Infr</i>	<i>Hedge Funds</i>	<i>Private Equity*</i>	<i>C'dity</i>
1-year	0.15	-0.94	-0.86	0.78	0.55	0.59	0.77	0.44	-0.16	0.12
2-year	0.91	0.20	-0.01	-0.09	0.14	0.45	-0.18	0.12	-0.60	-0.10
3-year	0.79	0.26	-0.08	-0.08	-0.16	0.19	0.27	-0.32	0.55	0.61
5-year	0.50	-0.09	-0.10	0.21	0.03	0.23	0.28	-0.03	0.60	0.21
7-year	0.52	-0.11	-0.12	0.28	0.07	0.32	0.31	-0.01	0.66	0.22
10-year	0.49	-0.10	-0.10	0.28	0.08	0.33	0.32	0.01	0.55	0.19
17-year	0.32	-0.08	-0.11	0.24	0.06	0.31	0.19	-0.01	0.52	0.19

\*Private Equity data are available from June 2000.

Table 6-14 demonstrates that over the short-term (1-2 years), the correlation between direct property and listed property is high (0.59 and 0.45). This indicates lower diversification potential between the assets. In the medium term (3-7 years) the correlation between direct and listed property ranges from 0.19-0.32, and reduces to 0.31

over the 17-year sample period. Direct property displays strong diversification potential with most asset classes, including alternative assets such as infrastructure and commodities, in both short-term and long-term horizons.

Listed property displayed strong diversification benefits with cash, fixed income (Australian and international), and to some extent with hedge funds, in the short and long-term horizon. The correlation between A-REITs and Australian equities was high ( $> 0.60$ ) in both the short-term and long-term, displaying potential lack of diversification benefit.

**Table 6-15: Correlation Matrix – Listed Property and Other Asset Classes at Different Intervals**

<b>Listed Property correlation to:</b>										
<b>Time Period</b>	<i>Cash</i>	<i>Aust fixed</i>	<i>Int fixed</i>	<i>Aust eq</i>	<i>Int eq</i>	<i>Direct Prop</i>	<i>Infr.</i>	<i>Hedge Funds</i>	<i>Private Equity*</i>	<i>C'dity</i>
1-year	-0.49	-0.47	-0.63	0.78	0.89	0.59	0.88	0.86	0.23	-0.12
2-year	0.16	-0.30	-0.33	0.57	0.78	0.45	0.45	0.76	0.03	-0.16
3-year	-0.31	-0.46	-0.62	0.83	0.53	0.19	0.58	0.23	0.78	-0.14
5-year	-0.25	-0.36	-0.52	0.79	0.50	0.23	0.62	0.22	0.66	-0.22
7-year	-0.18	-0.30	-0.47	0.78	0.50	0.32	0.60	0.22	0.62	-0.21
10-year	-0.19	-0.25	-0.44	0.73	0.46	0.33	0.57	0.23	0.55	-0.21
17-year	-0.09	-0.04	-0.32	0.62	0.40	0.31	0.52	0.21	0.47	-0.19

\*Private Equity data are available from June 2000.

The research investigates the diversification benefits of property assets with Australian equities and alternative assets by constructing two asset portfolio models. The asset allocation is determined using the mean-variance portfolio optimisation technique. Figure 6-5 displays the efficient frontier and optimal allocation results for the two asset models, being Portfolio A (Direct Prop & Listed Prop), Portfolio B (Direct Prop & Altern'ves), and Portfolio C (Listed Prop & Aust eq).

Figure 6.5 shows direct relationship based on industry survey findings (Chapters Four & Five). A key issue identified in the industry survey is that the current industry property allocation trend is to diversify away from REITs with higher allocation to direct/unlisted property funds. In addition, some funds are reprofiling the asset classification on risk/return profile, market and operational characterises, rather than on a generic basis. REITs are increasingly regarded as part of the equities portfolio, and infrastructure is pooled in the unlisted property portfolio. The literature review also highlighted that the ongoing, limited supply of quality real estate is likely to see funds seek higher allocation to alternative sectors in future, such as infrastructure. Figure 6.5 evaluates the diversification benefits and asset allocation components of different property assets (direct property and listed property) within the setting of industry defined two asset portfolio models.

Figure 6-5 illustrates that including listed property in a direct property portfolio is insignificant, evident from the 100% allocation to direct property in Portfolio A. However, listed property does gain an allocation of 25% in the Australian equities portfolio (Portfolio C).

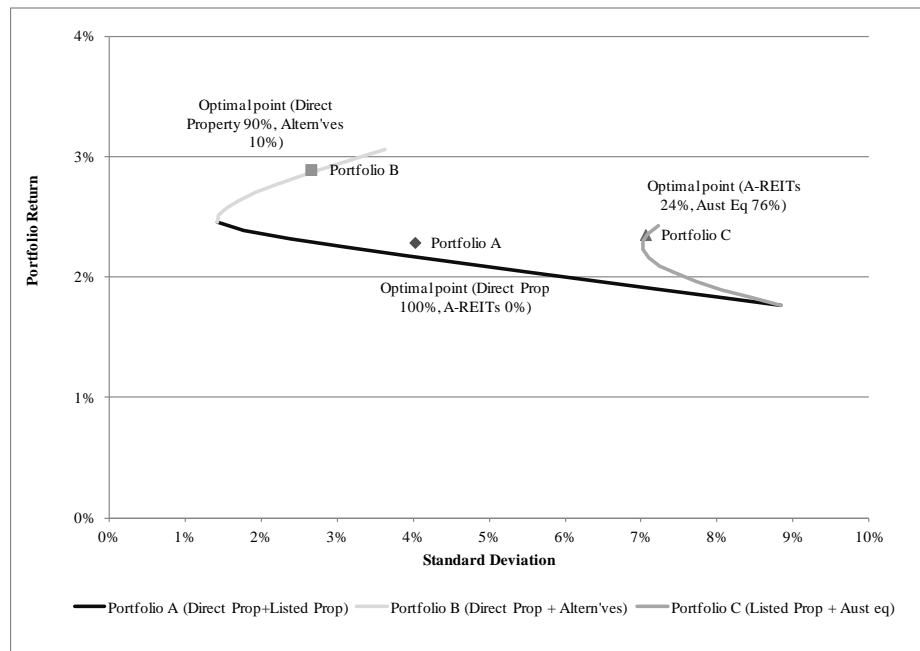
**Figure 6-5: Efficient Frontier – Property in Two Asset Portfolios**


Table 6-16 details the performance statistics of the different two asset portfolios. The results presented in Table 6-16 illustrate that including listed property in the direct property portfolio is insignificant, evident from the low risk-adjusted return performance (0.21) in Portfolio A when compared to the direct property only portfolio (0.72). However, including listed property in the direct property portfolio provides a much better performance profile than including A-REITs in the Australian equities portfolio (0.13). Including alternative assets in the direct property portfolio (Portfolio B) provides the best risk-adjusted return performance (0.55), although portfolio weighting is dominated by direct property.

**Table 6-16: Performance Statistics – Two Asset Portfolios**

Portfolio	Assets	Mean Return	Standard Deviation	Sharpe Ratio
Portfolio A	Direct Prop & Listed Prop	2.29%	4.02%	0.21
Portfolio B	Direct Prop & Altern'ves	2.89%	2.65%	0.55
Portfolio C	Listed Prop & Aust eq	2.35%	7.06%	0.13

Overall, the results provide evidence that placing listed property in the equities portfolio is not a viable investment option. However, including alternatives assets in the real estate portfolio seems beneficial. The performance of different property assets needs to be tested further within the parameters of multi-asset allocation models.

The average property allocation in the industry superannuation fund balanced investment option is 10.3% for the 17-year sample period, comprising direct property (5.0%) and listed property (5.3%). The research investigates the diversification benefits of different property assets in the industry fund balanced portfolio, within the setting of nine different investment strategies. The analysis is undertaken using two scenarios, including either direct property or listed property. For the 'direct property inclusive portfolios', the industry fund balanced investment

option property asset allocation is represented by the direct property component only. Similarly, the industry fund 'listed property inclusive portfolios' have property represented by the listed property component. The results can be compared against the composite property portfolio shown in Table 6-8, which includes both property asset classes added separately to the balanced portfolio.

Table 6-17 details the performance statistics for the asset allocation strategies using different property investment scenarios.

**Table 6-17: Performance Statistics – Direct Property Inclusive and Listed Property Inclusive Asset Allocation Strategies**

	Direct Prop Inclusive Portfolios			Listed Prop Inclusive Portfolios		
<b>Investment Strategies</b>	<i>Mean Return</i>	<i>Standard Deviation</i>	<i>Sharpe Ratio</i>	<i>Mean Return</i>	<i>Standard Deviation</i>	<i>Sharpe Ratio</i>
Strategic	2.19%	5.29%	0.14	2.17%	5.54%	0.13
Buy and Hold	2.16%	3.69%	0.20	2.13%	3.95%	0.18
Traditional	2.08%	5.74%	0.11	2.04%	6.06%	0.10
Optimal – No Constraints	2.18%	2.69%	0.28	2.16%	3.03%	0.24
Optimal – Weight Constrained	2.16%	3.89%	0.19	2.15%	4.09%	0.17
Turning Points	3.08%	5.30%	0.31	2.96%	5.64%	0.27
Equal Weighted	2.36%	3.50%	0.27	2.36%	3.50%	0.27
Tactical – No Constraints	2.09%	0.83%	0.79	2.32%	0.95%	0.94
Tactical – Weight Constrained	4.08%	4.75%	0.56	4.25%	5.58%	0.50

\*Property included with Equities, Cash and Fixed Income assets.

The results presented in Table 6-17 highlight that except for the Tactical – No Constraints strategy, all direct property led portfolios outperformed the listed property inclusive portfolios. Buy and Hold, Traditional, Turnings Points, and Tactical – Weight Constrained strategies perform better when property is represented by direct property assets. In contrast, Tactical – No Constraints was the only strategy that displayed improved performance when property was represented as listed property assets. However, including both property asset classes in multi-asset portfolios does provide improved risk-adjusted return performance for several strategies including Strategic (lower risk mainly), Optimal, and Tactical – No Constraints strategies (see Table 6-8).

The Traditional strategy demonstrated the highest risk profile across all scenarios: 5.74% in direct property inclusive portfolios, 6.06% in listed property inclusive portfolios, and 6.15% when both property assets were included in the multi-asset portfolios. The Tactical – Weight Constrained strategy demonstrated the highest mean total return profile across all scenarios: 4.08% in direct property inclusive portfolios, 4.25% in listed property inclusive portfolios, and 4.02% when both property assets were included in the multi-asset portfolios. Excluding the Equal Weighted strategy, all listed property led portfolios demonstrated a higher risk profile than the direct property inclusive strategies. The Tactical – No Constraints strategy, which included both direct and listed property assets, produced the highest risk-adjusted return performance (0.86). The results also illustrate that except for the Traditional strategy, all direct and listed property inclusive investment strategies have outperformed the industry fund Strategic investment portfolio.



The performance of listed property led Tactical strategies must be read with some caution. Tactical strategies work on the premise of overweighting assets with least volatility, and reduced allocation for assets with negative performance to zero. Listed property recorded negative total return in 13 out of 20 quarters leading up to December 2011, and 21 out of 68 quarters for the entire sample period. Although in theory listed property offers a better tactical allocation option due to direct property's illiquidity issues, the A-REITs performance during the 2007-2011 period would have made it impracticable for active fund managers to earn extra returns using listed property. However, recent data (ASX 2012b; ASX 2013a) shows that the A-REITs sector has recovered strongly which may lead to improved portfolio allocation in future.

Property, when represented by direct property, gained an average allocation of 16% across all strategies, ranging from 5% (Buy and Hold) to a maximum of 69% (Optimal – No Constraints). Property, when represented by listed property, gained an average allocation of 8%, ranging from 2% (Tactical – No Constraints) to 14% (Equal Weights). However, the allocation component changes slightly when both property assets are included in the same portfolio as separate asset classes. Table 6-18 details the average asset weights for the industry fund balanced investment option when both direct property and listed property are included in the multi-asset portfolio as a separate asset class. Table 6-18 demonstrates that when both direct property and listed property investments are available, the allocation to direct property mostly outweighs listed property in all investment strategies. Direct property allocation ranged from a minimum of 5% (Strategic) to a maximum of 50% (Optimal – No Constraints). In contrast, listed property failed to gain allocation in the Optimal – No Constraints strategy, with the highest sector weighting being 13% in the Equal Weighted portfolio.

**Table 6-18: Average Asset Weights – Direct and Listed Property Inclusive Strategies, June 95-Dec 11**

Asset Allocation Strategy	Aust eq	Int eq	Direct Prop	Listed Prop	Aust fixed	Int fixed	Cash	Altern' ves
Strategic	32%	20%	5%	5%	14%	6%	7%	11%
Buy and Hold	27%	12%	5%	4%	24%	2%	13%	13%
Traditional	37%	23%	7%	5%	15%	5%	8%	0%
Optimal - No Constraints	5%	7%	50%	0%	3%	4%	16%	15%
Optimal - Weight Constrained	22%	13%	20%	6%	13%	6%	10%	10%
Turning Points	21%	13%	12%	10%	19%	7%	11%	7%
Equal Weighted	13%	13%	13%	13%	13%	13%	13%	13%
Tactical - No Constraints	3%	2%	17%	2%	4%	4%	65%	3%
Tactical - Weight Constrained	30%	19%	12%	4%	9%	5%	11%	10%
<b>Average</b>	21%	14%	16%	5%	13%	7%	16%	9%

Earlier research by MacKinnon and Al Zaman (2009), Seiler, Webb & Myer (2001a), and Stevenson (2001), also found that when both direct property and REITs are available as different asset classes, REITs play little or no role in optimal portfolios. However, their research was limited to passive asset allocation strategies, such as the 'buy and hold' investment model. This research confirms that even with active asset allocation strategies, when both property assets are available, listed property is expected to play little or no role in multi-asset portfolios. Australian equities was the dominant asset class with an average 21% allocation, followed by direct property and cash, both at 16%. Listed property recorded the lowest average asset allocation at 5%. The high weighting to

property assets may be impacted by using smoothed returns versus de-smoothed returns in asset allocation models. However, earlier studies such as AXA Real Estate (2012) in UK and Newell and Lee (2011b) in Australia found that substituting the raw property index data with de-smoothed property risk estimates does little to change the weighting of property in the mixed-asset portfolio. Looking across the different asset allocation strategies, equities (Australian and international), and Australian fixed, dominated the Strategic, Traditional, Turning Points and Tactical – Weight Constrained investment strategies. Direct property, Australian fixed, and cash, were the key assets in the Optimal – No Constraints and Tactical – No Constraints investment strategies. In addition, direct property, Australian equities, and cash, recorded higher weightings in the Optimal – Weight Constraints investment strategy. Except for the Strategic and Equal Weighted strategies, direct property had a higher representation than listed property across all investment strategies.

The average allocation to direct property and listed property in the alternative models was direct property 16%, and listed property 5%. Excluding unconstrained investment strategies, the average allocation to direct property was 12%, and listed property 5%. This can be compared to the industry fund Strategic portfolio average property allocation of 10% (5% direct property, and 5% listed property). Despite the higher asset allocation range assigned to alternative assets (0-25%) than to property assets (0-20%), the average allocation to alternatives was 9%, lower than the direct property allocation (16%). Recent studies (Finkenzeller, Dechant & Schäfers 2010; Newell & Lee 2011a; Newell, Peng & De Francesco 2011) have concluded that direct property may play a less significant role in multi-asset portfolios when the alternative assets, such as infrastructure, are included. However, the consensus was that both are distinct assets and offer different diversification benefits. The strong allocation to direct property in both the two asset and multi-asset portfolios in this research further highlights that direct property will command significant allocation in institutional portfolios, despite the availability of similar real assets such as infrastructure.

Geltner, Rodriguez and O’Conner (1995) found that neither form of property is a perfect substitute for the other in a portfolio, and that timing may also be an important factor in choosing between direct and securitised property. Therefore, it is imperative to investigate the asset allocation level of both direct and listed property at different time intervals. Table 6-19 further details the direct and listed property allocation level in three year rolling intervals. Note that passive investment strategies (Buy and Hold, Equal Weighted) are excluded from the analysis. The analysis presented in Table 6-19 confirms that the allocation to direct and listed property assets is time-varying. Direct property allocation was prominent for the Optimal and Tactical investment strategies, while listed property received higher allocations in the Strategic, Traditional and Turning Points strategies. Both direct and listed property peaked in the three year period to 2001, with an average allocation across all strategies at 18% and 7% respectively. Direct property allocation declined to as low as 13% (June 2010). Listed property allocation was prominent across most investment strategies in the three year period to June 2007. However, the trend post GFC period highly favours direct property allocation across all investment strategies. The average allocation to direct property and listed property during the three year period to December 2011 was 15% and 3% respectively. Overall, the results demonstrate that even at different time intervals, the average allocation to direct property is significantly higher than listed property across most investment strategies.

**Table 6-19: 3-Year Rolling Direct Property and Listed Property Asset Allocation Level**

Asset Allocation Strategy	June-98		June-01		June-04		June-07		June-10		December-11		17-year Average	
	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>
Strategic	5%	5%	4%	7%	5%	7%	4%	5%	6%	4%	7%	3%	<b>5%</b>	<b>5%</b>
Traditional	5%	6%	4%	8%	5%	7%	4%	6%	8%	5%	8%	4%	<b>6%</b>	<b>6%</b>
Optimal – No Constraints	44%	0%	54%	2%	31%	0%	69%	4%	37%	2%	41%	1%	<b>47%</b>	<b>2%</b>
Optimal – Weight Constrained	20%	5%	16%	9%	8%	0%	18%	8%	14%	7%	19%	3%	<b>16%</b>	<b>6%</b>
Turning Points	9%	10%	8%	14%	10%	14%	10%	13%	15%	10%	14%	7%	<b>10%</b>	<b>11%</b>
Tactical – No Constraints	20%	3%	25%	3%	28%	4%	6%	3%	6%	1%	8%	2%	<b>16%</b>	<b>3%</b>
Tactical – Weight Constrained	11%	4%	16%	5%	13%	6%	7%	6%	7%	2%	7%	3%	<b>11%</b>	<b>5%</b>
Average	<b>16%</b>	<b>5%</b>	<b>18%</b>	<b>7%</b>	<b>14%</b>	<b>5%</b>	<b>17%</b>	<b>6%</b>	<b>13%</b>	<b>4%</b>	<b>15%</b>	<b>3%</b>	<b>16%</b>	<b>5%</b>

Note: passive investment strategies (Buy and Hold, Equal Weighted) are excluded from the analysis as asset weights remain constant throughout the investment period.

#### 6.4.4 Dynamic Asset Allocation Strategy and Property Allocation

This section of the research design involves constructing two DAA investment models based on the MPT mean-variance portfolio optimisation framework. The Dynamic – No Constraints investment strategy is based on the premise of overweighting assets with low variance, thus having high exposure to a specific asset class at specific points of time. The Dynamic – Weight Constrained model is set within the predefined holding constraints, in similar fashion to the industry superannuation fund Strategic investment portfolio. The industry superannuation fund's balanced investment portfolio historical asset return performance, correlation, and covariance matrix over a 17 year period (1995-2011) was examined in Section 6.4.1.

Table 6-20 details the performance of the Dynamic investment strategies.

**Table 6-20: Dynamic Asset Allocation Model Performance Statistics – Quarterly Data, 1995-2011**

Asset Allocation Strategy	Mean Return	Standard Deviation	Risk-Adjusted Return	Kurtosis	Skewness	Annualised Return	Annualised Standard Deviation
Dynamic – No Constraints	2.30%	2.10%	0.41	-0.21	0.07	9.51%	4.19%
Dynamic – Weight Constrained	2.16%	3.55%	0.20	-0.13	-0.46	8.92%	7.11%

Table 6-20 illustrates that the Dynamic – No Constraints asset allocation strategy produced the highest mean total return (2.3%). In addition, the Dynamic – No Constraints strategy was the least volatile investment option, with a risk level of less than 2.1%. The result is expected, given that Dynamic – No Constraints strategy is based on Markowitz's classical mean-variance formulation which seeks to minimise portfolio risk by over-weighting assets with low variance. The data trend displays flat kurtosis for both the asset allocation strategies, indicating low and even distribution. Results for the Dynamic – Weight Constrained asset allocation strategy were negatively skewed, meaning this allocation strategy has a greater chance of producing extremely negative outcomes. Results for the Dynamic – No Constraints strategy were positively skewed.

Dynamic – No Constraints strategy recorded a high risk-adjusted return profile (0.41), followed by the Dynamic – Weight Constrained strategy (0.20). The results can be compared to the industry fund conventional Strategic portfolio Sharpe ratio (0.14) – see Table 6-8. On a risk-adjusted return basis, both Dynamic investment strategies have outperformed the industry superannuation fund Strategic portfolio. The results are similar to international studies such as Vliet and Blitz (2011) which show that the use of dynamic investment strategies provide stabilised risk and enhanced expected return, compared to the strategic investment approach.

Table 6-21 details the aggregate asset allocation weights for the industry fund Dynamic investment strategies. The average allocation across the different strategies was: equities (Australian and international) 23%, fixed income (Australian and international) 21%, cash 21%, property 22%, and alternative assets 13%. Equities dominate all other assets in terms of the level of asset weighting in the constrained asset allocation strategy. Property and cash featured prominently in the Dynamic – No Constraints strategy. In the context of property

assets, the results illustrate that depending on the asset allocation strategy, weighting to property assets can fall within a 15-28% range. Even on a constrained basis, the allocation to property in the Dynamic investment portfolio was 15%, higher than the current industry fund Strategic portfolio average of 10% (see Table 6-4).

**Table 6-21: Aggregate Dynamic Investment Portfolio Asset Weights**

Asset Classes	Dynamic – No Constraints	Dynamic – Weight Constrained	Average
Cash	31%	11%	21%
Aust fixed	5%	13%	9%
Int fixed	11%	12%	12%
Aust eq	8%	22%	15%
Int eq	4%	12%	8%
Prop	28%	15%	22%
Altern'ves	13%	15%	13%

Table 6-22 further details property allocation levels for the Dynamic investment approaches in three year rolling intervals.

**Table 6-22: Dynamic Strategy Property Allocation at 3-Year Rolling Intervals, 1995-2011**

Asset Allocation Strategy	Jun-95	Jun-98	Jun-01	Jun-04	Jun-07	Jun-10	Dec-11	17-year Average	Range
Dynamic – No Constraints	44%	46%	29%	14%	29%	21%	33%	28%	32%
Dynamic – Weight Constrained	20%	16%	17%	8%	19%	15%	17%	15%	12%

Table 6-22 provides three year rolling property allocation data for the Dynamic investment models. The results illustrate that allocation to property assets varies with time. The property allocation level for the Dynamic – No Constraints, and Dynamic – Weight Constrained, models were 32% and 12% respectively. For the Dynamic – No Constraints strategy, the property allocation level was above 40% prior to June 2001. Since then, allocation levels have fluctuated sharply, declining to 14% in June 2004, and recovering to 33% in December 2011.

The highest level of property allocation for the Dynamic – Weight Constrained investment strategy was 20% at June 1995. Except for the 8% allocation recorded at June 2004, the Dynamic – Weight Constrained strategy allocation to property has generally tracked 15-19% since June 1995. Property allocation for both Dynamic strategies declined slightly from June 2004 to June 2010. This can be attributed to the lag effect of 9/11 (September 2001) and the 2007 GFC. More recently (December 2011), property allocation has increased slightly across both Dynamic investment strategies.

To ascertain which property investment scenario – that is, including direct property, or listed property, or both – provides the best investment option, the investment strategies were further tested under three different property investment scenarios: i) All Prop (the model includes both direct and listed property) based on industry

allocation (see Figure 6-1), ii) Direct Prop (property is represented in the model by direct property component only), and iii) Listed Prop (property is represented in the model by the listed property component only). Table 6-23 details the performance statistics for the Dynamic investment strategies using different property asset allocation scenarios.

Table 6-23 displays the performance of the Dynamic investment strategies using different property asset allocation scenarios.

**Table 6-23: Performance of Dynamic Investment Strategies with Different Property Allocation Scenarios – Quarterly Data, 1995-2011**

<b>Asset Allocation Strategies</b>	<b>Mean Return</b>	<b>Standard Deviation</b>	<b>Risk-Adjusted Return</b>	<b>Annualised Return</b>	<b>Annualised Standard Deviation</b>
<b>Dynamic – No Constraints</b>					
All Prop	2.30%	2.10%	0.41	9.51%	4.19%
Direct Prop	2.37%	2.23%	0.42	9.81%	4.45%
Listed Prop	2.32%	2.40%	0.37	9.60%	4.80%
<b>Dynamic – Weight Constrained</b>					
All Prop	2.16%	3.55%	0.20	8.92%	7.11%
Direct Prop	2.25%	3.60%	0.23	9.30%	7.20%
Listed Prop	2.19%	3.79%	0.20	9.04%	7.58%

Table 6-23 illustrates that the Dynamic – No Constraints direct property led portfolio recorded the highest mean total return (2.4%). On a risk-adjusted basis, the Dynamic – No Constraints direct property led portfolio outperformed the Dynamic – Weight Constrained strategy with a Sharpe ratio of 0.42. The Dynamic – No Constraints ‘Listed Prop’ risk-adjusted return was 0.37, compared to the ‘Direct Prop’ portfolio (0.42), and ‘All Prop’ portfolio (0.41). The risk-adjusted return profile for the Dynamic – Weight Constrained ‘Listed Prop’ and ‘All Prop’ portfolios was similar (0.20), but lower than the ‘Direct Prop’ portfolio (0.23). Overall, the results demonstrate that direct property led Dynamic investment portfolios offer better risk-adjusted return performances compared to listed property led portfolios. Across the different asset allocation strategies, the risk-adjusted return performances of the ‘All Prop’ portfolio were similar to the ‘Direct Prop’ led portfolios. This indicates that fund managers are better off adopting DAA investment strategies that include both direct and listed property assets as such approaches offer a more diversified investment portfolio. Including listed property also provides liquidity benefits for the fund manager.

The allocation to property also has an influence on the performance of the investment portfolios. Table 6-24 details the performance of the asset allocation models by including and excluding property in the Dynamic portfolios.

**Table 6-24: Dynamic Investment Strategies – Property Included & Excluded – Quarterly Data, 1995-2011**

	Property Inclusive Portfolios					Property Excluded Portfolios					Benefits of including Property		
<b>Strategies</b>	<i>Mean Return</i>	<i>Standard Deviation</i>	<i>Sharpe Ratio</i>	<i>Annualised Return</i>	<i>Annualised Standard Deviation</i>	<i>Mean Return</i>	<i>Standard Deviation</i>	<i>Sharpe Ratio</i>	<i>Annualised Return</i>	<i>Annualised Standard Deviation</i>	<i>Annualised Mean Return Difference</i>	<i>Annualised Standard Deviation Difference</i>	<i>Risk- Adjusted Return Difference</i>
Dynamic – No Constraints	2.30%	2.10%	0.41	9.51%	4.19%	2.01%	2.54%	0.23	8.30%	5.09%	1.21%	-0.90%	0.18
Dynamic – Weight Constrained	2.16%	3.55%	0.20	8.92%	7.11%	2.12%	3.80%	0.18	8.75%	7.60%	0.17%	-0.49%	0.02

Table 6-24 demonstrates the performance benefits of including property within different Dynamic investment strategies. The empirical analysis shows that including property assets within a multi-asset portfolio improves returns and provides stability by reducing overall portfolio risk. All property inclusive Dynamic strategies demonstrated lower standard deviation and higher mean total return when compared to the property excluded investment strategies. The Dynamic – No Constraints strategy demonstrated a risk-adjusted return difference of 44%, and portfolio risk reduction of 21%, when property assets were included. The extreme results in the Dynamic – No Constraints strategy were expected, given that the model is predominantly over-weighted to assets with low variance, such as cash and property. The property included Dynamic – Weight Constrained investment strategy (which works on similar holding constraint parameters as the industry fund Strategic investment approach) displayed an improved risk-adjusted return (10%) and reduced risk profile (-7%), compared to the property excluded portfolio. The Dynamic – Weight Constrained portfolio allocation for property ranged from 8-20% over the 17 year sample period. This high allocation suggests that property provides strong risk reduction features when compared to alternative asset classes.

## **6.5 Summary**

This chapter examined the role of property in the Australian industry superannuation fund balanced investment option by constructing and critically evaluating a variety of passive and active asset allocation models against the fund's conventional SAA technique. The analysis was undertaken for a 17 year timeframe (1995-2011) using ex-post quarterly total return asset benchmark data, and the industry superannuation fund asset allocation data.

The performance analysis for the 17 year period shows that property provided the second highest risk-adjusted return profile (0.21), behind alternative assets (0.44). However, when the property allocation components (direct property and listed property) were analysed separately, direct property was the best performing asset class in the industry fund balanced investment option, with a risk-adjusted return of 0.72. In addition, the results demonstrate that for the 17 year sample period, direct property significantly outperformed the listed property sector with higher returns, low risk, and better variance statistics.

The correlation matrix shows property has a significant correlation (0.58) with Australian Equities, which in part relates to the allocation of REITs within the property asset class. Likewise, property's significant co-movement to the alternative asset class (0.55) can be due to similar underlying legal asset structures which provide a continuity of income from investments such as infrastructure. This co-movement of asset classes could restrict the allocation to property based on MPT inputs (return, risk, and correlation matrix). The correlation between direct property and listed property is high (0.59) over the short-term. However, for the 17 year period studies, the diversification benefit increases with lower correlation levels between both property assets (0.31), see Table 6-14. The covariance analysis shows that the link between direct property and listed property is significantly low when compared to the co-movement of A-REITs and Australian equities. Although post GFC (2008-2011) direct property and listed property return covariance has improved, returns are still not as strong as the A-REITs and Australian equities co-movement. Despite the performance of A-REITs being tightly linked to the Australian equities market, the research provides evidence that placing listed property in the equities portfolio is not a viable strategy. However, including alternative assets in direct property does provide better results.



Detailed analysis was undertaken of different asset allocation models, including passive investment strategies (such as the Buy and Hold, and Equal Weighted, approaches), and more active strategies (such as Traditional, Turning Points, Optimal and Tactical strategies, with and without pre-determined asset weight constraints). In addition, Dynamic strategies (unconstrained and constrained) were analysed separately. The performances of these different asset allocation techniques were evaluated against the more conventional industry superannuation fund Strategic portfolio. In examining the different investment strategies, the role of property was also considered as part of the research. The various asset allocation strategies recorded quarterly mean total returns of 2.05-2.96%, apart from Tactical – Weight Constraints strategy which produced the highest mean total return (4.0%). Generally, the Tactical strategy was overweight in best performing assets to benefit from short-term market movements. The process requires considerable manager skills, and can involve high operational costs and portfolio volatility. Overall, the results demonstrate a wide standard deviation range (0.95-6.15%). Traditional asset allocation (6.15%) recorded the highest standard deviation, followed by the Tactical – Weight Constrained approach (5.30%). The high standard deviation (5.25%) for Strategic portfolio was reflected in the relatively low risk-adjusted return profile rating (0.14). Interestingly, all asset allocation models, except for the Traditional approach, outperformed the industry superannuation fund conventional Strategic investment technique. Tactical – No Constraints strategy recorded the highest Sharpe ratio (0.86), followed by Tactical – Weight Constrained (0.49), and Dynamic – No Constraints (0.41).

The findings also provide evidence that substituting direct property with listed property is unlikely to benefit the industry fund's balanced portfolio performance. While the asset allocation models predominately favour higher allocation to direct property than listed property, the results are time-varying. Listed property allocation remained steady prior to the 2007. However, the post GFC (2008-2011) trend has favoured direct property allocation. However, including both property assets in multi-asset portfolios does demonstrate improved risk-adjusted returns for several strategies, including Strategic, Optimal, and Tactical – No Constraints (which produced the highest risk-adjusted return).

Furthermore, the empirical results show that property as an asset class plays an important role within institutional multi-asset portfolios as all property inclusive portfolios significantly outperform the property excluded investment strategies. Depending on the asset allocation model, on a risk-adjusted return basis, when included within a multi-asset portfolio, property assets improve portfolio performance by 1.5-43.9%. All property inclusive strategies demonstrated reduced risk levels (0.5-21.0%) when compared to property excluded portfolios, except for the Tactical (No Constraints) strategy. On a weight constrained basis, the risk-adjusted return for all property inclusive portfolios was 7.7-11.7%, higher than the property excluded portfolios. The evaluation of the different asset allocation models recommends an allocation to property in the range of 9% (Buy and Hold) to 75% (Optimal – No Constraints), with an average allocation of 26%. Excluding unconstrained strategies, the recommended increase to the industry superannuation fund property allocation is 17% (12% direct property and 5% listed property). This compares to the industry superannuation fund current allocation to property of 10% (5% direct property and 5% listed property). The implications of the recommended higher allocation to property are discussed in the next chapter.



## **CHAPTER SEVEN: INDUSTRY APPLICATION AND IMPLICATIONS**

### **7.1 Introduction**

The analysis in Chapter Six compared the performance of the Australian industry superannuation funds' conventional strategic investment approach to ten alternative asset allocation strategies (constrained and unconstrained), alongside investigating the role of property in the associated investment models. The research covers a 17 year timeframe (1995-2011), and uses ex-post quarterly total return asset benchmark data and the industry superannuation fund balanced investment option asset allocation data. In the Australian context, this is new research that collates and presents the benchmark time-series asset allocation and asset performance data for the industry superannuation funds' Strategic balanced portfolio asset classes.

The benchmark asset allocation series data was sourced from the Rainmaker Group. The total return benchmark data series included: cash, Australian fixed, international fixed, Australian equities, international equities, property (index comprising both direct/unlisted property, and listed property), and alternatives. The evaluation of the literature highlights that there is no recognised alternative index available to industry in Australia. Therefore, the alternative asset class data series index in this research was constructed from the commencement of selected Australian data series for Infrastructure and Utilities, Hedge Funds (AU), Private Equity, and Commodity Prices (AU), based on an equal weighted formula that follows the UK model.

The performance analysis over the 17 year period shows that property provided the second highest risk-adjusted return profile (0.21), behind alternative assets (0.44). However, when the property allocation components (direct property and listed property) were analysed separately, direct property was the best performing asset class in the industry fund balanced investment option with a risk-adjusted return of 0.72. The aggregated asset allocation average over the 17 year study period was: Australian equities 32.2%, international equities 20.4%, Australian fixed income 13.8%, international fixed income 4.7%, alternatives 11.2%, property 10.3%, and cash 7.4%. Australian fixed income had the highest asset allocation range (19%), followed by alternatives (17%). Allocation to property ranged between 9-11%, having peaked at 14% in September 1998.

For the eleven asset allocation models, the optimal allocation analysis is explained in Chapter Six. Strategic, Traditional, Optimal, Turning Points, Tactical and Dynamic models have set parameters. The standard Modern Portfolio Theory approach is applied by deriving the efficient frontier and mean-variance optimisation using the Australian 10 year bonds as the risk-free rate. The passive investment strategies included are Buy and Hold, and Equal Weighted, models. Evidence from the analysis shows that allocation to property assets can be higher than the average 10% identified in previous industry reports and market research. The analysis undertaken for this research suggests optimal allocation to property is in the 17-26% range, depending on the investment strategy that is implemented. This chapter investigates the industry application and implications of the recommended higher allocation to property assets. This chapter is divided in two major sections. First, an analysis of the

performance measures across the different asset allocation models is discussed. Second, the implications of higher property asset allocation are discussed. The key findings are detailed in the Summary section.

## **7.2 Performance Evaluation**

Table 7-1 details the performance of the different asset allocation strategies using the Sharpe ratio as the risk-adjusted return comparison. Other performance comparison measures include beta, alpha, tracking error, and information ratio analysis. The ten alternative portfolio results are benchmarked against the performance of the industry superannuation funds' Strategic balanced portfolio, as produced by the Rainmaker Group (2012). The CAPM is used to measure the portfolio systematic risk (beta), separating fund manager skills from the exposure to the market (alpha).

Table 7-1 results illustrate that, except for the Traditional portfolio, all other strategies have outperformed the industry fund's Strategic investment portfolio. The results also provide evidence that Australian fund managers can provide enhanced risk-adjusted returns by using active asset allocation strategies, such as TAA and DAA. The Tactical strategies recorded the highest Sharpe ratio, followed by the Dynamic investment models. Even on a constrained basis, both Tactical and Dynamic asset allocation strategies recorded higher risk-adjusted return profiles than the industry fund Strategic portfolio. However, the higher Sharpe ratio for the Tactical models must be read with some caution. Generally, TAA strategies involve overweighting best performing assets to benefit from short-term market movements. The process requires considerable manager skills, and can involve high operational costs and portfolio volatility. In addition, the positive excess kurtosis indicates that the Tactical models have greater probability of large losses. Lee and Higgins (2009) have explained that risk-averse investors dislike negative skewness and positive excess kurtosis (fat tails) because, generally, they indicate a higher probability of large losses than is the case with normally distributed returns. The data trend displays flat kurtosis for all other asset allocation strategies, indicating low and even distribution of results.

Figure 7-1 illustrates a wide spread of beta values (0.77-1.62) across all asset allocation strategies. Generally, fund managers regard a low beta level (1 or less than 1) as desirable. Except for the Traditional portfolio, all asset allocation strategies recorded a beta level 1 or less than 1. Fabozzi and Markowitz (eds 2011a) explain that a higher beta level is not a sign of poor fund manager performance, but may be a result of more aggressive fund management tactics. The alpha values were close to zero for all asset allocation models, showing that there were limited continuous excess returns, except for the Tactical – Weight Constrained strategy which is based on momentum investing. While overweighting assets based on momentum signals from ex-post data is simple, in reality the process of determining tactical shifts based on forecast data is much more challenging. The excess returns over benchmark for the various asset allocation models can be further examined by looking at the information ratio and tracking error data. The tracking error is the standard deviation of the portfolio's active return, where active return is calculated as the portfolio's actual return minus the benchmark's actual return. The information ratio is another key industry measure of the degree to which a fund consistently outperforms/underperforms the appropriate benchmark. In this research the average portfolio return for the seven asset class Strategic portfolio is used as a benchmark to evaluate the performance of the alternative asset allocation strategies. This follows the Fabozzi, Grant and Vardharaj (2011), and Shein (2000) method of calculating tracking error and information ratio (see Chapter Two).

**Table 7-1: Industry Fund Strategic versus Alternative Portfolio – Performance Analysis**

<b>Asset Allocation Strategies</b>	<b>Mean Return</b>	<b>Standard Deviation</b>	<b>Sharpe Ratio</b>	<b>Kurtosis</b>	<b>Skewness</b>	<b>Beta</b>	<b>Alpha</b>	<b>Tracking Error</b>	<b>Information Ratio</b>
Strategic (Original Portfolio)	2.19%	5.25%	0.14	0.01	-0.38	1.49	0.21%	2.12%	0.07
Buy and Hold	2.15%	3.77%	0.19	-0.15	-0.35	1.09	0.11%	0.77%	0.13
Traditional	2.05%	6.15%	0.10	0.19	-0.36	1.62	0.37%	2.58%	0.09
Optimal – No Constraints	2.19%	2.86%	0.26	1.68	0.07	0.64	0.09%	2.21%	0.06
Optimal – Weight Constrained	2.17%	3.98%	0.18	0.57	-0.43	1.13	0.14%	1.12%	0.11
Turning Points	2.96%	5.21%	0.29	1.20	0.11	1.16	0.37%	1.49%	0.22
Equal Weighted	2.04%	3.42%	0.18	-0.20	-0.26	0.99	-0.01%	0.44%	-0.02
Tactical – No Constraints	2.25%	0.95%	0.86	19.77	3.36	0.02	0.01%	3.46%	0.06
Tactical – Weight Constrained	4.02%	5.30%	0.49	0.28	0.36	1.47	2.93%	2.41%	0.83
Dynamic – No Constraints	2.30%	2.10%	0.41	-0.21	0.07	0.41	0.10%	2.52%	0.10
Dynamic – Weight Constrained	2.16%	3.55%	0.20	-0.13	-0.46	1.01	0.11%	0.83%	0.14

A positive information ratio indicates outperformance of the benchmark, and a negative information ratio indicates underperformance of the benchmark. Except for the Equal Weighted strategy, all alternative investment strategies recorded an information ratio close to, or above, the industry fund Strategic portfolio. In addition, the Tactical – Weight Constrained strategy recorded an information ratio close to 1.0, which is regarded in the industry as exceptional. The tracking error range across the different strategies was 0.44%-3.46%. The industry practice is to keep tracking error below 2%. Except for the Equal Weighted strategy, the tracking error data shows evidence of different investment styles across the various asset allocation models. Unconstrained investment strategies (Tactical – No Constraints, Dynamic – No Constraints) recorded tracking error above 2%, where portfolio weighting was predominately towards a single asset class such as equities. Weighted constrained balanced portfolios (Strategic, Optimal – Weight Constrained, Tactical – Weight Constrained, Dynamic – Weight Constrained) and passive models (Buy and Hold, Equal Weighted) displayed lower tracking error.

The risk/return performance of the different asset allocation strategies is detailed in Figure 7-1.

**Figure 7-1: Risk/ Return Performance – Industry Fund Asset Allocation Strategies**

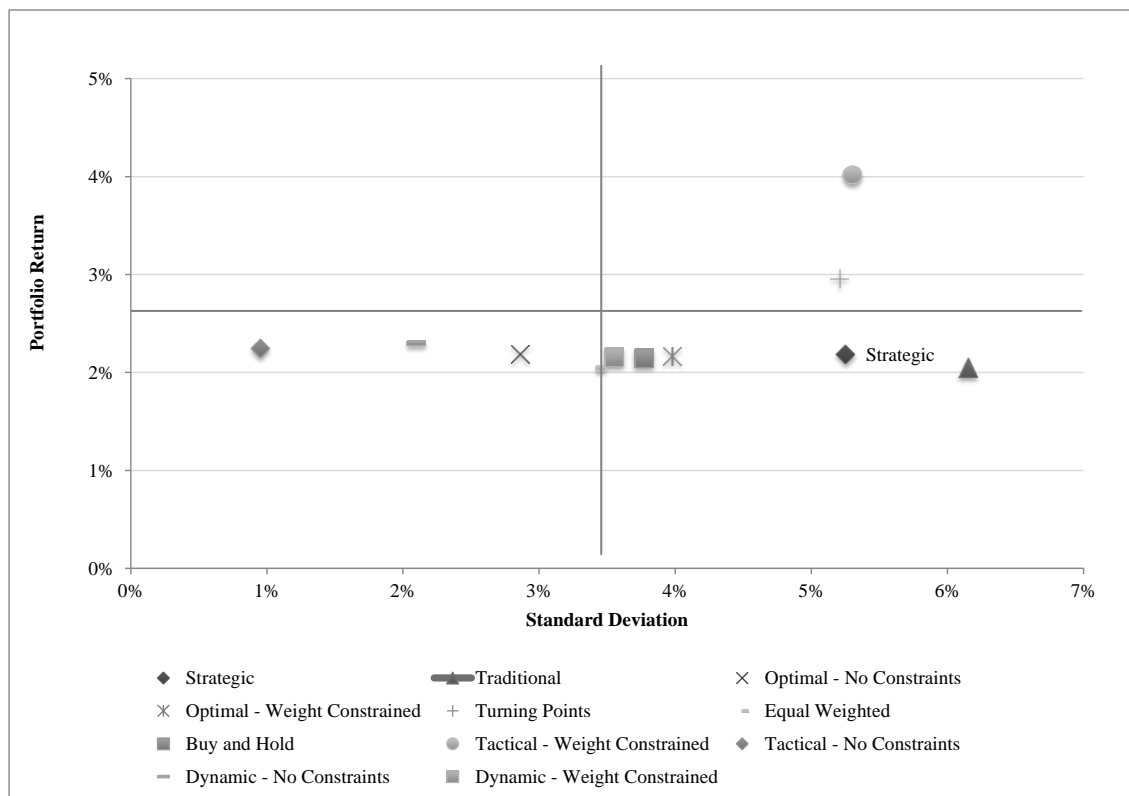
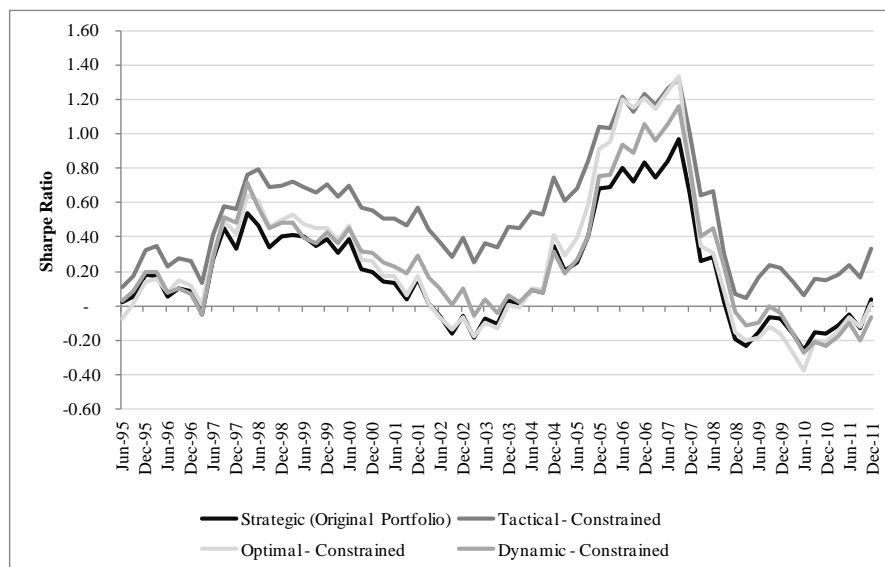


Figure 7-1 illustrates that, except for the Turning Points and Tactical strategies, all alternative investment portfolios generally displayed similar or higher returns, but lower risk, than the industry fund Strategic portfolio. Overall, the performance statistics indicate that Australian fund managers can benefit from adapting alternative investment strategies evaluated in this research. In particular, the performance of the Tactical, Dynamic and Optimal weight constrained portfolios, which work on the same modelling parameters as the industry superannuation fund Strategic investment model, would be useful to fund managers seeking an improved risk-

adjusted return profile. The investment performance of the constrained asset allocation strategies can be further examined by looking at the 17 year risk-adjusted return data.

Figure 7-2 demonstrates the three year rolling Sharpe ratio for the Strategic, Tactical, Dynamic and Optimal constrained investment portfolios. The results show that in most time periods, the alternative constrained investment strategies performed as well, or better than, the conventional Strategic approach. The risk-adjusted return performance has generally remained positive (zero to 1.00), except for the period since the 2007 Global Financial Crisis (GFC) in which negative Sharpe ratios can be linked to the significant fall in investment markets during the GFC. Since June 2010, the industry superannuation funds' conventional Strategic approach has outperformed the Dynamic and Optimal investment strategies. This is evidence of severe market correction in the post-GFC period, leading to institutional investment portfolio reprofiling. The Tactical strategy has outperformed the industry superannuation fund Strategic portfolio in all time periods. However, it would be challenging to apply Tactical strategies using the entire seven assets balanced portfolio model, given the cost involved in continuously rebalancing the portfolio, in particular property and alternatives assets.

**Figure 7-2: Moving 3-Year Asset Allocation Sharpe Ratio – Quarterly, 1995-2011**



The analysis indicates that the Dynamic investment strategies, which exhibits similar performance data characteristics to the industry fund Strategic portfolio, provides a more stable investment option and is more suited to a balanced fund investment scenario. The continued effects of the GFC mean that investment markets have remained unpredictable. Therefore, the use of DAA strategy would effectively allow fund managers to protect against market extremes and achieve an improved portfolio risk-adjusted return profile. In the context of property, the dynamic strategy's medium term timeframe favours investment in both direct and listed property assets.

### 7.3 Industry Implications

Looking across the different asset allocation strategies, for an Australian superannuation balanced fund, the empirical results show that there is scope to increase the property allocation level from current 10% position.

Table 7-2 details the asset allocation component of the industry superannuation fund conventional Strategic portfolio, and the ten alternative asset allocation models, evaluated as part of this research in Chapter Six.

Overall, the results presented in Table 7-2 demonstrate that at different times over the 17 year study period, the allocation to property across the eleven asset allocation models ranged from 9% (Buy and Hold) to 50% (Optimal – No Constraints), with an average allocation of 26%. Excluding unconstrained strategies, the recommended increase to the industry superannuation fund property allocation is 17% (12% direct property and 5% listed property). This compares to the industry superannuation fund average property allocation level of 10% (5% direct property and 5% listed property) during 1995-2011.

**Table 7-2: Industry Fund Strategic versus Alternative Portfolio – Asset Allocation Breakdown**

<b>Asset Allocation Strategies</b>	<b>Aust eq</b>	<b>Int eq</b>	<b>Direct Prop</b>	<b>Listed Prop</b>	<b>Aust fixed</b>	<b>Int fixed</b>	<b>Cash</b>	<b>Altern's</b>
Strategic (Original Portfolio)	32%	20%	5%	5%	14%	6%	7%	11%
Buy and Hold	27%	12%	5%	4%	24%	2%	13%	13%
Traditional*	37%	23%	7%	5%	15%	5%	8%	0%
Optimal - No Constraints	5%	7%	50%	0%	3%	4%	16%	15%
Optimal - Weight Constrained	22%	13%	20%	6%	13%	6%	10%	10%
Turning Points	21%	13%	12%	10%	19%	7%	11%	7%
Equal Weighted	13%	13%	13%	13%	13%	13%	13%	13%
Tactical - No Constraints	3%	2%	17%	2%	4%	4%	65%	3%
Tactical - Weight Constrained	30%	19%	12%	4%	9%	5%	11%	10%
Dynamic - No Constraints	1%	0%	43%	4%	0%	7%	35%	10%
Dynamic - Weight Constrained	21%	12%	15%	12%	14%	10%	10%	6%
<b>Average Allocation</b>	<b>18%</b>	<b>11%</b>	<b>20%</b>	<b>6%</b>	<b>12%</b>	<b>6%</b>	<b>18%</b>	<b>9%</b>

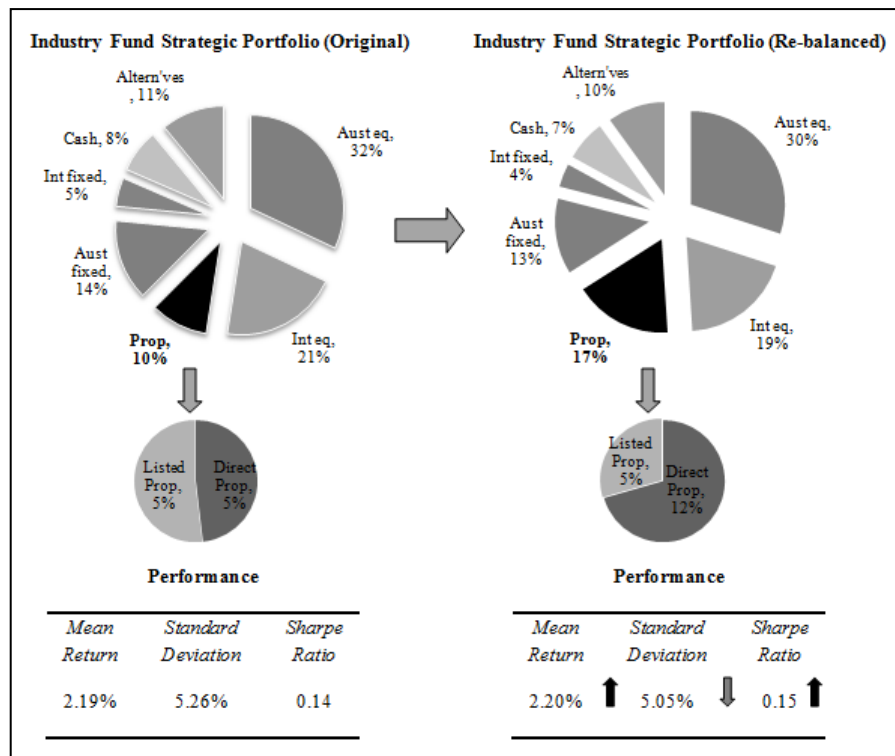
\*Property Inclusive

The recommended 17% increase in allocation to property can be investigated by rebalancing the industry superannuation fund Strategic portfolio. Figure 7-3 compares the performances of the industry fund original Strategic portfolio (which includes 10% property allocation) against a rebalanced industry fund strategic portfolio with 17% allocation to property. It is appreciated that rebalancing property is dependent on factors such as availability of investment product and investment mandates.

The results presented in Figure 7-3 show that allocation to equities (Australian and international), although slightly lower, still dominates the industry fund rebalanced SAA investment portfolio. Cash and fixed income (Australian and international) also recorded a slight decline in the rebalanced SAA model. Allocation to property is higher (17%), while the proportion invested in alternative assets remains steady at 10%. The combined real asset (property and alternatives) allocation accounts for 27% of the rebalanced industry fund Strategic portfolio. This high allocation is in line with the predictions of JP Morgan Asset Management (2012), and Jones Lang LaSalle (2012), that real assets will occupy 25% of institutional portfolios in the next decade. The increased allocation to property is backed by the improved risk-adjusted return performance. The Sharpe ratio for the rebalanced portfolio is 0.15, higher than 0.14 recorded for the original portfolio. It is appreciated that rebalancing the portfolio is not without costs. To increase the mean return from 2.19% to 2.20% and the Sharpe ratio from 0.14 to 0.15 could provide minimal gains due to added management and transactions costs.



**Figure 7-3: Industry Superannuation Fund Strategic Original and Rebalanced Portfolio**



The rebalanced industry fund strategic portfolio property allocation has 12% invested in direct property, and 5% in listed property. The results substantiate the findings from recent studies (CFS 2008b; De Francesco & Hartigan 2009; Newell & Razali 2009) that anticipate higher allocations to direct property in the short to medium term in Australia. The latest superannuation fund market report by APRA (2013b) shows that the industry fund allocation to property was 11% in June 2012, with a large 10% invested in direct property (see Table 2-6). The analysis is backed by comments from industry experts in Chapter Four and Chapter Five. The survey of Australian fund managers and asset consultants found that the push towards direct property reflects the need for funds to achieve greater portfolio stability, deliver sound risk-adjusted return performance, and have more control over how they invest in property.

## 7.4 Summary

The research contributes to both practical and academic fields as it offers a methodological approach on how allocation to property assets can be improved using a series of passive and active asset allocation strategies. The performance of the industry superannuation fund Strategic balanced investment option is compared against ten alternative investment strategies. The analysis addresses significant gaps in literature related to the applicability and benefits of active asset allocation models, such as TAA and DAA. More importantly this research focused on how the property asset allocation component changes with different investment models, where previous portfolio construction research had mainly evaluated assets such as equities, fixed income securities, and cash.

To industry practitioners operating in the competitive superannuation environment, this research should attract Fund Managers to explore alternative asset allocation models in which risk-adjusted returns can be improved

compared to the common strategic allocation approach. Based on the alternative asset allocation models, the inclusion of a property asset class offers an improved performance profile with property allocations moving above the current 10% average. For industry application, while allocations over 50% to property may not be practically justifiable, Australian fund managers can benefit from increasing property allocation to an average 17% recommended for the constrained investment strategies. This increased allocation to property is supported by the improved risk-adjusted return profile of the rebalanced industry fund Strategic portfolio. With Australia's growing and aging population, the stable rental income returns from property would be beneficial when most superannuation funds move into heavier payout periods. In particular, the information will benefit funds currently reprofiling investment portfolios to achieve stable risk-adjusted returns.

The results also demonstrate that there is scope to increase the industry superannuation fund direct property exposure to 12%, from the current average of 5%. However, listed property allocation is expected to remain at 5%. The overall push towards direct property reflects the need for fund managers to achieve greater portfolio stability, deliver sound risk-adjusted return, and the need for institutions to have more control over how they invest in property. Higher allocation to direct property has limitations, such as illiquidity, higher transaction costs, and management fees. Lack of liquidity could act as a deterrent for higher allocation to direct property. However, the continued evolution of unlisted property fund vehicles (such as wholesale property funds and property syndicates) could provide the medium for increasing allocations to direct property. These vehicles would allow fund managers to meet specific member investment and liquidity requirements, alongside retaining some input into property allocation decisions. Interestingly, the allocation to direct property was higher than alternative assets in most investment strategies, indicating direct property's importance in institutional portfolios despite the presence of similar real asset investments such as infrastructure. However, this needs to be examined in more detail in future research.

In conclusion, the research has the potential to change how Australian fund managers view property asset allocation. The research found that in asset allocation models property produced reliable returns, and recorded relatively low standard deviations in performance. These findings contribute to the case for increasing property allocation above the current 10% exposure for the popular strategic asset allocation model. The continued effects of the GFC on the equities and bonds markets mean that fund managers seeking an improved risk-adjusted return profile have the scope to increase allocation to stable investment sectors, such as property.

## **CHAPTER EIGHT: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **8.1 Introduction**

The purpose of this research was to identify the important steps and considerations that influence the property allocation decisions of Australian fund managers responsible for A\$2.0 trillion invested by the managed funds industry. This research also sought to investigate and recommend ways of improving institutional allocation decisions for property investments, which traditionally offer stable, income focused returns. Increased allocation to property will assist in funding the retirement incomes of Australia's growing and aging population. Increased allocation to property also helps to combat the effects of the Global Financial Crisis (GFC) on the equities and bond markets. Research was undertaken in three key phases. Phase one was a literature review, and phases two and three involved data collection and analysis. This chapter summarises the key findings from the literature review, industry survey and developed asset allocation models.

### **8.2 Summary**

The chapter layout for this thesis is detailed in Chapter One (Figure 1-2). Chapter One introduced the research, including the research background, scope and limitations. Chapter Two discussed the literature on investment management, investment strategies, property asset allocation concepts, and decision-making theory. In particular, Chapter Two provided: i) an overview of segments in the Australian managed funds industry market, their investment strategies, asset allocation options, and benchmark measures; ii) charted the growth of the Australian property market, and identified institutional property allocation trends and options; iii) provided an overview of the different asset allocation methodologies, detailed the key elements in portfolio construction formulation, and determined the applicability of Modern Portfolio Theory (MPT) to the property asset allocation process; and, iv) evaluated the literature on decision-making theory and its applicability to the property asset allocation process.

Chapter Three outlined the research design and approach. In the Australian context, information on strategic property allocation models and variables is not widely available, and there is little guided theory related to the subject. Therefore, a 'sequential exploratory' mixed methods research design was used, involving an industry survey (qualitative), followed by asset allocation modelling (quantitative). The theory generated from the initial qualitative phase (industry survey) helped formulate the research themes that were tested, elaborated or expanded on during the subsequent quantitative (asset allocation modelling) investigation.

The analysis and results were presented in four chapters. Chapter Four presented the results from the industry survey of leading Australian fund managers and asset consultants. In particular, Chapter Four documented the current status of institutional property allocation strategies and decision-making frameworks. The data were collected between May-August 2011 through semi-structured questionnaires administered by mail. In total, 130

institutions were targeted for the research based on purposive sampling. The results provide valuable insights about the optimal property allocation view that Australian institutions might adopt property asset allocation strategies, decision-making frameworks, and industry perceptions about future allocation to property.

As part of the process for validating results, the industry survey findings were presented to a panel of six leading fund managers and one asset consultant firm. Chapter Five discussed the validation of results and industry panel recommendations. The findings and recommendations were further expanded through a series of quantitative research themes in Chapter Six, aimed at improving institutional property allocation decisions. In particular, the analysis in Chapter Six compares the performance of the A\$302 billion not-for-profit Australian industry superannuation fund conventional Strategic portfolio against ten alternative investment strategies prepared for this research, and examines how the property allocation changes with different asset allocation models.

For an Australian superannuation fund balanced investment option portfolio, the empirical results show that there is scope to increase the property allocation level from the current 10% to 17%. Chapter Seven focussed on the application, and implications for industry funds, of the recommended increase of allocation to property.

The remaining sections in this chapter provide conclusions about research aims and objectives, contributions to the body of knowledge, recommendations, and the likely areas for further study on the research topic.

### **8.3 Conclusions Covering Research Objectives**

The research objectives and associated methods for investigation were detailed in Chapter Three (Table 3.1). As discussed in Section 8.1, this research was undertaken in three phases: (i) literature review, (ii) industry survey, and (iii) asset allocation modelling. Since each phase of investigation addressed different sets of research objectives, the conclusions about the objectives are summarised in that order within the following themes:

- i. **Section 8.2.1: Objectives I to III – Investment Strategies and Property Allocation Theory** – provide conclusions from the literature review phase which focused on the concepts of investment strategies, property asset allocation, and decision-making theory.
- ii. **Section 8.2.2: Objectives IV to VI – Current Status of Property Allocation Strategies** – provides conclusions from the industry survey. The main aim of the industry survey phase of investigation was to establish theory on institutional investor strategic property asset allocation processes and decision-making frameworks in Australia.
- iii. **Section 8.2.3: Objectives VII and VIII – Improving Allocation to Property Assets** – provides conclusions on the asset allocation modelling phase. The emergent theory from the industry survey was further tested through the asset allocation modelling investigation, designed to improve Australian institutional investors' property allocation decisions.

#### **8.3.1 Objectives I to III: Investment Strategies and Property Allocation Theory**

- i. *To examine and evaluate the literature on investment theory, investment management and property asset allocation concepts.*
- ii. *To identify and evaluate Australian managed funds industry investment data and strategies and property allocation trends.*

*iii. To examine and evaluate the growth of the Australian property investment market and the key factors that affects its performance.*

Australia has one of the world's largest and fastest growing funds management markets, underpinned mainly by a government mandated compulsory retirement saving scheme (superannuation), and by a sophisticated financial regulatory environment. The industry has grown by a compound annual rate of 12% since the early 1990s, driven mainly by the government's mandated compulsory retirement saving scheme (ABS 2013a). At December 2012, the industry managed A\$2.0 trillion. Fund managers, such as superannuation funds, are the dominant institutional investors for Australia's A\$300 billion property market. They invest in commercial property, both directly and indirectly, via investments in property funds and through mandates and partnerships.

Although property is regarded as a key investment asset class in institutional portfolios, the review of the Australian managed funds industry's historical asset allocation trend confirms that the proportion allocated to property assets has declined, from a peak of 25% in the 1980s to an average 10% or lower today. This contradicts recent publications (Craft 2001; Hoesli, Lekander & Witkiewicz 2003; Worzala & Bajtelsmit 1997) recommending that allocation to property in mixed-asset portfolios should be within the 10-30% range. This divergence in theory and practice can be attributed to the property asset allocation principles and frameworks employed by individual fund managers.

Empirical evidence on institutional property asset allocation strategies and decision-making processes is limited in Australia. The property allocation decision-making process is performed at both the strategic and investment levels. Strategic decision-making is where fund managers, such as superannuation fund managers, determine the proportion of allocation to property in a mixed-asset portfolio. The property investment decisions deal with how property managers invest this allocated proportion in different sectors and geographic markets. The review of the literature confirms that it is the Strategic property allocation decision-making that requires more research focus.

For Australian fund managers, the conventional strategic asset allocation (SAA) policy dictates the division of investment capital between different asset classes that best meet the long-term investment objectives and constraints of fund members. The typical conventional strategic balanced investment portfolio consists of five major components, namely: equities (Australian and international), fixed income (Australian and international), property, alternatives, and cash. Any investment selection decision is preceded (either implicitly or explicitly) by an asset allocation decision. Given its importance, the investment management industry dedicates significant resources to developing and operating asset allocation policies.

Traditionally, any changes to asset class exposures are made within the SAA guidelines. Fund managers (mainly active managers) also attempt to earn additional returns by adopting shorter term (tactical and dynamic) policies. Most theoretical studies in the context of property allocation have been undertaken mainly within the setting of passive investment strategies, such as 'buy and hold' and the classical mean-variance optimisation model. Several recent studies have identified the need to investigate the optimal allocation to property assets within the context of active investment strategies, in which portfolio asset weights can be constantly rebalanced.

Property asset allocation decisions provide several challenges for fund managers. There is strong evidence from previous research that property does warrant inclusion in mixed-asset portfolios. However, there is disagreement on the proportions of various types of property that should be held. Choices about investment vehicles have expanded in recent decades with the rise of REITs and unlisted property funds. Therefore, the decision-making process may differ depending on the type of property asset and how institutions classify different property assets. In addition, the rapid rise in profile of similar real assets, such as infrastructure and other alternative asset classes, presents further asset allocation challenges for fund managers. Upon review it was identified that alternatives now form the third largest asset group in the typical Australian managed fund balanced portfolio.

The typical managed fund strategic policy is based on set modelling parameters that follow MPT, as first outlined by Harry Markowitz. Markowitz (1952) and subsequent researchers, such as Jack Treynor, William Sharpe and Frank A. Sortino, established the field of MPT; that is, the analysis of rational portfolio choices based on efficient use of risk. The MPT provides a theoretical framework for the property asset allocation process. However, in practice, decisions must be made in an environment of incomplete information, changing estimates of return, and shifting definitions of the acceptable investment risk. Therefore, while definitive inputs (historic data or predictive forecasts) are important, fund managers are also influenced by many non-financial considerations when making property allocation decisions.

The Australian managed funds industry's property allocation strategies are also impacted by market events. During the 1990s recession, most fund managers disinvested their property allocation and adjusted their investment portfolios to include more equities and bonds. The evolution of securitisation in the 1990s, coupled with financial reforms (including the government's compulsory superannuation scheme) and the stronger regulatory environment, was important to the resurgence of the property market. Consequently, the 2002-2007 real estate 'boom' period saw an influx of institutional capital invested in the property sector. Although the recession in late 2007 severely restricted the growth of the Australian property market, there appears to be silver lining. The current trend towards increased risk aversion means that capital displaced from mainstream assets, such as equities and bonds, will need to be invested in real assets, including property. Indications are that property allocation in institutional investment portfolios is likely to be higher in future, but at what level/proportionality (direct and listed property split) is still unclear. This needed to be tested further via exploratory survey and asset allocation modelling.

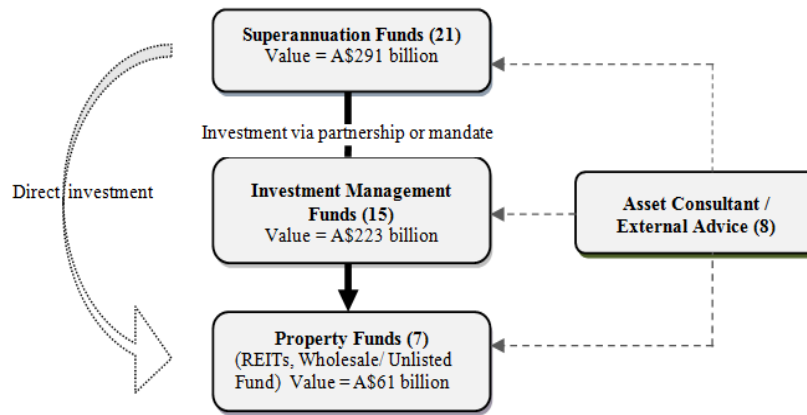
### **8.3.2 Objectives IV to VI: Current Status of Property Allocation Strategies**

- iv. To identify key factors influencing Australian fund manager's property allocation decisions.*
- v. To identify Australian fund manager's property asset allocation strategies and decision-making frameworks.*
- vi. To identify and evaluate leading local and overseas investment techniques and strategies which includes an asset allocation to property.*

Generally, institutional investors in Australia gain allocation to property assets by investing in property funds, and via mandates or partnerships with wholesale managed funds. Each managed fund type has distinct property allocation strategies and investment processes. Fund managers' asset allocation decisions are also influenced

significantly by asset consultants and external advisers. Hence, the industry survey in this research targeted a wide cross-section of experts from each managed funds industry group. Figure 8-1 illustrates a typical Australian managed fund industry property asset allocation structure, and the number of institutions that responded to the survey.

**Figure 8-1: Property Investment Structure and Number/Value of Institutions Surveyed**



Source: Author.

In total, 79 institutions responded to the survey, including 51 completed responses and 28 refusals. The 51 completed response included superannuation funds (21), wholesale investment management funds (15), property funds (7), and asset consultants (8). The institutions surveyed (excluding asset consultants) held funds under management of approximately A\$576 billion. The wide cross-section of industry experts targeted allowed both fund specific analysis, and general or industry evaluation of how Australian fund managers determine optimal property asset allocation strategies and decisions. The strategic property allocation level for the funds surveyed was 10% (6% direct/unlisted, and 4% listed), with a permissible range of +/-5%. The results showed that:

- i. Fund managers were generally comfortable with the current level of property allocation, based on their institution's asset liability modelling, risk/return profile, and advice from asset consultants.
- ii. The neutral market view (10%) drives optimal property allocation decisions for some funds. However, in most cases, fund managers have predetermined investment constraints and thus manage their property optimisation process within those constraints. Studies conducted in the UK (French 2001; Gallimore & Gray 2002) have also found that institutions may determine future property allocations based on the views of others in the market.
- iii. Liquidity was the predominant constraint to optimal property allocation decisions. Other key constraints include management fees, difficulty in obtaining quality stock in local market, entry and exit restrictions, and resource availability (time and staff). Some fund managers may not have restrictions specifically placed on property assets, but may have restrictions on unlisted investments generally.
- iv. Fund managers are reprofiling how assets are classified, based on risk/return profile, and market and operational characteristics, rather than generic classifications. Approximately 30% of the fund managers surveyed categorised direct property within the unlisted band, together with unlisted infrastructure assets. REITs and listed infrastructure are increasingly banded within the equities asset class.

- v. There is increased role of club deals and separate accounts versus unlisted funds in post-GFC context for larger pension funds; this shows a change in strategy and more focus on control and alignment of interest.

A cross-tabulation of results indicates that the number of property personnel employed by an institution had a direct impact or influence on the fund's level of property exposure and its property investment strategy:

- i. Funds with fewer than three property staff had a nominal average property investment of A\$0.4 billion, and are likely to invest predominantly in the indirect (unlisted and securitised) property sector.
- ii. Funds with higher number of property personnel (3+) had property investments in the A\$1.6-3.2 billion range, and are likely to invest actively in both direct and indirect property investment sectors.
- iii. Funds that do not employ any property professionals outsourced their property allocation decisions, and investment management functions, to asset consultants or via other partnerships.

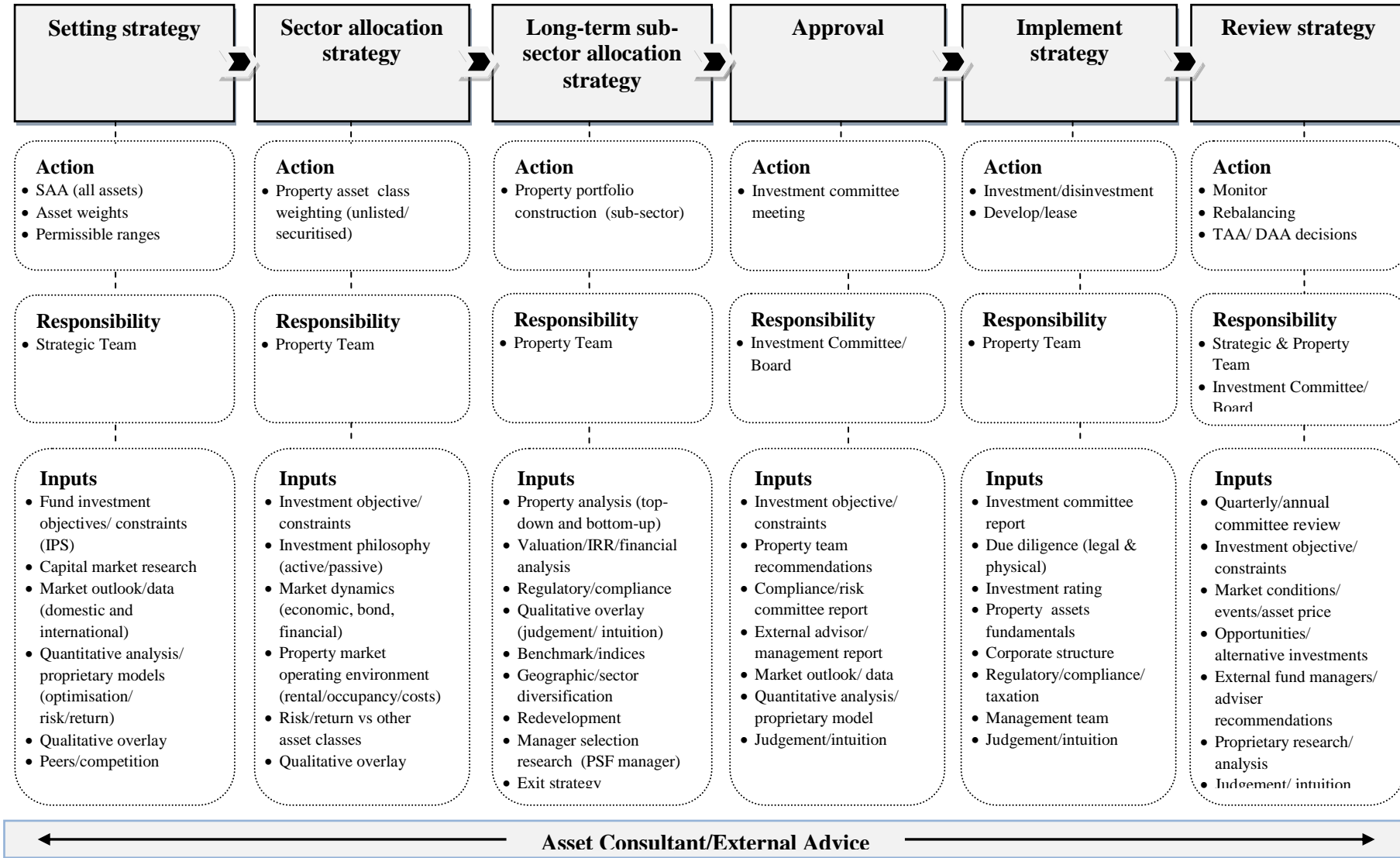
The research illustrates that Australian fund managers and asset consultants use a combination of asset allocation policies (strategic, tactical, and dynamic) for the property allocation decision. The majority (60%) of institutions surveyed stated that the SAA policy is the dominant property allocation strategy. Shorter term strategies, in particular the dynamic asset allocation (DAA) structure, have become more prominent for several funds due to their ability to react more effectively to uncertainty in the current market environment.

The decision-making frameworks developed from the industry survey illustrate that property asset allocation is a sequential and continuous process involving constant interaction between a number of decision-makers (both internal and external). Figure 8-2 illustrates the typical fund manager strategic property allocation decision-making framework. The decision-making process moves through several key stages:

- i. *Market research* (economic, capital markets) – the Strategic Team runs models and simulations to determine the proportion of allocation to each asset class, including property.
- ii. *Setting investment objectives/constraints* – fund formulates the Investment Policy Statement.
- iii. *Setting strategy* – fund sets long-term SAA policy, asset weights and permissible investment range for all asset classes, including property. The asset allocation policies are discussed with the Property Team.
- iv. *Property allocation plan* – the Property Team decides whether it is viable to pursue investments, and in which sectors (direct, unlisted or securitised), markets (office, retail, industrial or other), and geographical locations. The Property Team prepare reports for the Investment Committee meeting.
- v. *Investment Committee and Board approval* – the Investment Committee and Board make the final decision on the allocation level to property and related investment strategies.
- vi. *Implementation* – if the decision is to increase allocation to property, the Property Team is provided with the funding, and need to implement the investment plan (due diligence, acquisition, and asset manager selection).
- vii. *Monitoring and Review* – the Property Team (or external asset manager) monitors asset performance and provides ongoing reports in monthly asset allocation meetings. These reports form the basis for any TAA and DAA policy shifts, and also help formulate the fund's future SAA guidelines.



**Figure 8-2: Property Asset Allocation Decision-Making Framework**



The research also provided evidence that the property asset allocation decision-making process in Australia varies depending on the size and type of managed fund:

- i. *Large superannuation funds* generally employ as in-house property team and have the capacity to run more sophisticated models and simulations. Generally, these funds are able to hold investments predominantly in both direct and indirect property investments.
- ii. *Small superannuation funds* mainly depend on external advice (primarily from asset consultants) for property asset allocation decisions, and their allocation to property is mainly via listed REITs.
- iii. *Investment management funds* and *property funds*' property asset allocation processes are guided by client mandates. For these funds, external advice (mainly from asset consultants) is limited to setting up a fund's SAA targets. In particular, the process is much simpler for property funds which are mandated by their functions to allocate all investments to real estate assets. Generally, their property allocation decisions are independent of the size of the funds under management.

The decision-making process for large Australian managed funds, particularly superannuation funds, is significantly influenced by the thought processes of external managers and advisers, particularly asset consultants. The use of asset consultant services was prominent across all superannuation fund asset allocation functions, from setting the asset allocation policy to implementing the proposal. The results show that the Australian asset consultant's optimal property allocation advice process is guided by the client's investment objectives and constraints. Australian asset consultants also undertake investment manager selection research for their clients, and monitor and report on their performance. The results are consistent with similar studies conducted by Dhar and Goetzmann (2005), and IREI (2010), that identified asset consultant advice as one of the key external factors influencing US fund managers' property asset allocation decision-making processes.

Overall, the construction of various models highlight that Australian fund managers' property asset allocation framework is not based entirely on traditional normative or descriptive decision theory. The process leans more towards prescriptive decision theory, displaying a consistent and rational approach that recognises cognitive limitations. The key quantitative asset allocation analyses include efficient frontier analysis based on historical returns. Fund managers also placed significant importance on a qualitative overlay, mainly judgement ('gut-feeling') and experience. The results are comparable to similar studies (French 2001; Gallimore & Gray 2002; Worzala & Bajtelsmit 1997) that identified general experience/intuition and judgement as key qualitative factors that influence institutional property allocation decisions in the US and the UK. The qualitative, or gut feel, overlay is important as it can guide decision-makers to make more effective asset allocation decisions in line with investors' current perceptions of the relative merits of each asset class, including property. The use of quantitative analysis is important as it brings a methodical approach to the decision-making process, given that qualitative factors such as 'gut feel' may make decisions less than 'rational'.

The majority of the institutions surveyed expect no major changes to the current property asset allocation decision-making process. However, several fund managers and asset consultants have highlighted that changing markets and the recent GFC warrant additional forecasting models and valuation tools to improve property asset allocation decisions. Generally, fund managers were comfortable with current level of property allocation (8-

12%). However, in the next five years, about one third expects their allocation target to move within 11-15%. There is a shift in Australian fund manager's property allocation strategy, with funds now downgrading securitised property exposure, with higher weighting to direct property (mainly via partnerships and mandates). Examples of leading fund managers that have announced increased appetite for property assets include AustralianSuper and Unisuper (Friemann 2012, p. 50; Hughes 2012, p. 47). Fund managers are also seeking greater international property exposure due to factors such as the higher Australian dollar and lack of opportunities locally. Overall, the push towards direct property reflects fund managers' desire to achieve greater portfolio stability, and the need for funds to have more control over key decisions relating to their assets (at strategic and investment levels).

### **8.3.3 Objectives VII and VIII: Improving Allocation to Property Assets**

- vii. To prepare and evaluate asset allocation models that optimises direct and listed property asset classes.*
- viii. To suggest ways of improving institutional investor's asset allocation decisions towards property investments.*

The quantitative research objectives were aimed at improving institutional asset allocation decisions towards property assets. The empirical analysis covered a sample period of 17 years (1995-2011), comprising 67 quarterly data points involving the industry superannuation fund's seven benchmark asset classes including cash, Australian fixed, international fixed Australian equities, international equities, property, and alternatives asset class. Industry funds are the largest institutional not-for-profit superannuation investment option in Australia, and thus provided a good representation of asset allocation trends in the Australian managed funds industry. The choice of the popular default balanced fund investment option for the analysis was important given that it represents 67% of the industry superannuation fund's assets under management (APRA 2013b, p.7).

For the alternative asset class data series, the Australian managed fund industry appears to have a range of benchmark data series which seem incomplete given the assets included in the alternative asset class. Therefore, the alternative asset class index in this research was constructed from the commencement of selected Australian data series for Infrastructure and Utilities, Hedge Funds (AU), Private Equity, and Commodity Prices (AU), based on an equal weighted formula that follows the UK model (Bond et al. 2007a). The property asset class includes both direct property and listed property. For the purpose of this research, direct property is represented by investments in direct commercial property assets and unlisted property funds. Listed property is represented by the Australian REITs.

The historical analysis of the balanced portfolio showed variances in industry superannuation fund benchmark asset allocation data:

- i. Equities (Australian and international) dominated the balanced fund portfolio with an allocation of more than 50%.
- ii. Australian fixed income had the highest asset allocation range (19%), followed by alternatives (17%).
- iii. Average allocation to property was 10%, evenly split between listed (5%) and direct property (5%).
- iv. Property provided the second highest risk-adjusted return profile (0.21) behind alternative assets (0.44).

- v. Direct property was the best performing asset class with a risk-adjusted return of 0.72 when the property allocation components (direct property and listed property) were analysed separately.
- vi. Property has a significant correlation (0.58) with Australian equities, which in part relates to the allocation of REITs within the property asset class.
- vii. Correlation between direct property and listed property was high (0.59) over the short-term. However, the diversification benefits improved on a 17-year analysis timeframe with lower correlation statistics (0.31).
- viii. Covariance analysis showed that the link between direct property and listed property was significantly low when compared to the co-movement of A-REITs and Australian equities. Although post GFC (2008-2011) direct property and listed property return covariance has improved, it is still not as strong as the A-REITs and Australian equities co-movement.

The portfolio analysis provides evidence that despite the performance of A-REITs being tightly linked to the Australian equities market, placing listed property in the equities portfolio is not a viable strategy. Including listed property in the direct property portfolio provides a much better performance profile (0.21) than including A-REITs in the Australian equities portfolio (0.13). However, including alternative assets in the direct property portfolio provides better risk-adjusted return performance (0.55) than a portfolio that combines direct property and listed property. Interestingly, none of these two portfolio models could replicate the direct property only portfolio risk-adjusted return (0.72).

The key parameters from past market data (risk/return performance, correlation, and covariance measures) provided the platform for the analysis of the historical benchmark data for industry superannuation funds' conventional Strategic allocation. This analysis then supported a comparison between the Strategic allocation and the suitability of ten alternative asset allocation models. The alternative investment strategies evaluated included the Buy and Hold, Equal Weighted, Traditional, Turnings Points, Optimal, Tactical, and Dynamic, asset allocation models. The Strategic allocation model represents the industry fund balanced investment option portfolio, used as a benchmark in this research. The Buy and Hold, and Equal Weighted, strategies are passive techniques. The Optimal strategies seek the highest risk-adjusted returns: a technique known in the field of MPT as Markowitz mean-variance portfolio optimisation. The Traditional strategy is constrained to equities, bonds, and cash. The Turning Points allocation is based on the cyclical movement of Australian GDP. The Tactical strategies are based on risk parity and the momentum investment technique. The Dynamic investment strategies are mean-variance portfolio optimisation formulations on a medium term (three year rolling) timeframe.

Except for the industry fund Strategic portfolio, the asset weight data for alternative asset allocation models was modified to suit the different investment styles. The Optimal, Tactical, and Dynamic strategies were modelled both on an unconstrained and a constrained basis (asset weight and no short-selling constraints), similar to the industry fund Strategic portfolio. In theory, the DAA approach displays similar characteristics to the SAA model as it allows institutions to invest in all types of assets, with different time horizons. Therefore, the DAA model analysis was undertaken separately to the analysis of other alternative asset allocation models (see Chapter Six). However, the findings are present in synthesised format in this chapter.

The selected passive and active asset allocation models were set within the standard MPT framework using the Australian government 10 year bonds as the risk-free rate. The individual asset and portfolio performances were compared using the Sharpe ratio. The performance statistics show that the ten alternative asset allocation models perform as well as the industry funds' conventional Strategic approach (see Table 8-2). The results demonstrate that:

- i. Except for the Traditional approach, all alternative asset allocation models outperformed the industry superannuation funds' conventional Strategic portfolio.
- ii. The Tactical – No Constraints strategy recorded the highest Sharpe ratio (0.86), followed by Tactical – Weight Constrained (0.49), and Dynamic – No Constraints strategies (0.41).
- iii. Strategic portfolio had a high standard deviation (5.25%), reflected in the relatively low risk-adjusted return profile rating (0.14).
- iv. Except for the Tactical – No Constraints strategy, all direct property led portfolios outperformed the listed property inclusive portfolios (see Table 8-1). Therefore, substituting direct property with listed property is not likely to benefit industry fund performance. Table 8-1 is a summary of the different direct property inclusive, and listed property inclusive, asset allocation portfolio performance statistics discussed in Table 6-17 and Table 6-23 in Chapter Six.

**Table 8-1: Performance Statistics – Direct Property Inclusive and Listed Property Inclusive Strategies**

	<b>Direct Prop Inclusive Portfolios</b>			<b>Listed Prop Inclusive Portfolios</b>		
<b>Asset Allocation Strategies</b>	<i>Mean Return</i>	<i>Standard Deviation</i>	<i>Sharpe Ratio</i>	<i>Mean Return</i>	<i>Standard Deviation</i>	<i>Sharpe Ratio</i>
Strategic (Original Portfolio)	2.19%	5.29%	0.14	2.17%	5.54%	0.13
Buy and Hold	2.16%	3.69%	0.20	2.13%	3.95%	0.18
Traditional*	2.08%	5.74%	0.11	2.04%	6.06%	0.10
Optimal – No Constraints	2.18%	2.69%	0.28	2.16%	3.03%	0.24
Optimal – Weight Constrained	2.16%	3.89%	0.19	2.15%	4.09%	0.17
Turning Points	3.08%	5.30%	0.31	2.96%	5.64%	0.27
Equal Weighted	2.36%	3.50%	0.27	2.36%	3.50%	0.27
Tactical – No Constraints	2.09%	0.83%	0.79	2.32%	0.95%	0.94
Tactical – Weight Constrained	4.08%	4.75%	0.56	4.25%	5.58%	0.50
Dynamic – No Constraints	2.37%	2.23%	0.42	2.32%	2.40%	0.37
Dynamic – Weight Constrained	2.25%	3.60%	0.23	2.19%	3.79%	0.20

\*Property included with Equities, Cash and Fixed Income assets.

- v. Including both property asset classes does provide improved risk-adjusted return performance for several strategies, including the Strategic, Dynamic, Optimal, and Tactical – No Constraints strategies (see Table 8-2). Therefore, fund managers may be better off adopting investment strategies that include both direct and listed property assets as such an approach would offer a more diversified investment portfolio. Table 8-2 is a summary of the different property inclusive and property excluded asset allocation portfolio performance statistics discussed in Table 6-10 and Table 6-23 in Chapter Six.
- vi. Except for the Tactical – No Constraints strategy, depending on the asset allocation model, when property assets are included within a multi-asset portfolio, performance improves by 2% to 44%, and portfolio risk level is reduced by 1% to 21% (see Table 8-2). The results for the Tactical – No Constraints are expected,

given that it is based on the risk parity model which benefits from predominantly allocating higher portfolio weights to least volatile assets, which in this analysis was cash.

**Table 8-2: Property Included and Excluded Portfolio Performance – Quarterly Data, 1995-2011**

Asset Allocation Strategies	Property Inclusive Portfolios			Property Excluded Portfolios		
	Mean Return	Standard Deviation	Sharpe Ratio	Mean Return	Standard Deviation	Sharpe Ratio
Strategic (Original Portfolio)	2.19%	5.25%	0.14	2.17%	5.60%	0.13
Buy and Hold	2.15%	3.77%	0.19	2.15%	3.88%	0.18
Traditional*	2.07%	5.69%	0.11	2.05%	6.15%	0.10
Optimal – No Constraints	2.19%	2.86%	0.26	2.16%	3.13%	0.23
Optimal – Weight Constrained	2.17%	3.98%	0.18	2.15%	4.34%	0.17
Turning Points	2.96%	5.21%	0.29	3.10%	5.78%	0.29
Equal Weighted	2.04%	3.42%	0.18	2.03%	3.52%	0.17
Tactical – No Constraints	2.25%	0.95%	0.86	1.95%	0.77%	0.67
Tactical – Weight Constrained	4.02%	5.30%	0.49	3.85%	5.33%	0.45
Dynamic – No Constraints	2.30%	2.10%	0.41	2.01%	2.54%	0.23
Dynamic – Weight Constrained	2.16%	3.55%	0.20	2.12%	3.80%	0.18

\*Property included with equities, fixed income and cash

In evaluating the different asset allocation models, in many instances property allocation was found to be under allocated on a return optimisation basis. Table 8-3 summarises the asset allocation component of industry superannuation funds' conventional Strategic portfolio, and of the ten alternative asset allocation models.

**Table 8-3: Summary of Asset Allocation Components for Different Investment Strategies**

Asset Allocation Strategies	Aust eq	Int eq	Direct Prop	Listed Prop	Aust fixed	Int fixed	Cash	Alter n'ves
Strategic (Original Portfolio)	32%	20%	5%	5%	14%	6%	7%	11%
Buy and Hold	27%	12%	5%	4%	24%	2%	13%	13%
Traditional*	37%	23%	7%	5%	15%	5%	8%	0%
Optimal – No Constraints	5%	7%	50%	0%	3%	4%	16%	15%
Optimal – Weight Constrained	22%	13%	20%	6%	13%	6%	10%	10%
Turning Points	21%	13%	12%	10%	19%	7%	11%	7%
Equal Weighted	13%	13%	13%	13%	13%	13%	13%	13%
Tactical – No Constraints	3%	2%	17%	2%	4%	4%	65%	3%
Tactical – Weight Constrained	30%	19%	12%	4%	9%	5%	11%	10%
Dynamic – No Constraints	1%	0%	43%	4%	0%	7%	35%	10%
Dynamic – Weight Constrained	21%	12%	15%	12%	14%	10%	10%	6%
<b>Average Allocation</b>	<b>18%</b>	<b>11%</b>	<b>20%</b>	<b>6%</b>	<b>12%</b>	<b>6%</b>	<b>18%</b>	<b>10%</b>

\*Property Inclusive

The optimal allocation to property ranged from 9% (Buy and Hold) to 50% (Optimal – No Constraints), with an average allocation of 26% across the different strategies. Upon excluding unconstrained strategies, the recommended allocation to property for industry funds is 17% (12% direct, and 5% listed). This compares to the current industry fund property allocation of 10%. Interestingly, despite the higher asset allocation range assigned to alternative assets (0-25%) than to property assets (0-20%), the average allocation to alternatives across the different constrained strategies was 10%, lower than property (17%). This provides concrete evidence that

property will command a significant allocation in institutional portfolios despite the availability of similar real assets such as infrastructure.

### **8.3.4 Summary of Conclusions**

The main purpose of this research was to identify whether Australian fund managers view property as a key investment asset class, to determine how these institutions formulate their property allocation decisions, and to suggest ways to improve institutional allocation to property assets. Research was undertaken using an industry survey and an asset allocation modelling investigation.

The evaluation of the 79 survey respondents indicated that Australian fund managers' property asset allocation is a dynamic and methodological process, involving sophisticated tools and techniques. It is an interactive, sequential and continuous process involving multiple decision-makers (internal and external), complete with feedback loops. The techniques and analysis used are comparable to those used by US and UK fund managers. The exercise involves considering market information, quantitative analysis and qualitative overlay. Although aided by proprietary (internally developed) tools/models and research, the results also indicate that asset consultants now play a notable part in the thought process of Australian fund managers' property asset allocation decisions. This is particularly evident for the large superannuation funds.

There has also been a shift in Australian fund managers' property asset allocation views and strategies, driven mainly by the funds' need to adapt to the continued uncertainty in global financial and investment market conditions. Although SAA remains the dominant property allocation strategy, shorter term strategies, in particular DAA structure, have become more prominent for several funds due to their ability to react more effectively to current uncertainties in the market environment. The current property allocation trend is to diversify away from securitised property exposure, with higher weighting to direct property.

Leading Australian fund managers and asset consultants expect allocation to property to move to the 10-15% range in the next five years. The findings are backed by the asset allocation modelling results. Covering a 17 year period, this research compared the performance of the industry superannuation funds' Strategic investment approach against ten alternative asset allocation models. Depending on the asset allocation model, when property is included in a multi-asset portfolio, the portfolio's risk-adjusted return profile improves by 2% to 44%, and portfolio risk level reduces by 1% to 21%. In the tested asset allocation models, property produced reliable returns and had a relatively low standard deviation performance. These results suggest there is a case to increase property allocation in the popular Strategic balanced portfolio above the current exposure of 10% to 17% (12% direct, and 5% listed).

Looking forward, property is expected to continue to attract investor attention due to its relatively low volatility when compared to equities, its inflation-hedging qualities, and its ability to provide stable income. The continued effects from the GFC mean that capital displaced from equities and bonds markets would need to be invested in stable investment sectors such as property. Increased allocation to property will assist in funding the retirement incomes of Australia's growing and aging population. Property will remain important for fund managers, particularly as the large superannuation sector continues to grow.

## **8.4 Contribution to Body of Knowledge**

This research makes important contributions to both the investment management and the property allocation bodies of knowledge. In the Australian context, information on strategic property allocation models and variables is not widely available and there is little guided theory related to the subject. At a strategic level, this research is the first to investigate and document in a single study the property asset allocation decision-making practice of a wide cross-section of Australian fund managers (superannuation funds, investment management funds, and property funds) and asset consultants. This approach allowed both fund specific and industry evaluation of how Australian fund managers determine their optimal property allocation view and how they perform the property allocation functions at different levels. The analysis shows that the property allocation process varies depending on the size and type of managed fund. Therefore, the conceptual frameworks developed from the research will help enhance academic theory and understanding in the area of property allocation decision-making.

The investigation of the various decision-making frameworks also has important practical implications for the industry. The research found that the property allocation strategy for small sized fund managers can be a static process. Given their limited resources (funds under management and personnel) it is common for small fund managers generally to rely on asset consultant advice for property allocation decisions, or even to base their property allocation decisions on what other fund managers see as the neutral property allocation level market view. Thus, the decision-making frameworks developed in this research (see, for example Figure 8-2) provide small fund managers and other industry practitioners with important insights into institutional fund manager property asset allocation analysis, evaluation and decision-making processes and techniques. The identification of these key factors will both assist and educate investors and the industry to better understand institutional strategic property allocation methodology. This could provide a platform for industry practitioners to improve their own institution's property allocation decision-making processes.

In addition, this research provides useful contributions to the body of knowledge about property portfolio construction. The review of literature (Chapter Two) highlighted that comprehensive empirical evidence on Australian institutional property asset allocation strategies is not rationally developed. This research evaluated and provided extensive analysis of eleven different asset allocation models, with an important focus on the property allocation component. The research also presents a unique perspective of investigating the optimal allocation to property assets within the context of active investment strategies, such as TAA and DAA models, whereas previous studies have focused mainly on passive investment strategies. The investigation of these models effectively contributes to the transfer of broader finance and investment market theories and practice to the property discipline.

For an Australian superannuation balanced fund, the asset allocation modelling results have important practical implications. The empirical results show that, by increasing the property allocation level from current 10% to 17%, there is scope to improve the risk-adjusted return performance of the industry superannuation funds' Strategic balanced investment option portfolio, (see Figure 8-3). This knowledge will be beneficial for Australian fund managers currently reprofiling investment portfolios to achieve stable risk-adjusted returns.



Figure 8-3 is a summary of the industry superannuation funds' Strategic portfolio performances, as detailed in Figure 7-3 (Chapter Seven).

**Figure 8-3: Industry Fund Strategic Portfolio (Original versus Re-balanced)**

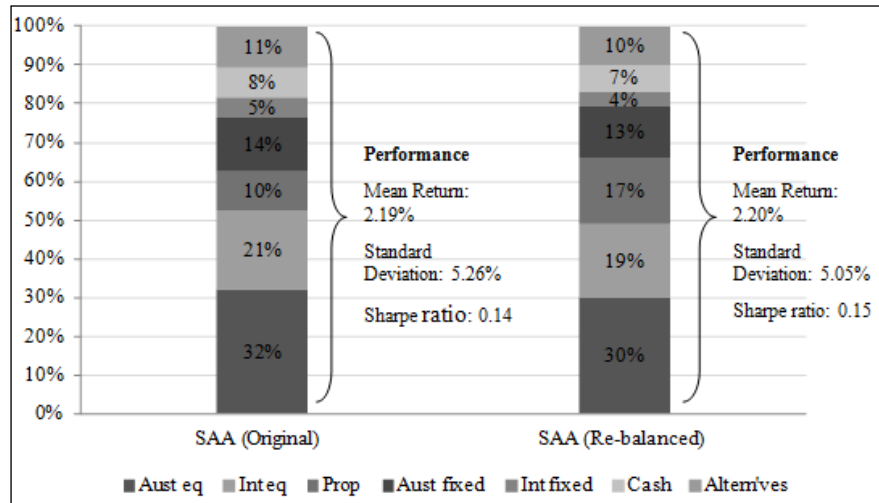


Figure 8-3 illustrates that although allocation to equities (Australian and international) still dominates the rebalanced industry fund portfolio, total asset weighting to capital market assets (cash, fixed income, and equities) has declined slightly in favour of stable investment sectors, such as property and alternatives. The combined real asset (property and alternatives) allocation accounts for 27% of the rebalanced portfolio. This high allocation is in line with predictions by JP Morgan Asset Management (2012), and Jones Lang LaSalle (2012), that in the next decade real assets will occupy 25% of institutional portfolios.

The higher weighting to direct property (12%) substantiates findings from the industry survey (Chapter Four and Chapter Five), and is backed by recent industry superannuation fund asset allocation data. The industry superannuation fund property allocation was 11% as at June 2012, with a large 10% invested in direct property (APRA 2013b, p. 50). The lower allocation to listed property reflects the A-REITs performance data during the asset allocation modelling timeframe. Listed property recorded negative total return in 13 out of 20 quarters leading up to December 2011 (Rainmaker Group 2012). However, recent market data shows that the A-REITs sector has recovered strongly, which may lead to increased listed property allocation in future. For example, the Future Fund, a leading fund manager, has recently announced an increased focus on listed property (Lenaghan 2013).

## 8.5 Recommendations

The strategic property asset allocation decision-making framework used by Australian fund managers considers a number of factors (qualitative and quantitative) that are influenced by both in-house and external (mainly asset consultant) advice. The process moves through several key stages, from formulating the asset allocation policies to implementing the investment plan (see Figure 8-2). The final decisions on the level of property allocation and associated strategies are made by the Investment Committee and Board. The Board decision is based on proprietary reports from the Asset Allocation Team, Property Team, research analyst reports, and external advice

(mainly asset consultants). It is essential that fund managers develop effective feedback loops that support constant interaction amid different decision-makers. This would ensure that the fund's strategic property asset allocation decisions are constantly monitored and reviewed in line with any recent changes in the investment environment.

A recent important development for the Australian managed funds asset allocation decision-making process is the 'rights of refusal' procedures. Under these procedures, the Investment Committee must provide a report setting out specific reasons for declining to approve certain asset allocation recommendations. During the recent GFC, several quantitative models failed to predict the consequences on asset performance, including those for property assets. The 'rights of refusal' procedures could have legal implications if fund performance is affected by poor asset allocation choices. Since the GFC, 'rights of refusal' procedures has become an integral part of most fund managers' asset allocation decision-making process.

A managed fund's SAA team generally consists of 4-12 committee members, with property staff representation being 1-2. Some fund managers and asset consultants surveyed were uneasy with the low level of property personnel presence in the fund asset allocation team. The key concern was that their lack of understanding of local and overseas property products or markets indirectly limits the fund's exposure to property assets. It appears that funds employing more property personnel, or which seek advice from consultants with property specific experience, are more effective in making informed decisions and are able to react more quickly to changes in property market conditions.

Based on the asset allocation modelling results, including the property asset class offers an improved performance profile when compared to the performance of the property excluded investment strategies. For industry practitioners operating in the competitive superannuation environment, this research should attract fund managers to explore alternative asset allocation models where risk-adjusted returns can be improved compared to the common strategic allocation approach with an increased allocation to property. In particular, the performance of the Tactical, Dynamic, and Optimal constrained portfolios, which work on the same modelling parameters as the industry fund Strategic investment model, would be useful to fund managers seeking an improved risk-adjusted return profile during current uncertainties in the investment market environment.

The results show that the Tactical strategy has outperformed the different asset allocation models, including the industry superannuation fund Strategic portfolio. Generally, the Tactical strategy overweighted best performing assets to benefit from short-term market movements. While overweighting assets based on ex-post momentum signals is simple, determining tactical shifts based on forecast data is much more challenging. The process requires considerable manager skills and can involve high operational costs and portfolio volatility. Therefore, it would be challenging to apply Tactical allocation strategies using the entire seven assets balanced portfolio model. The challenge arises from the cost involved in continuously rebalancing the portfolio, and in particular, continuously rebalancing lumpy assets such as direct property and unlisted alternatives assets. For this reason, generally it is recommended that institutions only consider Tactical strategy for liquid assets, such as equities and listed property.

The analysis shows that the Dynamic investment model, which exhibits similar performance data characteristics to the industry fund Strategic portfolio, provides a more stable investment option. It is more suited to a balanced fund investment scenario. In theory, the DAA approach displays similar characteristics to the SAA model as it allows institutions to invest in all types of assets, with different time horizons. The continued effects of the recent GFC mean that investment markets have remained unpredictable. Therefore, using Dynamic strategies would effectively allow fund managers to protect against market extremes and achieve an improved portfolio risk-adjusted return profile. In the context of property, DAA's medium term timeframe is deemed effective for investments in both direct and listed property assets.

Indications are that Australian managed funds will become more direct players in the property market, mainly via partnerships and mandates. The survey of leading Australian fund managers and asset consultants (Chapter Four) found that the push towards direct property reflects the need for fund managers to achieve greater portfolio stability and to deliver sound risk-adjusted returns, and the need for institutions in the post GFC era to have more control over key decisions relating to their assets (at the strategic and investment levels). While lack of liquidity could act as a deterrent for higher allocation to direct property, the continued evolution of unlisted property fund vehicles (such as wholesale property funds and property syndicates) could provide the medium for increasing allocations to direct property. These vehicles would allow fund managers to meet specific member investment and liquidity requirements, alongside retaining some input into property allocation decisions.

## 8.6 Areas of Further Research

Throughout the course of this study, it was evident that several issues that need further investigation which was beyond the scope and objectives of this thesis. The main recommendations for further research are:

- i. **Developing better risk management and valuation tools** – the literature review (Chapter Two) identified that, despite the significant development in the property market and the MPT in the last 60 years, institutional property investors have begun only recently to use standard techniques and risk management tools from the broader investment market. The majority of institutions surveyed (Chapter Four) stated that they were unlikely to make major changes in how they approach property as an asset class. However, most are reassessing assumptions about MPT and seeking a deeper understanding of risk. Further research could be beneficial in the area of property allocation, with the aim of improving the effectiveness of actions to anticipate, monitor and manage risks (such as derivatives, hedging).
- ii. **Undertaking regular asset allocation surveys** – the review of the literature, and the industry survey results, indicate that the trend in property asset allocation will highly favour direct property, mainly core sectors. Undertaking regular industry surveys, similar to surveys undertaken by the Investment Property Forum (IPF) in the UK, would be useful in keeping the market abreast of new developments in Australia on institutional property asset allocations trends, policies and strategies.
- iii. **Assessment of asset allocation decision-maker's property market knowledge** – the survey results highlight that managed funds that do not employ in-house property teams normally rely on external advice to establish property asset allocation policies and strategies. However, respondent comments indicate that some asset consultants have limited understanding of property markets (local and global), and thus limit their recommendations to equities and bonds. This area needs further investigation.

- iv. **Further analysing alternatives and property asset allocation components** – the evaluation of the different investment strategies (Chapter Six) illustrated that the maximum allocation to the property and alternatives asset classes appeared similar for unconstrained and weighted constrained asset models. For example, the maximum allocation for Optimal – No Constraints was property 75%, and alternatives 85%. Likewise, the maximum allocation for Optimal – Weight Constrained was property 20% and alternatives 25%. As these occurred at the same time, the evidence suggests that the strong correlation readings between property and the alternative asset class could lead to property and alternatives being considered within a single asset class portfolio. This needs to be further examined with the property components (direct property and listed property) and alternatives asset components (infrastructure, hedge funds, private equity and commodity) included separately within the different asset allocation models.
- v. **Developing an industry alternatives asset index** – the alternatives index in this research is constructed from the commencement of selected Australian data series for Infrastructure and Utilities, Hedge Funds (AU), Private Equity, and Commodity Prices (AU), based on an equal weighted formula, which follows the UK structure (Bond et al. 2007a). The alternatives index definition and index construction method can vary from fund to fund. Given that alternatives are now the third largest asset group in Australian institutional balanced investment option portfolios, research that assists to develop a standard ‘Australian alternatives index’ benchmark could benefit future portfolio construction studies.
- vi. **Retesting the asset allocation models with current data** – the asset allocation models used in this research are based on quarterly data from June 1995 to December 2011. As the industry superannuation fund asset allocation data is now available from 2011 onwards, retesting the various asset allocation models with more recent data could be a useful in identifying contemporary asset allocation. In addition, there is scope to include a forecasting component in the asset allocation models.
- vii. **Retesting the asset allocation models with de-smoothed property data** – The property data used to construct the different asset allocation models are raw and not de-smoothed property, which is in line with industry practice. Given limitations on time, there was no scope to re-test and compare the results of the asset allocation models using de-smoothed property data. Future research can focus on re-testing the different asset allocation models using de-smoothed property data and comparing the results to current study.
- viii. **Application of asset allocation models to other managed funds segments** – the research is limited to investigating the property asset allocation components of the industry superannuation fund sector. There is scope to use the approach and methodology to investigate the optimal allocation to property in other Australian superannuation sectors (such as retail funds and public sector funds), and other managed funds segments (such investment management funds and units trust funds).
- ix. **International application of asset allocation models** – the principles underpinning the various asset allocation theories and models used in this research are universal and could easily be applicable to other developed international investment markets. Future research can focus on determining the optimal allocation to property using the eleven identified asset allocation models; for example, in the UK, the US or Asia-Pacific countries, with the results compared to this Australian study.

In conclusion, the research has the potential to change how the Australian fund managers view property asset allocation. This thesis examined the property asset allocation strategies, and decision-making processes and frameworks, for the A\$2.0 trillion Australian fund management industry, including the large superannuation funds. In doing so, this research effectively merged both finance and property discipline theory and practices to methodologically illustrate institutional investor optimal property asset allocation strategies, processes and investment models. The conceptual frameworks and models developed from the research will help enhance academic theory and understanding about property asset allocation decision-making. Based on the asset allocation modelling, increased allocation to property assets offers an improved performance profile for the common strategic portfolio. This knowledge could benefit fund managers currently reprofiling investment portfolios in search of improved risk-adjusted returns in the post GFC era. The findings should trigger further studies to advance property asset allocation decision-making and portfolio construction research, with the aim of improving the stature of property as an asset class.



## REFERENCES

- Adair, AS, Berry, JN & McGreal, WS 1994, 'Investment decision-making: a behavioral perspective', *Journal of Property Finance*, vol. 5, no. 4, pp. 32-42.
- Aggarwal, R 1993, 'Theory and practice in financial education: or why we shouldn't just ask them', *Journal of Financial Practice and Education*, fall edn, pp. 15-22.
- Alexander, GJ, Sharpe, WF & Bailey, JV 2001, *Fundamentals of investments*, 3rd edn, Prentice Hall International, Inc., New Jersey.
- Allen Consulting 2011, *Enhancing financial stability and economic growth: the contribution of superannuation*, The Allen Consulting Group, Melbourne.
- Amaratunga, D, Baldry, D, Sarshar, M & Newton, R 2002, 'Quantitative and qualitative research in the built environment: application of "Mixed" research approach', *Work Study*, vol. 51, no. 1, pp. 17-31.
- Amenc, N, Goltz, F, Martellini, L & Milhau, V 2011, 'Asset allocation and portfolio construction', in Fabozzi, FJ & Markowitz, HM (eds) 2011, *The theory and practice of investment management: asset allocation, valuation, portfolio construction and strategies*, 2nd edn, John Wiley & Sons Inc, New Jersey, pp. 159-202.
- Anson, MJ, Fabozzi, FJ & Jones, FJ 2011, 'The handbook of traditional and alternative investment vehicles: investment characteristics and strategies', *The Frank J. Fabozzi Series*, John Wiley & Sons Inc, New Jersey.
- Anson, M 2004, 'Strategic versus tactical asset allocation', *The Journal of Portfolio Management*, winter, pp. 8-22.
- Armstrong, P 2002, 'What is property? Property: challenging conventional thinking', *Australian Property Journal*, May edn, pp. 104-111.
- Atherton, E, French, N & Gabrielli, L 2008, 'Decision theory and real estate development: a note on uncertainty', *Journal of European Real Estate Research*, vol. 1, no. 2, pp. 162-182.
- Australian Bureau of Statistics 2013a, *Managed funds Australia time-series workbook 5655.0: December 2012 (data file)*, ABS, Commonwealth of Australia, Canberra.
- Australian Bureau of Statistics 2013b, *Managed funds Australia bulletin: December quarter 2012*, ABS, Commonwealth of Australia, Canberra.
- Australian Bureau of Statistics 2013c, *Australian demographic statistics: March 2013*, cat. no. 3101.0, ABS, Commonwealth of Australia, Canberra, viewed 19 June 2013, <<http://www.abs.gov.au>>.
- Australian Bureau of Statistics 2012a, *2012 Year Book Australia*, ABS, Commonwealth of Australia, Canberra.
- Australian Bureau of Statistics 2012b, *Australian national accounts: national income, expenditure and product September 2012*, cat. no. 5206.0, ABS, Canberra, viewed 29 September 2012, <<http://www.abs.gov.au>>.
- Australian Bureau of Statistics 2008, *Population projections, Australia: 2006 to 2101*, cat. no. 3322.0, ABS, Commonwealth of Australia, Canberra.
- Australian Private Equity & Venture Capital Association Limited 2013a, *Venture capital factsheet: April 2013*, AVCAL, Sydney.
- Australian Private Equity & Venture Capital Association Limited 2013b, *Private equity factsheet: February 2013*, AVCAL, Sydney.
- Australian Private Equity & Venture Capital Association Limited 2012a, *Australian private equity and venture capital activity report 2012 Yearbook*, AVCAL, November 2012, Sydney.
- Australian Private Equity & Venture Capital Association Limited 2012b, *Cambridge Associates LLC Australia/AVCAL Index Returns*, AVCAL, Sydney, viewed 23 June 2012 <[www.avcal.com.au](http://www.avcal.com.au)>.
- Australian Prudential Regulation Authority 2013a, *Quarterly superannuation performance: December 2012*, APRA, February edn, Sydney.
- Australian Prudential Regulation Authority 2013b, *Annual superannuation bulletin: June 2012*, APRA, January edn, Sydney.

- Australian Prudential Regulation Authority 2013c, *Superannuation fund-level profiles and financial performance: June 2012 (data file)*, APRA, January edn, Sydney.
- Australian Prudential Regulation Authority 2012a, *Half yearly life insurance bulletin: June 2012 (data file)*, APRA, December edn, Sydney.
- Australian Prudential Regulation Authority 2012b, *Annual friendly society bulletin: June 2012*, APRA, December edn, Sydney.
- Australian Prudential Regulation Authority 2012c, *Annual superannuation bulletin: June 2011*, APRA, February edn, Sydney.
- Australian Prudential Regulation Authority 2010, *Superannuation fund-level profiles and financial performance: June 2010 (data file)*, APRA, September edn, Sydney.
- Australian Prudential Regulation Authority 2007, *Insight: celebrating 10 years of superannuation data collection 1996-2006*, APRA, special edn, issue 2, Sydney.
- Australian Securities Exchange 2013a, *Managed funds*, ASX, viewed 25 April 2013 <<http://www.asx.com.au/products/managed-funds.htm>>.
- Australian Securities Exchange 2013b, *Commodities*, ASX, viewed on 9 April 2013, <<http://www.asx.com.au/products/commodities.htm>>.
- Australian Securities Exchange 2013c, *About ASX*, ASX, viewed 23 February 2013, <<http://www.asx.com.au>>.
- Australian Securities Exchange 2012a, *Listed managed investments and ETPs monthly update: December 2012*, ASX, Sydney.
- Australian Securities Exchange 2012b, *A-REITs factsheet: December 2012*, ASX, Sydney.
- Australian Securities Exchange 2012c, *S&P/ASX All Ordinaries Accumulation Index*, ASX, Sydney, viewed 23 October 2012, <<http://au.spindices.com/indices/equity/all-ordinaries>>.
- Australian Securities Exchange 2012d, *S&P/ASX 200 A-REIT Index*, ASX, Sydney, viewed 23 October 2012, <<http://au.spindices.com/indices/equity/sp-asx-200-a-reit-sector>>.
- Australian Securities Exchange 2009, *Listed managed investments monthly update: March 2009*, ASX, Sydney.
- Australian Securities Exchange 2007, *Listed managed investments monthly update: August 2007*, ASX, Sydney.
- Australian Taxation Office 2013, *Superannuation reforms research*, ATO, viewed 23 March 2013, <<http://www.ato.gov.au>>.
- Australian Trade Commission 2012, *Australia benchmark report 2012*, Austrade Financial Services Division, Canberra.
- Australian Trade Commission 2011, *Australian hedge funds*, Austrade Financial Services Division, Canberra.
- Australian Trade Commission 2010a, *Alternative investments in Australia*, Austrade Financial Services Division, Canberra.
- Australian Trade Commission 2010b, *Investment management industry in Australia*, Austrade Financial Services Division, Canberra.
- AXA Real Estate 2012, *Property's place in a mixed-asset portfolio*, AXA Investment Management Company, United Kingdom.
- Axiss Australia 2002, *Investment management in Australia*, Australian Government – Invest Australia, Sydney.
- Bacon, C 2008, *Practical portfolio performance measurement and attribution*, 2nd edn, John Wiley & Sons Ltd Inc, England.
- Bajtelsmit, VL & Worzala, EM 1995, 'Real estate allocation in pension fund portfolios', *Journal of Real Estate Portfolio Management*, vol. 1, no. 1, pp. 25-38.
- Balkin, RS 2010, 'Experimental designs', in Sheperis, CL, Young, JS & Daniels, MH (eds), *Counseling research: quantitative, qualitative, and mixed methods*, Pearson Education Inc, New Jersey, pp. 46-60.
- Barings 2012, *Baring Dynamic Asset Allocation Fund: balancing risk and return*, Baring Asset Management Limited, London.



- Barkham, R 1996, 'The financial structure and ethos of property companies: an empirical analysis', *Construction Management and Economics*, vol. 15, no. 5, pp. 441-456.
- Barkham, R & Geltner, D 1995, 'Price discovery in American and British property markets', *Real Estate Economics*, vol. 23, no. 1, pp. 21-44.
- Basak, S & Chabakauri, G 2010, 'Dynamic mean-variance asset allocation', *The Review of Financial Studies*, vol. 23, no. 8, pp. 2970-3016.
- Baum, A & Hartzell, D 2012, *Global property investment: strategies, structures, decisions*, Wiley-Blackwell, United Kingdom.
- Baum, A 2002, *Commercial real estate investment*, Estate Gazette, London.
- Bekkers, N, Doeswijk, RQ & Lam, TW 2009, 'Strategic asset allocation: determining the optimal portfolio with ten asset classes', *The Journal of Wealth Management*, winter edn, pp. 61-77.
- Berenson, ML, Levine, DM, Krehbiel, TC, Watson, J, Jayne, N & Turner, L 2007, *Basic business statistics: concepts and applications*, Pearson Education Australia Inc, Prentice Hall, New South Wales.
- Bergman, MM 2008, *Advances in mixed methods research: theories and applications*, SAGE Publications Inc, Los Angeles.
- Bernstein P 2007, *Capital ideas evolving: the improbable origins of modern Wall Street*, John Wiley and Sons, New Jersey.
- Bickman, L & Rog, DJ (eds) 2009, *The SAGE handbook of applied social research methods*, SAGE Publications Inc, California.
- Bispinck, H 2012, 'Real estate investment decision-making – a review', *Journal of Property Investment and Finance*, vol. 30, no. 5, practice review, pp. 529-544.
- Black, F & Litterman, R 1992, 'Global portfolio optimization', *Financial Analysts Journal*, vol. 48, no. 5, pp. 28-43.
- Blake Dawson & Jones Lang LaSalle 2009, *Australian real estate: a legal guide to foreign investors*, Jones Lang LaSalle, Sydney.
- Bodie, Z, Kane, A & Marcus, AJ 2008, *Investments*, 7th edn, McGraw-Hill Irwin, Boston.
- Bond, SA Hwang, S, Mitchell, P & Satchell, SS 2007a, *Asset allocation in the modern world*, Investment Property Forum, London.
- Bond, SA, Hwang, S, Mitchell, P & Satchell, SS 2007b, 'Will private equity and hedge funds replace real estate in mixed-asset portfolios? Not likely', *The Journal of Portfolio Management*, September edn, pp. 74-85.
- Booth, GG & Broussard, JP 2002, 'The role of REITs in asset allocation', *Finance*, vol. 23, no. 2, pp. 109-124.
- Boshoff, D & Cloete, C 2012, 'Can listed property shares be a surrogate for direct property investment behaviour?', *South African Journal of Economic and Management Sciences*, vol. 15, no. 1, pp. 72-93.
- Boudry, WI, Coulson, NE, Kallberg, JG & Liu, CH 2012, 'On the hybrid nature of REITs', *Journal of Real Estate Finance and Economics*, vol. 44, pp. 230-249.
- Boyd, T, MacGillivray, H & Schwartz, AL 1995, 'A survey of real estate capital budgeting practices in Australia', *Journal of Real Estate Literature*, vol. 3, pp. 193-201.
- Brannen, J & Moss, G 2012, 'Critical issues in designing mixed methods policy research', *American Behavioral Scientist*, vol. 56, no. 6, pp. 789-801.
- Brinson, GP, Singer, BD & Beebower, GL 1991, 'Determinants of portfolio performance II', *Financial Analyst Journal*, May/June edn, pp. 40-48.
- Brinson, GP, Hood, LR & Beebower, GL 1986, 'Determinants of portfolio performance', *Financial Analyst Journal*, July/August edn, pp. 39-44.
- Brounen, D & Eichholtz, P 2003, 'Property, common stock and shares: increased potential for diversification', *Journal of Portfolio Management*, special issue, pp. 129-137.
- Brown, GR & Matysiak, GA 2000, *Real estate investment: a capital market approach*, Financial Times Prentice Hall, Harlow.

- Brown, GR & Schuck, EJ 1996, 'Optimal portfolio allocations to real estate', *The Journal of Real Estate Portfolio Management*, vol. 2, no. 1, pp. 63-73.
- Brown, GR 1991, *Property investments and the capital markets*, E & FN SPON, London.
- Burns, RB 1997, *Introduction to research methods*, 3rd edn, Addison Wesley Longman Australia Pty Limited, Melbourne.
- Cambridge Associates 2013, 'Australia Private Equity & Venture Capital Index and selected benchmark statistics', Cambridge Associates LLC, September 2012, Sydney.
- Campbell, DT & Fiske, DW 1959, 'Convergent and discriminant validation by the multitrait-multimethod matrix', *Psychological Bulletin*, vol. 56, pp. 81-105.
- Canto, V 2006, *Understanding asset allocation: an intuitive approach to maximising your portfolio*, FT Prentice Hall, New York.
- Chen, L & Mills, TH 2010, 'Global real estate investment universe continues to expand and develop', in Newell, G & Sieracki, K (eds) 2010, *Global trends in real estate finance*, Wiley-Blackwell, United Kingdom, pp. 3-18.
- Cheng, P, Lin, Z & Liu, Y 2010, 'Illiquidity and portfolio risk of thinly traded assets', *The Journal of Portfolio Management*, vol. 36, no. 2, pp. 126-138.
- Chiang, KC H & Lee, ML 2007, 'Spanning tests on public and private real estate', *Journal of Real Estate Portfolio Management*, vol. 13, no. 1, pp. 7-15.
- Christopherson, JA, Carino, DR & Ferson, WE 2009, *Portfolio performance measurement and benchmarking*, McGraw Hill, New York.
- Citigroup Inc 2012a, *Citigroup Global Fixed-Income Index catalogue: 2012*, Citigroup Global Markets Inc, New York.
- Citigroup Inc 2012b, *Citigroup World Global Bond Index*, Citigroup Global Fixed-Income Index Group, Sydney, viewed 21 September 2012, <<http://www.citigroup.com>>.
- Clayton, J, Giliberto, SM, Gordon, J, Hudson-Wilson, S, Fabozzi, FJ & Liang, Y 2009, 'Real estate's evolution as an asset class', *The Journal of Portfolio Management*, vol. 35, no. 5, pp. 10-22.
- Clayton, J & MacKinnon, G 2003, 'The relative importance of stock, bond and real estate factors in explaining REIT returns', *Journal of Real Estate Finance and Economics*, vol. 27, no. 1, pp. 39-60.
- Clayton, J & MacKinnon, G 2001, 'The time-varying nature of the link between REIT, real estate and financial asset returns', *Journal of Real Estate Portfolio Management*, vol. 7, no. 1, pp. 43-54.
- Colonial First State Global Asset Management 2009, *Evaluating infrastructure from a property perspective: the case for a diversified real asset allocation*, CFS Research Series, November edn, CFS, Sydney.
- Colonial First State Global Asset Management 2008a, *Global REITs: key features and recent trends*, CFS Research Series, June edn, CFS, Sydney.
- Colonial First State Global Asset Management 2008b, *Allocating capital between Australian direct property, Australian REITs & global listed property*, CFS Research Series, May edn, CFS, Sydney.
- Colonial First State Global Asset Management 2004, *The role of direct property in asset allocation*, CFS Research Series, August edn, CFS, Sydney.
- Commonwealth Bank of Australia 2013, *Commonwealth Bank Bond Indices*, CBA, Sydney, viewed on 13 March 2013, <[http:// www.commbank.com.au/](http://www.commbank.com.au/)>.
- Commonwealth Bank of Australia 2012, *CBA Bond: All Series, All Maturities indices*, CBA, Sydney.
- Craft, TM 2001, 'The role of private and public real estate in pension plan portfolio allocation choices', *Journal of Real Estate Portfolio Management*, vol. 7, no. 1, pp. 17-23.
- Credit Suisse 2013, *Dow Jones Credit Suisse Hedge Fund Index methodology*, Dow Jones Indices, CME Group Company, viewed on 25<sup>th</sup> April 2013, <<http://www.hedgeindex.com/hedgeindex/en/indexmethodology.aspx?cy=USD&indexname=HEDG>>.
- Creswell, JW & Plano Clark VL 2011, *Designing and conducting mixed methods research*, 2nd edn, SAGE Publications Inc, Los Angeles.

- Creswell, JW 2009, *Research design: qualitative, quantitative and mixed methods approaches*, 3rd edn, SAGE Publications Inc, Los Angeles.
- Creswell, JW & Plano Clark VL 2007, *Designing and conducting mixed methods research*, SAGE Publications Inc, Thousand Oaks, California.
- Creswell, JW 1994, *Research designs: qualitative and quantitative approaches*, SAGE Publications Inc, Thousand Oaks, California.
- Crowe, S & Krisbergh, D 2010, *Listed property performance as a predictor to direct real estate performance*, European Public Real Estate Association/ Cohen & Steers Capital Management Inc, Belgium.
- Cuffe, SL & Goldberg, LR 2012, 'Allocating assets in climates of extreme risk: a new paradigm for Stress testing portfolios', *Financial Analysts Journal*, vol. 68, no. 2, pp. 85-108.
- Dalton Jr, TG 2012, 'The chief investment strategist/ economist', in Smith, DM & Shawky, HA (eds), *Institutional money management: an inside look at strategies, players and practices*, John Wiley & Sons Inc, New Jersey, pp. 73-87.
- Darst, DM 2003, *The art of asset allocation: asset allocation principles and investment strategies for any market*, McGraw-Hill, New York.
- Day, AL 2001, *Mastering financial modelling in Microsoft® Excel: a practitioner's guide to applied corporate finance*, 2nd edn, Pearson Education Limited, Prentice Hall, Great Britain.
- De Francesco, A & Hartigan, LR 2009, 'The impact of changing risk characteristics in the A-REIT sector', *Journal of Property Investment and Finance*, vol. 27, no. 6, pp. 543-562.
- De Francesco, A 2007, 'Gearing and the Australian real estate investment market', *Journal of Property Investment and Finance*, vol. 25, no. 6, pp. 579-602.
- De Francesco, A 2005, 'The role of direct property in asset allocation', *Australian Property Journal*, February edn, pp. 386-393.
- Deloitte Touche Tohmatsu 2009, *Dynamics of the Australian superannuation system: the next 20 years*, Deloitte Actuaries & Consultants, Melbourne.
- Desormeau, Jr WH 2012, 'The institutional investment consultant', in Smith, DM & Shawky, HA (eds), *Institutional money management: an inside look at strategies, players and practices*, John Wiley & Sons Inc, New Jersey, pp. 99-112.
- De Wit, DPM 1996, 'Real estate portfolio management practices of pension funds and insurance companies in the Netherlands: a survey', *Journal of Real Estate Research*, vol. 11, no. 2, pp. 131-148.
- Dhar, R & Goetzmann, W 2005, *Institutional perspectives on real estate investing: the role of risk and uncertainty*, Pension Real Estate Association, Hartford, Connecticut.
- Dow Jones Credit Suisse Hedge Index LLC 2012, *Dow Jones Credit Suisse Core Hedge Fund Indices*, New York, viewed 23 June 2012, <www.hedgeindex.com>.
- Edmonds, WA & Kennedy, TD 2013, *An applied reference guide to research designs: quantitative, qualitative, and mixed methods*, SAGE Publications Inc, Los Angeles.
- Elton, EJ, Gruber, MJ, Brown, SJ & Goetzmann, WN 2010, *Modern portfolio theory and investment analysis*, 8th edn, John Wiley & Sons Ltd Publication, USA.
- Faber, MT, 2007, 'A quantitative approach to tactical asset allocation', *The Journal of Wealth Management*, vol. 9, no. 4, Spring edn, pp. 69-79.
- Fabozzi, FJ, Markowitz, HM, Kolm, PN & Gupta, F 2012, 'Mean-variance model for portfolio selection', *Encyclopedia of Financial Models*, John Wiley & Sons Inc, New Jersey.
- Fabozzi, FJ & Markowitz, HM (eds) 2011a, *The theory and practice of investment management: asset allocation, valuation, portfolio construction and strategies*, 2nd edn, John Wiley & Sons Inc, New Jersey.
- Fabozzi, FJ & Markowitz, HM 2011b, 'Overview of investment management' in Fabozzi, FJ & Markowitz, HM (eds) 2011, *The theory and practice of investment management: asset allocation, valuation, portfolio construction and strategies*, 2nd edn, John Wiley & Sons Inc, New Jersey, pp. 3-14.
- Fabozzi, FJ, Grant, JL & Vardharaj, R 2011, 'Common stock portfolio management strategies', in Fabozzi, FJ & Markowitz, HM (eds) 2011, *The theory and practice of investment management: asset allocation,*

- valuation, portfolio construction and strategies*, 2nd edn, John Wiley & Sons Inc, New Jersey, pp 229-268.
- Fabozzi, FJ, Shiller, RJ & Tunaru, RS 2010, 'Property derivatives for managing European real-estate risk', *European Financial Management*, vol. 16, no. 1, pp. 8-26.
- Fabozzi, FJ 2009, *Institutional investment management: equity and bond portfolio strategies and applications*, John Wiley & Sons Inc, Hoboken.
- Fabozzi, FJ, Kolm, PN, Pachamanova, DA & Focardi, SM 2007, *Robust portfolio optimisation and management*, John Wiley & Sons Inc, New Jersey.
- Fabozzi, FJ, Gupta, F & Markowitz, HM 2002, 'The legacy of Modern Portfolio Theory', *Journal of Investing*, vol. 11, no. 3, fall edn, pp. 7-22.
- Faff, R, Gallagher, DR & Wu, E 2005, 'Tactical asset allocation: Australian evidence', *Australian Journal of Management*, vol. 30, no. 2, pp. 261-282.
- Fama, EF & French, KR 1992, 'The cross-section of expected stock returns', *The Journal of Finance*, vol. 47, no. 2, pp. 427-465.
- Fama, EF 1965, 'The behaviour of stock market prices', *Journal of Business*, vol. 38, pp. 34-105.
- Farragher, EJ & Savage, A 2008, 'An investigation of real estate investment decision-making practices', *Journal of Real Estate Practice and Education*, vol. 11, no. 1, pp. 29-40.
- Farragher, EJ & Kleiman, RT 1996, 'A re-examination of real estate investment decision-making practices', *Journal of Real Estate Portfolio Management*, vol. 2, no. 1, pp. 31-39.
- Farrell, JL JR 2011, 'Asset allocation under extreme uncertainty', *Journal of Portfolio Management*, vol. 37, no. 2, pp. 72-82.
- Feldman, BE 2003, 'Investment policy for securitised and direct real estate: correcting for liquidity', *The Journal of Portfolio Management*, special issue, pp. 113-121.
- Financial Services Institute of Australasia 2003, 'Financial markets and economics (CI)', FINSIA, Securities Institute Education, Sydney.
- Finkenzeller, K, Dechant, T & Schäfers, W 2010, 'Infrastructure: a new dimension of real estate? An asset allocation analysis', *Journal of Property Investment and Finance*, vol. 28, no. 4, pp. 263-274.
- Flick, U 2006, *An introduction to qualitative research*, 3rd edn, SAGE Publications Inc, London.
- Focardo & Fabozzi 2004, *The mathematics of financial modelling & investment management*, John Wiley & Sons Inc, New Jersey.
- Fowler, FJ 2009, 'Survey research methods', *Applied Research Methods Series: Vol.1*, 4th edn, SAGE Publications Inc, Singapore.
- Francis, JC & Kim, D 2013, *Modern Portfolio Theory: foundations, analysis, and new developments*, John Wiley & Sons Inc, New Jersey.
- Fraser-Sampson, G 2011, *Alternative assets: investments for a post-crisis world*, John Wiley & Sons Ltd, United Kingdom.
- French, N 2001, 'Decision theory and real estate investment: an analysis of the decision-making processes of real estate investment fund managers', *Managerial and Decision Economics*, vol. 22, pp. 399-410.
- French, N & French, S 1997, 'Decision theory and real estate investment', *Journal of Property Valuation & Investment*, vol. 15, no. 3, pp. 226-232.
- Friemann, G 2012, 'UniSuper first to renew appetite for listed trusts', *The Australian Financial Review*, 7 June, p. 50.
- Fuerst, F & Marcato, G 2009, 'Style analysis in real estate markets: beyond the sector and region dichotomy', *The Journal of Portfolio Management*, vol. 35, no. 5, pp. 104-117.
- Gallagher, DR 2002, 'The Australian investment management industry', SIRCA, Sydney.
- Gallagher, DR 2001, 'Attribution of investment performance: an analysis of Australian pooled superannuation funds', *Accounting and Finance*, vol. 41, pp. 41-62.

- Gallimore, P & Gray, A 2002, 'The role of investor sentiment in property investment decisions', *Journal of Property Research*, vol. 19, no. 2, pp. 111-120.
- Gallimore, P, Hansz, JA & Gray, A 2000, 'Decision-making in small property companies', *Journal of Property Investment & Finance*, vol. 18, no. 6, pp. 602-612.
- Geltner, DM, Miller, NG, Clayton, J & Eichholtz, P 2007, *Commercial real estate analysis & investments*, 2nd edn, Thomson South-Western, Mason.
- Geltner, D & Kluger, B 1998, 'REIT-based pure-play portfolios: the case of property types', *Real Estate Economics*, vol. 26, no. 4, pp. 581-612.
- Geltner, DM, Rodriguez, J & O'Connor, D 1995, 'The similar genetics of public & private real estate and the optimal long-horizon portfolio mix', *Real Estate Finance*, vol. 12, no. 3, pp. 13-25.
- Geltner, DM 1993, 'Estimating market values from appraised values without assuming an efficient market', *Journal of Real Estate Research*, vol. 8, no. 3, pp. 325-345.
- Geltner, DM 1991, 'Smoothing in appraisal-based returns', *Journal of Real Estate Finance and Economics*, vol. 4, no. 3, pp. 327-345.
- Gerrans, P, Clark-Murphy, M & Speelman, C 2010, 'Asset allocation and age effects in superannuation investment choices', *Accounting and Finance*, vol. 50, no. 2, pp. 301-319.
- Geurts, TG & Nolan, H 1997, 'Does real estate have a place in the investment portfolio of tomorrow?', *Review of Business*, summer edn, pp. 19-24.
- Gibson, RC 2008, *Asset allocation: balancing financial risk*, 4th edn, McGraw Hill, New York.
- Giliberto, SM 1990, 'Equity real estate investment trusts and real estate returns', *The Journal of Real Estate Research*, vol. 5, no. 2, pp. 259-263.
- Gitman, LJ, Joehnk, MD, Juchau, RH, Wheldon, BJ & Wright, SJ 2004, *Fundamentals of investing*, 2nd Australian edn, Pearson Education Australia, New South Wales.
- Goetzmann, WN & Ibbotson, RG 1990, 'The performance of real estate as an asset class', *Journal of Applied Corporate Finance*, vol. 3, no. 1, pp. 65-76.
- Gray, WR, Wang, T, Zhang, S, Kanner, C & Gray, C 2012, *A horse race between tactical asset allocation model*, Empiritrage LLC, Cleveland, Ohio.
- Greene, JC 2008 'Mixed methods in social inquiry', *Journal of Mixed Methods Research*, vol. 2, no. 2, pp. 190-192.
- Greene, JC, Caracelli, VJ and Graham, WF 1989, 'Toward a conceptual framework for mixed-method evaluation designs', *Education Evaluation and Policy Analysis*, vol. 11, no. 3, pp. 255-274.
- Gupta, F, Prajogi, R & Stubbs, E 1999, 'The information ratio and performance', *Journal of Portfolio Management*, vol. 26, no. 1, fall edn, pp. 33-40.
- Haight, GT, Morrell, SO & Ross, GE 2007, *How to select investment managers & evaluate performance: a guide for pension funds, endowments, foundations, and trusts*, John Wiley & Sons Inc, New Jersey.
- Hammer, D 1991, *Dynamic asset allocation: strategies for stock, bond and money market*, John Wiley & Sons Inc, USA.
- Hanrahan, PF 2007, *Funds management in Australia: officer's duties and liabilities*, LexisNexis Butterworth Australia, New South Wales.
- Harley, R 2012, 'REITs pass baton to unlisted property', *The Australian Financial Review*, 17 May 2012, Australasian Business Intelligence.
- Harvey, J 2010, *The truth about real estate allocations*, Cohen & Steers, New York.
- Hauss, H 2004, 'The role of institutional property investments in the global asset allocation process', *Australian Property Journal*, August edn, pp. 198-205.
- Hartigay, S & Yu, SM 1993, *Property investment decision-making: a quantitative approach*, E&FN Spon, London.

- Heiselt, A & Sheperis, CJ 2010, 'Mixed methods design', in Sheperis, CL, Young, JS & Daniels, MH (eds), *Counseling research: quantitative, qualitative, and mixed methods*, Pearson Education Inc, New Jersey, pp. 187-214.
- Henry, GT 2009, 'Practical sampling', in Bickman, L & Rog, DJ (eds) 2009, *The SAGE handbook of applied social research methods*, SAGE Publications Inc, California, pp. 77-105.
- Hensel, CR, Ezra, DD & Ilkiw, JH 1991, 'The Importance of asset allocation decision', *Financial Analyst Journal*, vol. 47, no. 4, pp. 65-72.
- Hesse-Biber, SN 2010, *Mixed methods research: merging theory with practice*, The Guilford Press, New York.
- Higgins, D 2010, 'Investment styles and performance in the Australian unlisted wholesale property fund market', *Pacific Rim Property Research Journal*, vol. 16, no. 3, pp. 254-272.
- Higgins, D & Ng, B 2009, 'Australian securitised property funds: an examination of their risk-adjusted performance', *Journal of Property Investment and Finance*, vol. 27, no. 4, pp. 404-412.
- Higgins, D 2007, 'Placing commercial property in the Australian capital markets', *RICS Research Paper Series*, vol. 7, no. 12, London.
- Higgins D 2005, 'Sizing the Australian property investment market', *Australian Property Journal*, August edn, pp. 530-534.
- Hirt, GA & Block, SB 2012, *Fundamentals of investment management*, 10th edn, McGraw-Hill/Irwin, New York.
- Hoernemann, JT, Junkans, DA & Zarate, CM 2005, 'Strategic asset allocation and other determinants of portfolio returns', *The Journal of Wealth Management*, winter edn, pp. 26-38.
- Hoesli, M & Oikarinen, E 2012, 'Are REITs real estate? Evidence from international sector level data', *Journal of International Money and Finance*, vol. 31, pp. 1823-1850.
- Hoesli, M & Lekander, J 2009, 'Real estate portfolio strategy and product innovation in Europe', *Journal of Property Investment & Finance*, vol. 26, no. 2, pp. 162-176.
- Hoesli, M, Lekander, J & Witkiewicz, W 2003, *International evidence on real estate as a portfolio diversifier*, International Center for Financial Asset Management and Engineering, Geneva.
- Hoesli, M & Macgregor, BD 2000, *Property investment: principles and practice of portfolio management*, Pearson Education Asia Pty Ltd, Singapore.
- Horrigan, H, Case, B, Geltner, D & Pollakowski, H 2009, 'REIT-based property return indices: a new way to track and trade commercial real estate', *The Journal of Portfolio Management*, vol. 35, no. 5, pp. 80-91.
- Howard, RA 1988, 'Decision analysis: practice and promise', *Management Science*, vol. 34, no. 6, pp. 679-695.
- Hudson-Wilson, S, Fabozzi, FJ & Gordon, JN 2003, 'Why real estate? An expanding role for institutional investors', *The Journal of Portfolio Management*, special issue, pp. 12-25.
- Hughes, D 2012, 'Australian super to double real estate', *The Australian Financial Review*, 20 November, p. 47.
- Ibbotson, RG & Kaplan, PD 2000, 'Does asset allocation policy explain 40, 90, or 100 percent of performance?', *Financial Analyst Journal*, January/February edn, pp. 26-33.
- IESE Business School 2013, *Venture capital and private equity country attractiveness index*, IESE Business School, University of Navarra, Barcelona, Spain.
- Institutional Real Estate Inc, 2010, *The language & culture of the pension real estate investment market*, IREI, San Ramon, USA.
- Investment Property Databank 2013a, *IPD Australia Quarterly Unlisted Infrastructure Index factsheet: April 2013*, IPD, Sydney.
- Investment Property Databank 2013b, *The Property Council / IPD Australia All Property Index factsheet: April 2013*, IPD, Sydney.
- Investment Property Databank 2012, *PCA/IPD Australia Quarterly Composite Property Index*, IPD, Sydney, viewed 21 September 2012, <www.ipd.com>.
- Investment Property Databank 2000, *The assessment and management of risk in the property investment industry*, IPD, London.

- Investment Property Forum 2012, *Real estate's role in the mixed-asset portfolio: a re-examination*, IPF, London.
- Investment Property Forum 2010, *UK institutional investors: property allocations, influences and strategies*, IPF, London.
- Jaffe, A & Sirmans, CF 2001, *Fundamentals of real estate investment*, South-Western/Thomson Learning, Ohio.
- Jahnke, W 1997, 'The asset allocation hoax', *Journal of Financial Planning*, February edn, pp. 109-113.
- Jensen, M 1968, 'The performance of mutual funds in the period 1945-1964', *Journal of Finance*, vol. 23, no. 2, pp. 389-416.
- Jick, TD 1979, 'Mixing qualitative and quantitative methods: triangulation in action', *Administrative Science Quarterly*, vol. 24, no. 4, pp. 602-611.
- JLW Research, 1989, *Asset allocation from property perspective*, JLW Property Research Pty Limited, Sydney.
- Jones Lang LaSalle, 2013, *The advancement of real estate as a global asset class*, Global Foresight Research Series, Jones Lang LaSalle Global, Sydney.
- Jones Lang LaSalle, 2012, *Real assets and the Asia Pacific*, Jones Lang LaSalle Global, Sydney.
- JP Morgan Asset Management 2012, *The realization: a new world - a new normal – a tectonic shift*, JP Morgan Chase & Co, United States.
- Kallberg, JG, Liu, CH & Greig, DW 1996, 'The role of real estate in the portfolio allocation process', *Real Estate Economics*, vol. 24, no. 3, pp. 359-377.
- Kaplan, PD (ed) 2012, *Frontiers of modern asset allocation*, John Wiley & Sons Inc, New Jersey.
- Keng, TY 2004, 'The role of international property trusts in Australian mixed-asset portfolios', *Pacific Rim Property Research Journal*, vol. 10, no. 2, pp. 215-234.
- KPMG 1998, *Financial institutions performance survey*, KPMG, Sydney.
- Kritzman, M 1999, 'Toward defining an asset class', *The Journal of Alternative Investments*, vol. 2, no. 1, pp. 79-82.
- Kumar, R 2005, *Research methodology: a step by step guide for beginners*, 2nd edn, Pearson Education Australia, Sydney.
- Lawrence, SD & Singh, TN 2011, 'De-risking through dynamic asset allocation', *Financial Executive*, vol. 27, no. 4, May edn, pp. 44-47.
- Lee, CL, Reed, R & Robinson, J 2008, 'Behaviours of property investors: an investigation on the risk perceptions of Australian property fund managers', *Proceedings of the 14th Pacific Rim Real Estate Society Conference*, 20-23 January 2008, Kuala Lumpur, Malaysia.
- Lee, ML & Chiang, K 2010, 'Long-run price behaviour of equity REITs: become more like common stocks after the early 1990s?', *Journal of Property Investment and Finance*, vol. 28, no. 6, pp. 454-465.
- Lee, S 2011, 'Risk-based asset allocation: a new answer to an old question', *The Journal of Portfolio Management*, vol. 37, no.4, summer edn, pp. 11-28.
- Lee, S 2010, 'The changing benefits of REITs to the mixed-asset portfolio', *Journal of Real Estate Portfolio Management*, vol. 16, no. 3, pp. 201-215.
- Lee, S & Higgins, D 2009, 'Evaluating the Sharpe performance of the Australian property investment markets', *Pacific Rim Property Research Journal*, vol. 15, no. 3, pp. 358-370.
- Lee, S & Stevenson, S 2006, 'Real estate in the mixed-asset portfolio: the question of consistency', *Journal of Property Investment & Finance*, vol. 24, no. 2, pp. 123-135.
- Lee, S & Stevenson, S 2005, 'The case for REITs in the mixed-asset portfolio in the short and long run', *Journal of Real Estate Portfolio Management*, vol. 11, no. 1, pp. 55-80.
- Lee, S & Byrne, P 1995, 'Is there a place for property in the multi-asset portfolio?', *Journal of Property Investment & Finance*, vol. 6, no. 3, pp. 60-83.
- Leech, NL 2012, 'Writing mixed research reports', *American Behavioral Scientist*, vol. 56, no. 6, pp. 866-881.
- Leech, NL & Onwuegbuzie, AJ 2010, 'Guidelines for conducting and reporting mixed research in the field of counseling and beyond', *Journal of Counseling and Development*, vol. 88, no. 1, pp. 61-69.

- Lenaghan, N 2013, 'Future Fund looks to REITs', *The Australian Financial Review*, 6 February, p. 37.
- Liang, Y & Webb, JR 1996, 'The hedged REIT Index and mixed-asset portfolios', *The Journal of Real Estate Portfolio Management*, vol. 2, no. 1, pp. 55-61.
- Lind, DA, Marchal, WG & Mason, RB 2002, *Statistical techniques in business & economics*, 11th edn, McGraw-Hill Companies Inc, Boston.
- Ling, DC & Naranjo, A 1999, 'The integration of commercial real estate markets and stock markets', *Real Estate Economics*, vol. 27, no. 3, pp. 483-515.
- Lintner, J 1965, 'The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets', *The Review of Economics and Statistics*, vol. 47, no. 1, pp. 13-37.
- Lummer, SL & Riepe, MW 1994, 'The role of asset allocation in portfolio management', in Lederman, J & Klein, RA (eds), *Global asset allocation: techniques for optimizing portfolio management*, John Wiley & Sons Inc, New York, pp. 1-6.
- Lützkendorf, T & Lorenz, D 2010, 'Socially responsible property investment – background, trends and consequences', in Newell, G & Sieracki, K (eds) 2010, *Global trends in real estate finance*, Wiley-Blackwell, United Kingdom, pp. 193-238.
- MacGregor, BD & Nanthakumaran, N 1992, 'The allocation to property in the multi-asset portfolio: the evidence and theory reconsidered', *Journal of Property Research*, vol. 9, no. 1, pp. 5-32.
- MacKinnon, GH & Al Zaman, A 2009, 'Real estate for the long-term: the effect of return predictability on long-horizon allocations', *Real Estate Economics*, vol. 37, no. 1, pp. 117-153.
- Maginn, JL, Tuttle, DL, McLeavey, DW & Pinto, JE (eds) 2007, *Managing investment portfolios: a dynamic process*, 3rd edn, John Wiley & Sons, New York.
- Mangione, TW & Van Ness, JH 2009, 'Mail surveys', in Bickman, L & Rog, DJ (eds) 2009, *The SAGE handbook of applied social research methods*, SAGE Publications Inc, California, pp. 475-508.
- Markowitz, HM 1987, *Mean-variance analysis in portfolio choice and capital markets*, Basil Blackwell, New York.
- Markowitz, HM 1959, *Portfolio selection: efficient diversification on investments*, 2nd edn, John Wiley & Sons Inc, United States.
- Markowitz, H 1952, 'Portfolio selection', *The Journal of Finance*, vol. 7, no. 1, pp. 77-91.
- Marston, R 2011, *Portfolio design: a modern approach to asset allocation*, John Wiley & Sons Inc, New Jersey.
- Maxwell, JA 2009, 'Designing a qualitative study', in Bickman, L & Rog, DJ (eds) 2009, *The SAGE handbook of applied social research methods*, SAGE Publications Inc, California, pp. 214-253.
- McDonald, S 1992, *Institutional investment: the shifting source of property funding in the nineties*, Hooker Research Limited, Sydney.
- McNamara, G 2010, 'Property derivatives: the story so far', in Newell, G & Sieracki, K (eds) 2010, *Global trends in real estate finance*, Wiley-Blackwell, United Kingdom, pp. 114-139.
- Mei, J & Lee, A 1994, 'Is there a real estate factor premium?', *Journal of Real Estate Finance and Economics*, vol. 9, no. 2, pp. 113-126.
- Mercer 2013, *Mercer's 2012 global asset manager fee survey*, Mercer LLC, viewed 15 March 2013, <<http://www.mercer.com/articles/1505185>>.
- Mercer 2011, *Dynamic asset allocation*, Mercer LLC, viewed 15 March 2012, <<http://www.mercer.com/articles/1396205>>.
- Money Management/DEXX&R 2012, *Top 100 dealers: July 2012*, Money Management/ DEXX&R, viewed 12 April 2013, <<http://www.moneymanagement.com.au>>.
- Morawski, J, Rehkugler, H & Füss, R 2008, 'The nature of listed real estate companies: property or equity market?', *Financial Markets and Portfolio Management*, vol. 22, pp. 101-126.
- Morgan Stanley Capital International Inc 2013, *MSCI World ex Australia Index (AUD) factsheet: March 2013*, MSCI Inc, United States.



- Morgan Stanley Capital International Inc, 2012, *MSCI WORLD Standard (Large+Mid Cap) Index performance: June 2012*, MSCI Inc, Sydney, viewed 17 October 2012, <<http://www.msci.com>>.
- Morningstar 2011, *Best practices in managed funds performance fees*, Morningstar Australasia Pty Ltd, Sydney.
- Morrison, DF 2010, *Investment strategies in the current market*, Morgan Stanley, USA.
- Morse, JM 1991, *Qualitative nursing research: a contemporary dialogue*, 2nd edn, SAGE Publications, California.
- Mossin, J 1966, 'Equilibrium in a capital asset market', *Econometrica*, vol. 34, no. 4, pp. 768-783.
- Mueller, AG & Mueller, GR 2003, 'Public and private real estate in a mixed-asset portfolio', *Journal of Real Estate Portfolio Management*, vol. 9, no. 3, pp. 193-203.
- Myer, FCN & Webb, JR 1994, 'Statistical properties of returns: financial assets versus commercial real estate', *Journal of Real Estate Finance and Economics*, vol. 8, no. 3, pp. 267-282.
- Myer, FCN & Webb, JR 1993, 'Return properties of equity REITs, common stocks, and commercial real estate: a comparison', *Journal of Real Estate Research*, vol. 8, no. 1, pp. 87-106.
- Newell, G & Lee, CL 2011a, 'The impact of alternative assets on the role of direct property in Australian mixed-asset portfolios', *Pacific Rim Property Research Journal*, vol. 17, no. 4, pp. 531-559.
- Newell, G & Lee, CL 2011b, 'Assessing the consistency of valuation-smoothing and the impact on property in Australian mixed-asset portfolios', *Pacific Rim Property Research Journal*, vol. 17, no. 3, pp. 463-482.
- Newell, G, Peng, HW & De Francesco, A 2011, 'The performance of unlisted infrastructure in investment portfolios', *Journal of Property Research*, vol. 28, no. 1, pp. 59-74.
- Newell, G 2010, 'Listed property trusts in Australia', in Newell, G & Sieracki, K (eds) 2010, *Global trends in real estate finance*, Wiley-Blackwell, United Kingdom, pp. 46-63.
- Newell, G 2009, 'Developing a socially responsible property investment index for UK property companies', *Journal of Property Investment & Finance*, vol. 27, no. 5, pp. 511-521.
- Newell, G, Chau, KW & Wong, SK 2009, 'The significance and performance of infrastructure in China', *Journal of Property Investment & Finance*, vol. 27, no. 2, pp. 180-202.
- Newell, G & Razali, MN 2009, 'The impact of the Global Financial Crisis on commercial property investment in Asia', *Pacific Rim Property Research Journal*, vol. 15, no. 4, pp. 430-452.
- Newell, G 2008, 'The significance of property in superannuation funds', *Australian and New Zealand Property Journal*, vol. 1, no. 8, pp. 670-677.
- Newell, G & Peng, HW 2008a, 'Assessing the significance of motivating factors and risk factors in infrastructure funds management', *Pacific Rim Property Research Journal*, vol. 14, no. 3, pp. 399-411.
- Newell, G & Peng, HW 2008b, 'LPT fund manager decision-making in the emerging property sectors', *Pacific Rim Property Research Journal*, vol. 14, no. 2, pp. 222-232.
- Newell, G & Peng, HW 2008c, 'The role of US infrastructure in investment portfolios', *Journal of Real Estate Portfolio Management*, vol. 14, no. 1, pp. 21-33.
- Newell, G 2007a, 'The significance of property in industry-based superannuation funds in Australia', *Australian and New Zealand Property Journal*, vol. 1, no. 1, pp. 34-43.
- Newell, G 2007b, 'The significance of wholesale property funds', *Australian and New Zealand Property Journal*, vol. 1, no. 3, pp. 216-223.
- Newell, G 2006, 'The changing risk profile of listed property trusts', *Australian Property Journal*, vol. 39, no. 3, pp. 172-180.
- Newell, G 2005, 'Factors influencing the performance of listed property trusts', *Pacific Rim Property Research Journal*, vol. 11, no. 32, pp. 211-227.
- Newell, G & Keng, TY 2003, 'The significance of property sector and geographic diversification in Australian institutional property portfolios', *Proceedings of the 9th Annual Pacific RIM Real Estate Society Conference*, 20-22 January 2003, Brisbane.
- Newell, G, Acheampong, P & Worzala, EM 2002, 'Property research priorities in Australia', *Pacific Rim Property Research Journal*, vol. 8, no. 2, pp. 127-139.

- Newell, G & Chau, KW 1996, 'Linkages between direct and indirect property performance in Hong Kong', *Journal of Property Finance*, vol. 7, no. 4, pp. 9-29.
- Newell, G, Stevenson, K & Rowland, P 1993, 'Institutional investor criteria for property investment', *The Valuer and Land Economics*, vol. 32, no. 6, pp. 450-454.
- Nguyen, P & Portait, R 2002, 'Dynamic asset allocation with mean variance preferences and a solvency constraint', *Journal of Economic Dynamics & Control*, vol. 26, pp. 11-32.
- Norton, ER 2012, 'Asset allocation and life cycle investing', in Smith, DM & Shawky, HA (eds), *Institutional money management: an inside look at strategies, players and practices*, John Wiley & Sons Inc, New Jersey, pp. 217-235.
- Oikarinen, E, Hoesli, M & Serrano, C 2011, 'The long-run dynamics between direct and securitised real estate', *Journal of Real Estate Research*, vol. 33, no. 1, pp. 73-103.
- P&I/Towers Watson 2012a, *The P&I/Towers Watson World 500: world's largest money managers*, Pension & Investments/ Watson Wyatt, viewed 10 April 2013, <<http://www.pionline.com/>>.
- P&I/Towers Watson 2012b, *The P&I/Towers Watson Global 300 pension fund survey: world's 300 megafunds*, Pension & Investments/ Watson Wyatt, United Kingdom.
- Pagliari, JL, Scherer, KA & Monopoli, RT 2005, 'Public versus private real estate equities: a more refined long-term comparison', *Real Estate Economics*, vol. 33, no. 1, pp. 147-187.
- Pagliari, JL & Webb, JR 1995, 'The fundamental examination of securitised and unsecuritized real estate', *The Journal of Real Estate Research*, vol. 10, no. 1, pp. 381-425.
- Pagliari, JL (eds) 1995, *The handbook of real estate portfolio management*, Irwin Professional Pub, Chicago.
- Pai, A & Geltner, D 2007, 'Stocks are from mars, real estate is from venus', *The Journal of Portfolio Management*, vol. 33, special issue, pp. 134-144.
- Pareto, C 2012, *Measure your portfolio's performance*, Investopedia US, viewed 16 December 2012, <<http://www.investopedia.com/articles/08/performance-measure.asp#ixzz2LUZrdHgF>>.
- Parker, D 2013, *Decision-making by Australian property funds*, Royal Institute of Chartered Surveyors Research Report, RICS, London.
- Parker, D 2011, *Global real estate investment trusts: people, process and management*, Wiley-Blackwell Publication, West Sussex, UK.
- Parker, D 2010, 'REIT investment decision-making: a multi step process', *Proceedings of the 16th Annual Pacific RIM Real Estate Society Conference*, 24-27 January 2010, Wellington, New Zealand.
- Peng, HW & Newell, G 2007, 'The significance of infrastructure in Australian investment portfolios', *Pacific Rim Property Research Journal*, vol. 13, no. 4, pp. 423-450.
- Perold, AF & Sharpe, WF 1988, 'Dynamic strategies for asset allocation', *Financial Analysts Journal*, vol. 44, no. 1, pp. 16-27.
- Picerno, J 2010, *Dynamic asset allocation: Modern Portfolio Theory updated for the smart investor*, Bloomberg Press, New York.
- Pivo, G 2008, 'Responsible property investing: what the leaders are doing?', *Journal of Property Investment & Finance*, vol. 26, no. 6, pp. 562-576.
- Pivo, G 2005, 'Is there a future for socially responsible property investments?', *Real Estate Issues*, vol. 30, no. 1, pp. 16-27.
- Pivo, G & McNamara, P 2005, 'Responsible property investing', *International Real Estate Review*, vol. 8, no. 1, pp. 128-143.
- Pridham, A 2000, 'Securitising bricks and mortars', *Australian Land Economics Review*, January edn, pp. 63-72.
- Property Council of Australia, 2011, *Australian property investment industry: Autumn 2011*, PCA, Sydney.
- Property Council of Australia, 2009, *Australian property investment industry: June 2009*, PCA, Sydney.
- Property Investment Research, 2013, *Australian property funds industry survey 2012: a complete landscape of property funds sector (data file)*, PIR, 11th edn, Sydney, viewed 03 April 2013, <<https://www.pir.com.au/>>.

- Pyhrr, SA, Cooper, JR, Wofford, LE, Kapplin, SD & Lapides, PD 1989, *Real estate investment: strategy, analysis, decisions*, John Wiley & Sons, New York.
- Rachev, ST, Stoyanov, SV & Fabozzi, FJ 2008, *Advanced stochastic models, risk assessment, and portfolio optimization*, John Wiley & Sons Inc, New Jersey.
- Radanovic, D 2010, *Property and Australia's aging population*, CFS Research Series, August edn, Colonial First State Global Asset Management, Sydney.
- Ragsdale, EK & Rao, GR 1994, 'Tactical asset allocation at Kidder: Peabody', in Lederman, J & Klein, RA (eds), *Global asset allocation: techniques for optimizing portfolio management*, John Wiley & Sons Inc, New York, pp. 208-225.
- Rainmaker Group 2013, *Australian asset consultant's superannuation fund market share: 2008-12 (data file)*, Rainmaker Group, Sydney.
- Rainmaker Group 2012, *Australian superannuation industry asset class weights: June 1995-December 2011 (data file)*, Rainmaker Group, Sydney.
- Reddy, W, Higgins, D, & Wakefield, R 2014, 'An investigation of property-related decision practice of Australian fund managers', *Journal of Property Investment & Finance*, vol. 32, no. 3, pp. 282-305.
- Reddy, W 2014, 'Dynamic asset allocation strategy and the role of property assets: a study of Australian industry superannuation funds', *Proceedings of the 20th Pacific Rim Real Estate Society Conference*, 19-22 January 2014, Christchurch, New Zealand.
- Reddy, W 2013a, 'Superannuation funds and property allocation strategies: what is the mix? direct property, listed property or both?', *Pacific Rim Property Research Journal*, vol. 19, no. 1, pp. 57-79.
- Reddy, W 2013b, 'Superannuation funds and property allocation strategies: what is the mix? direct property, listed property or both?', *Proceedings of the 18th Asian Real Estate Society Annual Conference*, 28 June – 01 July 2013, Kyoto, Japan.
- Reddy, W 2013c, 'Fund Managers and their Property Asset Allocation Decision-making Process', PhD Colloquium, *19th Pacific Rim Real Estate Society Conference*, 13-16 January 2013, Melbourne, Australia.
- Reddy, W, Higgins, D, Wist, M & Garimort, J 2013a, 'Australian industry superannuation funds: investment strategies and property allocation', *Journal of Property Investment & Finance*, vol. 31, no. 5, pp. 462-480.
- Reddy, W, Higgins, D, Wist, M & Garimort, J 2013b, 'Investment Strategies and Property Allocation for Industry Superannuation Funds', *Australia and New Zealand Property Journal*, vol. 4, no. 4, pp. 372-375.
- Reddy, W, Higgins, D, Wist, M & Garimort, J 2013c, 'Australian industry superannuation funds: investment strategies and property allocation', *Proceedings of the 19th Annual Pacific Rim Real Estate Society Conference*, 13-16 January 2013, Melbourne, Australia.
- Reddy, W 2012a, 'Determining the current optimal allocation to property: a survey of Australian fund managers', *Pacific Rim Property Research Journal*, vol. 18, no. 4, pp. 371-387.
- Reddy, W 2012b, 'Institutional property asset allocation strategies and decision-making frameworks: an Australian study', *Proceedings of the 28th Annual American Real Estate Society Conference*, 17-21 April 2012, St Petersburg Beach, Florida.
- Reddy, W 2012c, 'Determining the current optimal allocation to property: a study of Australian fund managers', *Proceedings of the 18th Annual Pacific Rim Real Estate Society Conference*, 15-18 January 2012, Adelaide, Australia.
- Reddy, W 2012d, 'Fund Managers and their Property Asset Allocation Decision-making Process', PhD Colloquium, *18th Pacific Rim Real Estate Society Conference*, 15-18 January 2012, Adelaide, Australia.
- Reddy, W 2001, *Property trust investments: the opportunities, constraints and viability of property trust investments in Fiji*, MA Thesis, The University of the South Pacific, Fiji.
- Rees, D 2008, *The role of Australian real estate in investment portfolios – risk or reward?*, Mirvac Group, Sydney.
- Rees, D 2007, 'The emergence of real estate debt markets in Australia', *Australian and New Zealand Property Journal*, vol. 1, no. 4, pp. 305-309.

- Renton, NE 1992, *Renton's understanding: investment property including residential, commercial, industrial & property trusts*, The Investment Library, Australia.
- Reserve Bank of Australia 2013a, *RBA Index of Commodity Prices G5: April 2013 (data file)*, RBA, Sydney, viewed 26 April 2013, <<http://www.rba.gov.au>>.
- Reserve Bank of Australia 2013b, *Managed funds tables series B14: March 2013 (data file)*, RBA, Sydney, viewed 06 April 2013, <<http://www.rba.gov.au>>.
- Reserve Bank of Australia 2012a, *Commonwealth Government securities on issue tables series E10: November 2012 (data file)*, RBA, Sydney, viewed 04 April 2013, <<http://www.rba.gov.au>>.
- Reserve Bank of Australia 2012b, *Financial and economic tables series F & G: June - August 2012 (data file)*, RBA, Sydney, viewed 31 August 2012, <<http://www.rba.gov.au>>.
- Reserve Bank of Australia 2009, 'Updating the RBA's Index of Commodity Prices', *Reserve Bank bulletin October 2009*, RBA, Sydney.
- Reserve Bank of Australia 2003, *Australian funds management: market structure and fees*, RBA, Sydney.
- Rist, RC 1975, 'Ethnographic techniques and the study of an Urban School', *Urban Education*, vol. 10, no. 1, pp. 86-108.
- Roberts, C & Henneberry, J 2007, 'Exploring office investment decision-making in different European contexts', *Journal of Property Investment & Finance*, vol. 25, no. 3, pp. 289-305.
- Robinson, J 2002, 'Asset allocation in balanced portfolios: a note on the place of property', *Proceedings of the 8th Annual Pacific RIM Real Estate Society Conference*, 20-22 January 2002, Christchurch, New Zealand.
- Roll, R & Ross, SA 1995, 'The Arbitrage Pricing Theory approach to strategic portfolio planning', *Financial Analysts Journal*, vol. 51, no. 1, pp. 122-131.
- Ross, SA & Zisler, RC 1991, 'Risk and return in real estate', *Journal of Real Estate Finance and Economics*, vol. 4, no. 2, pp. 175-190.
- Ross, SA 1976, 'The Arbitrage Theory of capital asset pricing', *Journal of Economic Theory*, vol. 13, no. 3, pp. 341-360.
- Roulac, SE 1994, 'The evolution of real estate decisions', in Graaskamp, JA, Delisle, JR & Sa-Aadu, J (eds), *Appraisal, Market Analysis, and Public Policy in Real Estate*, Kluwer Academic Publishers, Boston.
- Rowland, PJ 2010, *Australian property investments and financing*, Thomson Reuters (Professional Australia) Limited, NSW.
- Rowland, PJ & Kish, J 2000, 'Decision making by property fund managers: a survey', *Australian Property Journal*, May edn, pp. 104-111.
- Rowland, PJ 1997, *Property investments and their financing*, 2nd edn, LBC Information Services, Sydney.
- RREEF 2005, *Understanding infrastructure*, RREEF Real Estate Research America, New York.
- Russell Investments 2012, *Russell Investments 2012 global survey on alternative investing: the importance of diversification and alpha*, Russell Investment Group, Washington, United States.
- Sah, V, Gallimore, P & Clements, JS 2010, 'Experience and real estate investment decision-Making: a process-tracking investigation', *Journal of Property Research*, vol. 27, no. 3, pp. 207-219.
- Samuelson, PA 1965, 'Proof that properly anticipated prices fluctuate randomly', *Investment Management Journal*, vol. 6, no. 2, pp. 41-49.
- Schmidt, M 2012, *Buy-and-hold investing vs. market timing*, Investopedia US, viewed 27 October 2012, <<http://www.investopedia.com/articles/stocks/08/passive-active-investing.asp#ixzz2ABKhQknk>>.
- Schneeweis, T, Crowder, GB & Kazemi, H 2010, *The new science of asset allocation: risk management in a multi-asset world*, John Wiley & Sons, Inc, New Jersey.
- Schuck, E & Howard, J 2005, 'Implementing an allocation to domestic property', *Australian Property Journal*, August edn, pp. 535-541.
- Schuck, E 1995, 'Why diversification does work', *Real Estate Review*, vol. 25, no. 1, pp. 12-19.

- Sebastian, S & Schätz, A 2009, *Real estate equities – real estate or equities?*, European Public Real Estate Research Association, Brussels.
- Seiler, MJ, Webb, JR & Myer, FCN 2001a, 'Can private real estate portfolios be rebalanced/diversified using equity REITs shares?', *Journal of Real Estate Portfolio Management*, vol. 7, no. 1, pp. 25-41.
- Seiler, MJ, Webb, JR & Myer, FCN 2001b, 'Are EREITs real estate?', *Journal of Real Estate Portfolio Management*, vol. 5, no. 2, pp. 171-181.
- Seiler, MJ, Webb, JR & Myer, FCN 1999, 'Diversification issues in real estate investment' *Journal of Real Estate Literature*, vol. 7, no. 2, pp. 163-179.
- Sharpe, WF, Chen, P, Pinto, JE & McLeavey, DW 2007, 'Asset allocation', in Maginn, JL, Tuttle, DL, McLeavey, DW & Pinto, JE (eds), *Managing investment portfolios: a dynamic process*, John Wiley & Sons Inc, New York, pp. 231-327.
- Sharpe, W 1994, 'The Sharpe ratio', *Journal of Portfolio Management*, vol. 39, fall edn, pp. 49-58.
- Sharpe, WF 1992, 'Asset allocation management style and performance measurement', *Journal of Portfolio Management*, vol. 18, no. 2, pp. 7-20.
- Sharpe, W 1966, 'Mutual fund performance', *Journal of Business*, vol. 39, no.1, pp. 119-138.
- Sharpe, W 1964, 'Capital asset prices: a theory of market equilibrium under conditions of risk', *Journal of Finance*, vol. 19, no. 3, pp. 65-86.
- Shein, JL 2000, 'Is it more than just performance: tracking error and the information ratio', *Journal of Investment Consulting*, vol. 2, no. 2, pp. 18-22.
- Sheperis, CL, Young, JS & Daniels, MH 2010, *Counseling research: quantitative, qualitative, and mixed methods*, Pearson Education Inc, New Jersey.
- Sieber, SD 1973, 'The integration of fieldwork and survey methods', *The American Journal of Sociology*, vol. 78, no. 6, pp. 1335-1359.
- Simon, S & Ng, WN 2009, 'The effect of the real estate downturn on the link between REITs and the stock market', *Journal of Real Estate Portfolio Management*, vol. 15, no. 3, pp. 211-219.
- Singal, V 2012, 'Indexes: purpose, construction, and performance', in Smith, DM & Shawky, HA (eds), *Institutional money management: an inside look at strategies, players and practices*, John Wiley & Sons Inc, New Jersey, pp. 35-54.
- Sirmans, CF & Worzala, E 2003, 'International direct real estate investment: a review of the literature', *Urban Studies*, vol. 40, no(s) 5-6, pp. 1081-1114.
- Sirmans, GS, Friday, HS & Price, RM 2006, 'Do management changes matter? An empirical investigation of REIT performance', *Journal of Real Estate Research*, vol. 28, no. 2, pp. 131-148.
- Standard & Poor's Dow Jones 2013a, *S&P/ASX Infrastructure Index (AUD) factsheet: April 2013*, S&P Dow Jones Indices LLC, McGraw-Hill Companies Inc, Sydney.
- Standard & Poor's Dow Jones 2013b, *S&P/ASX 200 A-REIT Index factsheet: April 2013*, S&P Dow Jones Indices LLC, McGraw-Hill Companies Inc, Sydney.
- Standard & Poor's Dow Jones 2013c, *S&P/ASX 200 Equity Indices factsheet: December 2012*, S&P Dow Jones Indices LLC, McGraw-Hill Companies Inc, Sydney.
- Statman, M 2000, 'The 93.6% question of financial advisors', *The Journal of Investing*, vol. 9, no. 1, pp. 16-20.
- Steinert, M & Crowe, S 2001, 'Global real estate investment: characteristics, optimal portfolio allocation and future trends', *Pacific Rim Property Research Journal*, vol. 7, no. 4, pp. 223-239.
- Stevenson, S 2001, 'The long-term advantages to incorporating indirect securities in direct real estate portfolios', *Journal of Real Estate Portfolio Management*, vol. 7, no. 1, pp. 5-16.
- Stevenson, S 2000, 'Constructing optimal portfolios and the effect on real estate's allocation', *Journal of Property Investment & Finance*, vol. 18, no. 4, pp. 488-506.
- Stockton, KA & Shtekhman, A 2010, *A primer on tactical asset allocation strategy evaluation*, Vanguard Group Inc, Valley Forge, Pennsylvania.

- Stringer, T 2001, 'What's the best strategy for property investment: direct, listed or both?', *Australian Property Journal*, February issue, pp. 430-433.
- Strong, RA 2000, *Portfolio construction, management and protection*, 2nd edn, South-Western College Publishing, Thompson Learning, United States.
- Tashakkori, A & Teddlie, C (eds) 2010, *Handbook of mixed methods in social and behavioral research*, 2nd edn, SAGE Publications Inc, California.
- Tashakkori, A & Teddlie, C 2009, 'Integrating qualitative and quantitative approaches to research', in Bickman, L & Rog, DJ (eds) 2009, *Handbook of applied social research methods*, SAGE Publications Inc, California, pp. 283-317.
- Tashakkori, A & Teddlie, C (eds) 2003, *Handbook of mixed methods in social and behavioral research*, SAGE Publications Inc, California.
- Tashakkori, A & Teddlie, C 1998, *Mixed methodology: combining qualitative and quantitative approaches*, SAGE Publications Inc, Thousand Oaks, California.
- Teddlie, C & Tashakkori, A 2012 'Common "core" characteristics of mixed methods research: a review of critical issues and call for greater convergence', *American Behavioral Scientist*, vol. 56, no. 6, pp. 774-788.
- Teddlie, C & Tashakkori, A 2009, *Foundations of mixed methods research: integrating quantitative and qualitative approaches in the social and behavioral sciences*, SAGE Publications Inc, California.
- Teddlie, C & Yu, F 2007, 'Mixed methods sampling: a typology with examples', *Journal of Mixed Methods Research*, vol. 1, no. 1, pp. 77-100.
- Tobin, J 1958, 'Liquidity preference as a behavior towards risk', *The Review of Economic Studies*, vol. 25, no. 2, pp. 65-86.
- Towers Watson 2013a, 'Global pension assets study 2013', Thinking Ahead Group, Towers Watson, United Kingdom.
- Towers Watson 2013b, 'Asset diversification accelerates: smart beta strategies continue to attract assets', Towers Watson, Australia.
- Treynor, JL 1965, 'How to rate management of investment funds', *Harvard Business Review*, vol. 43, no. 1, pp. 63-75.
- UBS 2013a, *UBS Australian Infrastructure and Utilities Index total return factsheet*, UBS, viewed on 25 April 2013, <<http://keyinvest-de.ubs.com/DerivativeDetail/CH0022891060>>.
- UBS 2013b, *UBS Australian Composite Bond Indices*, viewed on 13 March 2013, <<http://www.ubs.com/australia>>.
- UBS 2012, *UBS Australia Infrastructure and Utilities Accumulation Index*, UBS Wealth Management, Sydney, viewed 26 June 2012, <[www.ubs.com](http://www.ubs.com)>.
- Venmore-Rowland, P 1990, 'Direct property and property shares', *Journal of Property Valuation and Investment*, vol. 8, no. 3, pp. 272-289.
- Vliet, P & Blitz, D 2011, 'Dynamic strategic asset allocation: risk and return across the business cycle', *Journal of Asset Management*, vol. 12, no. 5, pp. 360-375.
- Waggle, D & Moon, G 2006, 'Mean-variance analysis with REITs in mixed-asset portfolios: the return interval and the time period used for the estimation of inputs', *Managerial Finance*, vol. 33, no. 12, pp. 955-968.
- Wallace, M 1992, 'Asset allocation and diversification by real estate sector within a portfolio: two Australian case studies', *Proceedings of the ARES National Research Conference*, April 1-4, San Diego, California.
- Walhausen, J 2012, 'The portfolio manager, the analysts, and the trader', in Smith, DM & Shawky, HA (eds), *Institutional money management: an inside look at strategies, players and practices*, John Wiley & Sons Inc, New Jersey, pp. 89-97.
- Wang, P & Kochard, L 2011, *Using a Z-score approach to combine value and momentum in tactical asset allocation*, working paper, Georgetown University, Washington DC.
- Watson, JC 2010, 'Predictive designs', in Sheperis, CL, Young, JS & Daniels, MH (eds), *Counseling research: quantitative, qualitative, and mixed methods*, Pearson Education Inc, New Jersey, pp. 46-60.

- Watson Wyatt 2009, *Dynamic strategic asset allocation*, Watson Wyatt Australia Pty Ltd, Melbourne.
- Webb, JR 1990, 'On the exclusion of real estate from the market portfolio: why real estate should be included in mixed-asset portfolios', *Journal of Portfolio Management*, vol. 17, no. 1, pp. 78-84.
- Wendt, RQ 1994, 'Strategic asset allocation: asset/liability forecasting from A to Z', in Lederman, J & Klein, RA (eds), *Global asset allocation: techniques for optimizing portfolio management*, John Wiley & Sons Inc, New York, pp. 162-194.
- Wetcher-Hendricks, D 2011, *Analysing quantitative data: an introduction for social researchers*, John Wiley & Sons Inc, New Jersey.
- World Bank 2013, *Standard & Poor's global stock markets factbook: market capitalization of listed companies (data file)*, The World Bank, viewed 12 April 2013, <<http://data.worldbank.org/>>.
- World Federation of Exchanges 2013, *Key Market Indicators: August 2013*, WFE, viewed 31 March 2014 <[http://www.world-exchanges.org/files/WFE%20Key%20Market%20Indicators\\_Aug%202013.pdf](http://www.world-exchanges.org/files/WFE%20Key%20Market%20Indicators_Aug%202013.pdf)>.
- Worzala, EM & Bajtelsmit, VL 1997, 'Real estate asset allocation and the Decisionmaking framework used by pension fund managers', *Journal of Real Estate Portfolio Management*, vol. 3, no. 1, pp. 47-56.
- Worzala, E & Newell, G 1997, 'International real estate: a review of strategic investment issues', *Journal of Real Estate Portfolio Management*, vol. 3, no. 2, pp. 87-96.
- Yauch, C & Steudel, H 2003, 'Complementary use of qualitative and quantitative cultural assessment methods', *Organizational Research Methods*, vol. 6, no. 4, pp. 465-481.
- Yin, RK 2009, *Case study research: design and methods*, 4th edn, Applied Social Research Methods Series, vol. 5, SAGE Publications Inc, California.
- Yunus, N, Hansz, JA & Kennedy, PJ 2012, 'Dynamic interactions between private and public real estate markets: some international evidence', *Journal of Real Estate Finance and Economics*, vol. 45, pp. 1021-1040.

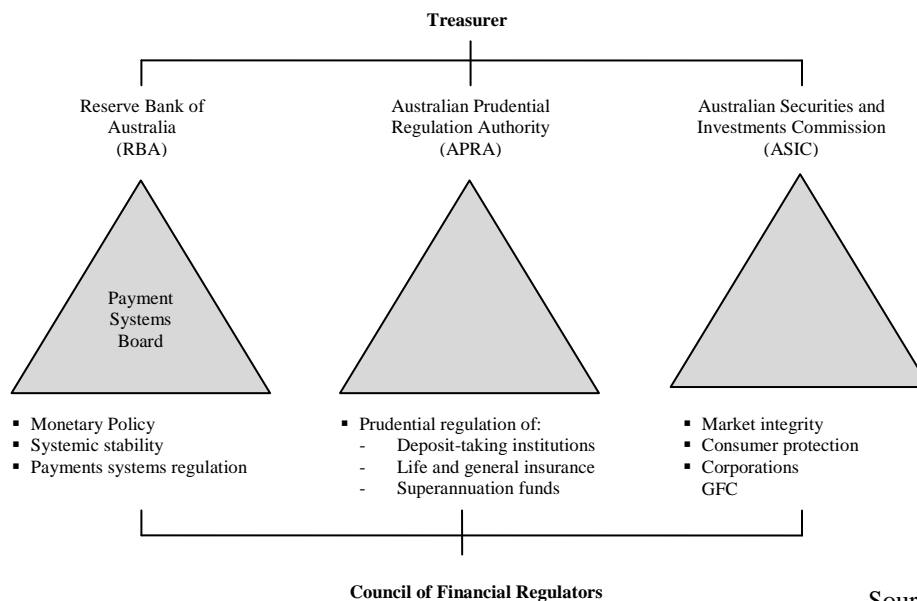
## APPENDICES

### Appendix 1: Top 10 Global Managed Funds Investment Markets, 30 June 2012

Global Rank	Country	Managed Funds (US\$ billions)
1	United States	12,186
2	Luxembourg	2,344
3	Australia	1,536
4	France	1,394
5	Hong Kong	1,148
6	Ireland	1,137
7	Singapore	1,029
8	Brazil	1,024
9	United Kingdom	858
10	Canada	785

Source: Austrade 2012, p. 46.

### Appendix 2: Three Pillar Institutional Regulatory Framework



Source: KPMG 1998.

### Appendix 3: Global Significance of Australian Superannuation Industry, December 2012

Rank	Country	Assets (USD billions)	Percentage of GDP	10 Year Growth Rate
1	USA	16,851	108%	6.5
2	Japan	3,721	62%	5.0
3	UK	2,736	112%	9.3
4	Australia	1,555	101%	18.2
5	Canada	1,483	84%	7.0
6	Netherlands	1,199	156%	9.1
7	Switzerland	732	118%	8.2
8	Germany	498	15%	10.3
9	Brazil	340	14%	20.4
10	South Africa	252	64%	13.2



Source: Towers Watson 2013a.

**Appendix 4: Global Ranking of Australian Superannuation Funds, December 2011**

Global Rank	Fund	Total assets (USD billions)
33	Future Fund	74.3
68	AustralianSuper	43.4
89	QSuper	34.1
97	First State Superannuation Scheme	31.4
102	State Super Retirement Fund	30.4
111	UniSuper	28.6
137	Commonwealth Superannuation Scheme (CSC)	23.6
161	Retail Employees Superannuation Trust (REST)	20.7
174	Health Employees Superannuation Trust Australia (Hesta)	18.5
179	Sunsuper Superannuation Fund	18.2
184	Construction & Building Unions Superannuation (Cbus)	17.6
203	Emergency Services and State Super (ESSSuper)	16.3
241	Super SA	13.6
263	Government Employees Superannuation Board (GESB)	12.3
280	Telstra Superannuation Scheme	11.5

Source: P&I /Towers Watson 2012b.

**Appendix 5: Top 10 Global Leading Pension Funds: Assets under Management and Property Allocation Level, December 2011**

Global Rank	Fund	Country	Total assets (USD billions)	Property Allocation (USD billions)	Property Allocation %
1	Government Pension Investment Fund	Japan	1,394.87	0.00	0.00%
2	Government Pension Fund	Norway	575.53	4.03	0.70%
3	ABP	Netherlands	320.36	28.51	8.90%
4	National Pension	South Korea	313.98	15.17	4.83%
5	Federal Retirement Thrift	United States	281.36	16.88	6.00%
6	California Public Employees' Retirement System	United States	220.64	19.86	9.00%
7	Local Government Officials1, 2	Japan	199.55	0.00	0.00%
8	Central Provident Fund	Singapore	159.79	3.20	2.00%
9	Canada Pension Plan Investment Board2	Canada	158.67	17.14	10.80%
10	Employees Provident Fund	Malaysia	153.89	0.63	0.41%
33	Future Fund	Australia	74.3	3.94	5.30%
68	AustralianSuper	Australia	43.4	5.21	12.00%

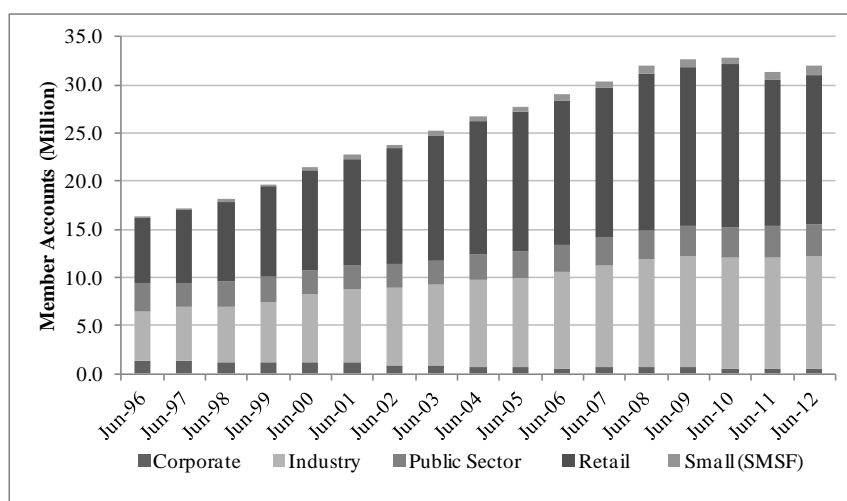
Source: P&I /Towers Watson 2012b.

**Appendix 6: Superannuation Funds Investment Method, December 2012 (A\$ billions)**

Investments (A\$ billions)	Corporate	Industry	Public Sector	Retail	Total	Percentage
Direct	5.4	35.1	17.2	39.2	97.0	10%
Individually mandates	18.2	117.0	123.6	10.4	269.2	28%
Pooled super trusts	3.4	16.8	32.0	37.2	89.4	9%
Wholesale funds	19.5	69.8	40.6	103.7	233.6	24%
Life office funds	-	3.1	-	154.2	157.3	16%
Unlisted unit trusts	-	5.5	-	49.6	55.1	6%
Other investments	7.1	46.2	21.5	1.6	76.4	8%

Source: APRA 2013a, p. 11.

**Appendix 7: Australian Superannuation Industry Member Accounts, 1996-2012**



Source: APRA 2013b, p. 34; APRA 2007, p. 20.

**Appendix 8: Leading Life Insurance Funds in Australia, June 2012**

Life Insurer	Total assets (\$ billions)	Market Share
AMP Life Limited	71.8	29%
MLC Limited	55.4	22%
OnePath Life Limited	30.1	12%
The National Mutual Life Association of Australasia Limited	14.0	6%
The Colonial Mutual Life Assurance Society Limited	13.7	6%
Challenger Life Company Limited	11.5	5%
Suncorp Life & Superannuation Limited	7.5	3%
Westpac Life Insurance Services Limited	7.3	3%
TAL Life Limited	3.6	1%
Zurich Australia Limited	2.5	1%
<b>Total Life Insurance Fund Asset</b>	<b>248.1</b>	

Source: APRA 2012a.

**Appendix 9: Australian Investment Managers Global Ranking, December 2011**

<b>Global Rank</b>	<b>Fund Manager</b>	<b>Total assets (AUD Billions)</b>
66	Macquarie Bank Group	267.2
100	Commonwealth Bank Group	144.4
105	AMP	125.2
143	NAB/MLC	77.1
147	Westpac/BT	74.7
160	QIC	61.6
240	Industry Funds Management	31.9
251	Challenger Financial	30.1
263	QBE	26.9
284	Perpetual	23.0
309	Perennial Investment	18.6
313	Platinum Asset Management	18.1
334	GPT Group	15.1
345	Dexus Property Group	13.9
358	Insurance Australia Group	12.9
394	Charter Hall Group	10.3
399	Goodman	10.1
406	Lend Lease	9.8
409	Maple-Brown Abbott	9.4
451	JCP Investment Partners	7.2
470	Paradice Investment	6.4
473	Northcape Capital	6.2
488	Access Capital Advisers	5.6

Source: P & I/Towers Watson 2012a.

**Appendix 10: Top 10 Dealer Groups – Funds under Advice & Market Share, June 2012**

<b>Dealer Group</b>	<b>Funds Under Advice (A\$ billions)</b>	<b>Planner Numbers</b>	<b>Market Share</b>
AMP Financial Planning	42.4	1,633	11%
Macquarie Private Wealth	32.4	354	9%
Commonwealth Financial Planning	26.5	816	7%
Ord Minnett	18.8	33	5%
Westpac Financial Planning	17.1	433	4%
NAB Financial Planning	12.2	669	3%
Hillross Financial Services	11.4	312	3%
Charter Financial Planning	11.0	483	3%
Bridges Financial Services	10.4	261	3%
GWM Adviser Services	10.2	578	3%
<b>Total Funds Under Advice Value</b>	<b>380.2</b>		

Source: Money Management/ DEXX&R 2012.

**Appendix 11: Listed Managed Investments by Sector, December 2012**

Listed Managed Investments	Number of Entities	Market Capitalisation (\$ billions)	Market Share
A-REITs	47	88.6	57.2%
Listed Investment Cos & Trusts (LICs & LITs)	53	18.5	11.9%
Infrastructure Funds	18	41.0	26.4%
ETPs	90	6.5	4.2%
Absolute Return Funds	11	0.4	0.2%
<b>Total</b>	<b>219</b>	<b>155.0</b>	

Source: ASX 2012a, p. 1.

**Appendix 12: Top 10 Property Securities Fund – Funds under Management & Market Share, June 2012**

Rank	Fund Name	Fund Manager/ Responsible Entity (RE)	Total Assets A\$ Million	Market Share
1	Global Property Listed Securities Fund	AMP Capital (Group Ranking)	4,530.0	31.6%
2	Vanguard Property Securities Index Fund	Vanguard Investments Australia Ltd	2,037.7	14.2%
3	Property Securities Funds	AMP Capital (Group Ranking)	977.0	6.8%
4	Colonial First State Wholesale Property Securities Fund	Colonial First State Global Asset Management (Group Ranking)	763.8	5.3%
5	BT Institutional Enhanced Property Securities Fund	BT Investment Management (RE) Limited	673.9	4.7%
6	Vanguard International P.S. Index Fund (Hedged)	Vanguard Investments Australia Ltd	635.6	4.4%
7	Colonial First State Colliers Global Wholesale Property Securities	Colonial First State Global Asset Management (Group Ranking)	606.6	4.2%
8	APN Property for Income Fund	APN Funds Management Limited	518.8	3.6%
9	Colonial First State Wholesale Indexed Property Securities Fund	Colonial First State Global Asset Management (Group Ranking)	308.5	2.2%
10	Ibbotson Australian Property Securities Trust	Ibbotson Associates	257.0	1.8%

Source: PIR 2013.

### **Appendix 13: Property Investment Decision-Making Process (Previous Researchers)**

#### **Baum (2002):**

- i. Determination of ideal portfolio structure
- ii. Identification of target sub-sectors
- iii. Sourcing new stock from the market
- iv. Appraisal
- v. Modelling of portfolio impact
- vi. Acquisition process

#### **Brown and Matysiak (2000):**

- i. Screening
- ii. Evaluation
- iii. Implementation
- iv. Auditing

#### **Farragher and Kleiman (1996):**

- i. Setting strategy – strategic analysis
- ii. Establishing risk/ return objectives
- iii. Forecasting expected costs and returns
- iv. Assessing investment risk
- v. Making risk-adjusted evaluations of the forecast costs and returns
- vi. Implementing accepted proposals including due diligence, formal feasibility, independent appraisal and formal implementation plan
- vii. Post audit review of the performance of operating investments

#### **Farragher and Savage (2008):**

- i. Setting strategy
- ii. Establishing risk/return
- iii. Searching for investment opportunity
- iv. Forecasting expected returns
- v. Evaluating forecast returns
- vi. Assessing and adjusting for risk
- vii. Decision-making
- viii. Implementing acceptable proposals
- ix. Auditing operating performance

#### **Jaffe and Sirmans (2001) five step process:**

- i. Identify goals, objectives and constraints
- ii. Analyse the overall investment environment
- iii. Forecast expected future benefits and costs
- iv. Apply appropriate decision-making criteria

#### **Hartigay and Yu (1993):**

- i. Definition of objectives and specific goals

- ii. Search for a set of alternative investment projects which promise to achieve the objectives and goals set
- iii. Evaluate, compare and rank the alternatives in terms of quantified expectations of risk and return
- iv. Choose the most satisfactory alternative
- v. At a later date, evaluate the consequences of the decision taken earlier, draw conclusions, revise goals and criteria

**IREI (2010):**

- i. Research
- ii. Establish acquisition objectives
- iii. Finding the deal
- iv. The initial review
- v. Due diligence
- vi. Presentation to the investment committee
- vii. Negotiating the deal
- viii. Closing the deal

**Pagliari (ed 1995) six step process**

- i. Investor's objectives and constraints
- ii. Real estate market conditions and expectations
- iii. Target portfolio determination
- iv. Portfolio strategy determination
- v. Portfolio monitoring
- vi. Portfolio performance measurement

**Pyhrr et al. (1989) proposed a ten step process:**

- i. Determine the investment strategy;
- ii. Generate alternatives
- iii. Analyse property using basic financial feasibility models
- iv. Negotiate basic terms with sellers
- v. Do detailed feasibility research
- vi. Complete a financial and text structuring
- vii. Perform DCF analysis
- viii. Final negotiations and closing
- ix. Manage the property
- x. Terminate the property

**Roberts and Henneberry (2007)**

- i. Setting of initial (property) investment goals and decision criteria
- ii. Formulation of a fully defined decision-making strategy (relating to portfolio structure and performance)
- iii. Search (for suitable properties)
- iv. Information input (including analysis of market conditions)
- v. Prediction of outcomes (return and risk at portfolio and property levels)

- vi. Application of decision criteria
- vii. Trade off (between properties)
- viii. Project screening of properties
- ix. Investment selection
- x. Negotiation, deal resolution and post investment activity.

**Roulac (1994):**

- i. Structure (being the specification of the decision process)
- ii. Opportunity (being the initiation of an investment opportunity from organisational initiative or third party presentation)
- iii. Assessment (being the evaluation of the opportunity)
- iv. Decision (being the authority to make decision and subsequent implementation)

**Appendix 14: Factors Influencing Property Allocation Target: Average Factor Importance by Respondent Types**

	<b>Superannuation Fund (21)</b>	<b>Investment Management Fund (15)</b>	<b>Property Funds (7)</b>	<b>Asset Consultants (8)</b>	<b>Average Rank</b>
Exploiting current buying opportunities	Important	Important	Important	Somewhat Important	Important
Optimal target	Important	Somewhat Important	Important	Important	Important
Tactical switching between non property asset classes	Low Importance	Somewhat Important	Low Importance	Somewhat Important	Low Importance
Strategic allocation changes for non-property asset classes	Somewhat Important	Somewhat Important	Low Importance	Important	Somewhat Important
Timing income to meet debt	Low Importance	Low Importance	Somewhat Important	Important	Low Importance
Correlation of returns with other assets	Important	Important	Not Important	Important	Important
Periodic allocation strategy by investment board	Important	Somewhat Important	Not Important	Important	Important
Asset class selected by investors/superannuation contributors	Somewhat Important	Somewhat Important	Somewhat Important	Somewhat Important	Somewhat Important

**Appendix 15: Important Property Return Evaluation Measures by Priority Order (%) and Respondent Types**

<b>Evaluation Measures</b>	<b>Superannuation Fund (21)</b>	<b>Investment Management Fund (15)</b>	<b>Property Fund (7)</b>	<b>Asset Consultant (8)</b>	<b>Average Response</b>
Capitalisation rate	26%	22%	18%	18%	21%
Internal rate of return (IRR)	19%	22%	23%	16%	20%
Net present value (NPV)	11%	16%	14%	11%	13%
Management fees	18%	4%	0%	14%	9%
Reversionary yield	5%	9%	9%	11%	9%
Other	11%	9%	9%	2%	8%
Cash-on cash return	4%	4%	14%	7%	7%
Equity dividend rate	0%	9%	5%	9%	6%
Effective tax rate	2%	2%	0%	7%	3%
Accounting return	2%	0%	5%	2%	2%
Gross rent multiplier	0%	2%	5%	0%	2%
Payback period	4%	0%	0%	2%	1%

**Appendix 16: Important Property Risk Assessment Evaluation Measures by Priority Order (%)**

<b>Risk Assessment Techniques</b>	<b>Direct Property</b>	<b>Unlisted Property</b>	<b>Listed Property</b>	<b>Average Usage</b>
Scenario analysis	22%	16%	12%	17%
Sensitivity analysis	23%	13%	8%	15%
Debt coverage ratio	18%	17%	10%	15%
Beta	5%	7%	14%	9%
Information ratio	5%	9%	10%	8%
Sharpe ratio	8%	7%	9%	8%
Tracking error	1%	7%	14%	7%
Probability analysis	5%	4%	5%	5%
Default ratio	3%	4%	4%	4%
Monte Carlo simulation	1%	4%	2%	3%
Sortino ratio	1%	3%	5%	3%
Breakeven ratio	3%	4%	2%	3%
Treynor ratio	1%	3%	2%	2%
Other	3%	1%	2%	2%

**Appendix 17: Correlation Matrix: Factors Influencing Property Allocation Decisions by Respondent Type**

	<b>Superannuation Fund</b>	<b>Investment Management Fund</b>	<b>Property Fund</b>	<b>Asset Consultant</b>
<b>Superannuation Fund</b>	1.00			
<b>Investment Management Fund</b>	0.46	1.00		
<b>Property Fund</b>	0.34	0.84	1.00	
<b>Asset Consultant</b>	1.00	0.46	0.34	1.00



## **APPENDIX 18**

### **Fund Manager Questionnaire**

## WEJENDRA REDDY PhD Study

### Survey of Fund Managers' Property Allocation Decision Making Process

RMIT University: School of Property, Construction and Project Management  
Mobile: +61 3 9925 1939 Fax: +61 3 9925 1939 E-mail: [wejendra.reddy@rmit.edu.au](mailto:wejendra.reddy@rmit.edu.au)

#### Compiler's Guide

Your participation in this questionnaire is valued. It will:

- Identify the key assumptions and industry information adopted in fund manager's property asset allocation analysis and decision making process in Australia.
- Identify the key factors influencing fund manager's property allocation decision.
- Provide the basis for comparison of local and overseas asset allocation strategies for property.
- Identify ways of improving Australian institutional investor's asset allocation strategies towards property investments.

The research survey will focus on property asset allocation decision making process for diversified wholesale funds and superannuation funds.

#### Confidentiality and anonymity

All information collected from the survey is **STRICTLY CONFIDENTIAL**, and will only be used for this study and not be disclosed to any third party. The information that you provide will remain **ANONYMOUS** in the published PhD thesis and any related journal articles and conference papers. All data will be stored securely in RMIT school archive for a period of 5 years after research publication and will be destroyed after this period. You are free to withdraw from the research at any given time, and to withdraw any unprocessed data previously supplied by you for the study. The project has received clearance from the RMIT Human Research Ethics Committee (HREC).

#### Require further information

If you have any questions, please contact Wejendra Reddy on mobile +61 3 9925 1939 or e-mail: [wejendra.reddy@rmit.edu.au](mailto:wejendra.reddy@rmit.edu.au)

Please complete the survey by Tuesday 31 May 2011 and fax to Wejendra Reddy on +61 3 9925 1939 or post to School of Property, Construction and Project Management, RMIT University, GPO Box 2476, Melbourne VIC 3001. Scanned copy of completed questionnaire can also be e-mailed to [wejendra.reddy@rmit.edu.au](mailto:wejendra.reddy@rmit.edu.au)

### SECTION 1: FUND MANAGER INFORMATION

#### Section 1.1 Fund Information

1) Please indicate the total size of funds that your institution holds/ manages: \$.....

2) Please indicate your institutional fund type:

- ☐ Retail Superannuation      ☐ Industry Superannuation      ☐ Public Sector Superannuation  
☐ Property Specific      ☐ Diversified Managed Fund      ☐ Other, please state:.....

#### Section 1.2 Fund's Property Investment Information

3) What is your institution's current asset allocation for the following property investments? If your institution is a superannuation fund, please only provide investment details of balanced or default fund.

Property Assets	Current Allocation (AS)
Direct property	
Indirect property	
Listed Property (REITs)	
Unlisted property funds	
Commercial Mortgage backed securities	
Other, please state:.....	

4) How long has your institution held investments in property assets (direct and indirect property)?

- ☐ 0-5 years      ☐ 6-10 years      ☐ 11-20 years      ☐ 20+ years      ☐ we do not invest in property

- 5) How does your institution invest in property assets (select more than one if required)?  
☐ Directly ☐ Property fund vehicles ☐ Mandate  
☐ Diversified funds ☐ Other, please state:.....
- 6) Please provide details of the number of property professionals employed to make property allocation decisions and property investment management functions for your institution?  
 .....
- 7) a) Over the next 5 years, do you expect any change in your institution's property allocation?  
☐ Yes ☐ No  
 b) If 'yes' for the above, please explain the reasons for the change:  
 .....  
 .....
- c) Will the above change be for direct or indirect (or securitised) property investment?  
☐ Direct property ☐ Indirect property ☐ Both
- 8) In your view, do you believe the current allocation to property by your institution is optimal? Please explain  
 .....  
 .....
- 9) How does your institution determine optimal allocation?  
 .....  
 .....
- 10) a) Is this analysis constrained? ☐ Yes ☐ No  
 b) If 'yes' for the above, please explain how:  
 .....  
 .....
- 11) a) Are property allocation decisions and property investment management functions for your institution made in-house or out-sourced? ☐ In-house ☐ Out-sourced  
 b) If the above functions are out-sourced, are the outside manager/ consultant given complete discretion? ☐ Yes ☐ No
- 12) Which of the following functions for your institution's property asset allocation process is carried in-house or out-sourced?
- |  | In-house                 | Out-sourced              |
|--|--------------------------|--------------------------|
| Setting asset allocation strategy                          |                          |                          |
| Strategic Asset Allocation (SAA)                           | <input type="checkbox"/> | <input type="checkbox"/> |
| Dynamic Strategic Asset Allocation (DSAA)                  | <input type="checkbox"/> | <input type="checkbox"/> |
| Tactical Asset Allocation (TAA)                            | <input type="checkbox"/> | <input type="checkbox"/> |
| Establishing return/ risk objectives                       | <input type="checkbox"/> | <input type="checkbox"/> |
| Searching for investment opportunities                     | <input type="checkbox"/> | <input type="checkbox"/> |
| Forecasting expected returns / evaluating forecasts        | <input type="checkbox"/> | <input type="checkbox"/> |
| Risk assessment  | <input type="checkbox"/> | <input type="checkbox"/> |
| Decision-making  | <input type="checkbox"/> | <input type="checkbox"/> |
| Implementing accepted proposals (purchase/ sale of assets) | <input type="checkbox"/> | <input type="checkbox"/> |
| Other, please state:.....                                  | <input type="checkbox"/> | <input type="checkbox"/> |

## SECTION 2: FUND DECISION MAKING PROCESS

### Section 2.1: Property Asset Selection Decision

13) Listed below are identified factors that are likely to influence the property asset allocation decision making process. Please tick a box on each line as to the relative importance of the following factors for your institution's property asset investment decision. Rate every item applying the scale of 1 to 5.

← IMPORTANCE →				
1	2	3	4	5
Not important	Low importance	Somewhat important	Important	Significantly important

	<i>Degree of importance</i>				
	1	2	3	4	5
<b>I) Internal factors likely to influence your institution's property allocation decision</b>					
Advice from internal investment team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relative external asset manager skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General skills/ intuition of decision-maker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intended investment period	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please state: .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>II) External factors likely to influence your institution's property allocation decision</b>					
Recent trends in the property market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External/ independent advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Actions taken by industry peers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market sentiment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Regulatory/ legislative environment (taxation legislation/ superannuation laws)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic environment/ outlook (inflation/ interest rate/ exchange rate)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial market conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market demand and supply factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please state: .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>III) Factors likely to influence how much property your institution holds</b>					
Exploiting current buying opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Optimal target	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tactical switching between non property asset classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strategic allocation changes for non property asset classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Timing income to meet debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correlation of returns with other assets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Periodic allocation strategy by investment board	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asset class selected by investors/ superannuation contributors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please state: .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Section 2.2: Property Asset Performance Evaluation

14) Which of the following benchmarks is used by your institution as important evaluation measures/ hurdle for property returns when making asset allocation decisions? Select more than one if required

- |  |  |
|--|--|
| <input type="checkbox"/> Capitalisation rate / initial yield | <input type="checkbox"/> Gross rent multiplier           |
| <input type="checkbox"/> Cash-on cash return                 | <input type="checkbox"/> Net present value (NPV)         |
| <input type="checkbox"/> Reversionary yield                  | <input type="checkbox"/> Payback period                  |
| <input type="checkbox"/> Internal rate of return (IRR)       | <input type="checkbox"/> Accounting return on investment |
| <input type="checkbox"/> Equity dividend rate                | <input type="checkbox"/> Management fees                 |
| <input type="checkbox"/> Effective tax rate                  | <input type="checkbox"/> Other, please state: .....      |

15) Please list any market indices (direct property, unlisted property and listed REITs) used by your institution as a benchmark to assess the performance of the fund's current/ prospective property investments?

.....

.....

16) Which of the following risk assessment technique/methods are predominantly used by your institution for property investment evaluation/ analysis? Select more than one if required

	Direct property	Unlisted property	Listed property
Sensitivity analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scenario analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debt coverage ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breakeven ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Default ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Beta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Probability analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monte Carlo simulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tracking error	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sortino ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharpe ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Treynor ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please state:.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Section 2.3: Property Allocation Decision-making Process

17) What guides property asset allocation decisions for your fund? Please state (Example – Fund prospectus, Superannuation Act, Asset consultant advice, Investment Policy Statement etc)

.....

.....

18) Is there any written rule restricting what percentage of the portfolio can be allocated to property?

☐ Yes ☐ No

19) a) The technique predominantly used for property asset allocation decision-making process by your institution is:

☐ Quantitative ☐ Qualitative ☐ Combination of quantitative and qualitative

b) Please provide details of the quantitative and qualitative methods (including electronic softwares) used by your institution for asset allocation decision-making process:

.....

.....

.....

20) Please list any key indicators or market data/ industry information adopted in your institution's asset allocation analysis and decision making process?

.....

.....

.....



21) a) What type of forecast models does your institution use to aid the property asset allocation decisions for wholesale fund managers/ superannuation funds?

.....

.....

b) Is this function out-sourced? ☐ Yes ☐ No

22) Your institution's property asset allocation decision-making framework can be described as (please feel free to use flow chart diagrams/ drawings):

23) a) Does your institution's property asset allocation process involve (select more than one if required):  
☐ Strategic asset allocation ☐ Dynamic strategic asset allocation ☐ Tactical asset allocation

b) Please briefly explain how your institution defines or differentiates between the above selected asset allocation strategies:

.....

.....

24) Please detail your institution's **strategic asset allocation** decision-making process for property assets.

25) Please detail your institution's **dynamic strategic asset allocation** decision-making process for property assets.

---

26) Please detail your institution's **tactical asset allocation** decision-making process for property assets.

27) In your view, are there any changes which you can recommend to the current asset allocation framework/ decision making process to improve the appropriateness of the level of allocation to property assets?

### Consent for Participating in this Research Project

I have received a statement explaining the survey questionnaire involved in this project and consent to participate in the above project, the particulars of which - including details of the interviews or questionnaires - have been explained to me. I acknowledge that having read Plain Language Statement, I agree to the general purpose, methods and demands of the study.

Participant's Consent (Please tick box before mailing the questionnaire back) ☐

Participant: \_\_\_\_\_ Date: \_\_\_\_\_  
(Signature)

The findings of this survey will form part of Wejendra Reddys' PhD thesis publication and any related journal and conference paper articles. Only aggregated results will be published and participants will not be identifiable either at data analysis or report presentation stage. Would you like a plain language executive summary and a research paper? ☐ Yes ☐ No  
If yes, please return the questionnaire and the report will be e-mailed or faxed to you.

Compiler's Name/ Title:

Company Name:

Compiler's Phone:

Compiler's E-mail Address:

**Thank you for your co-operation with this research**

Any complaints about your participation in this project may be directed to the Executive Officer, RMIT Human Research Ethics Committee, Research & Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 2251. Details of the complaints procedure are available from the above address.



## **APPENDIX 19**

### **Asset Consultant Questionnaire**

**WEJENDRA REDDY PhD Study**  
**Survey of Asset Consultants' Property Allocation Decision Making Process**

RMIT University: School of Property, Construction and Project Management  
Mobile:                      Fax: + 61 3 9925 1939 E-mail:

**Compiler's Guide**

Your participation in this questionnaire is valued. It will:

- Identify the key assumptions and industry information adopted in fund manager's property asset allocation analysis and decision making process in Australia.
- Identify the key factors influencing fund manager's property allocation decision.
- Provide the basis for comparison of local and overseas asset allocation strategies for property.
- Identify ways of improving Australian institutional investor's asset allocation strategies towards property investments.

The research survey will focus on property asset allocation decision making process for diversified wholesale funds and superannuation funds.

**Confidentiality and anonymity**

All information collected from the survey is **STRICTLY CONFIDENTIAL**, and will only be used for this study and not be disclosed to any third party. The information that you provide will remain **ANONYMOUS** in the published PhD thesis and any related journal articles and conference papers. All data will be stored securely in RMIT school archive for a period of 5 years after research publication and will be destroyed after this period. You are free to withdraw from the research at any given time, and to withdraw any unprocessed data previously supplied by you for the study. The project has received clearance from the RMIT Human Research Ethics Committee (HREC).

**Require further information**

If you have any questions, please contact Wejendra Reddy on mobile                      or e-mail:

Please complete the survey by **Tuesday 31 May 2011** and fax to Wejendra Reddy on + 61 3 9925 1939 or post to School of Property, Construction and Project Management, RMIT University, GPO Box 2476, Melbourne VIC 3001. Scanned copy of completed questionnaire can also be e-mailed to

**SECTION 1: FUND MANAGER INFORMATION**

1) Please indicate the type of managed funds your organisation provides property asset consultancy service to (select more than one if required):

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Retail Superannuation | <input type="checkbox"/> Industry Superannuation  | <input type="checkbox"/> Public Sector Superannuation |
| <input type="checkbox"/> Property Specific     | <input type="checkbox"/> Diversified Managed Fund | <input type="checkbox"/> Other, please state:.....    |

2) How do the above clients invest in property assets (select more than one if required)?

- |  |  |                                  |
|--|--|----------------------------------|
| <input type="checkbox"/> Directly          | <input type="checkbox"/> Property fund vehicles    | <input type="checkbox"/> Mandate |
| <input type="checkbox"/> Diversified funds | <input type="checkbox"/> Other, please state:..... |                                  |

3) a) Over the next 5 years, do you expect any change in these institutions' property allocation?

☐ Yes   ☐ No

b) If 'yes' for the above, please explain the reasons for the change:

.....  
.....

c) Will the above change be for direct or indirect (or securitised) property investment?

☐ Direct property                      ☐ Indirect property                      ☐ Both

- 4) In your view, do you believe the current allocation to property by these fund managers is optimal?  
Please explain

.....

.....

- 5) How does your organisation determine optimal allocation?

.....

.....

- 6) a) Is this analysis constrained? ☐ Yes ☐ No

b) If 'yes' for the above, please explain how:

.....

.....

- 7) Which of the following property asset allocation functions does your organisation perform for wholesale fund managers/ superannuation funds? Select more than one if required

Setting asset allocation strategy:

- |  |                          |
|--|--------------------------|
| Strategic Asset Allocation (SAA)                           | <input type="checkbox"/> |
| Dynamic Strategic Asset Allocation (DSAA)                  | <input type="checkbox"/> |
| Tactical Asset Allocation (TAA)                            | <input type="checkbox"/> |
| Establishing return/ risk objectives                       | <input type="checkbox"/> |
| Searching for investment opportunities                     | <input type="checkbox"/> |
| Forecasting expected returns / evaluating forecasts        | <input type="checkbox"/> |
| Risk assessment  | <input type="checkbox"/> |
| Decision-making  | <input type="checkbox"/> |
| Implementing accepted proposals (purchase/ sale of assets) | <input type="checkbox"/> |
| Other, please state:.....                                  | <input type="checkbox"/> |

## SECTION 2: FUND DECISION MAKING PROCESS

### Section 2.1: Property Asset Selection Decision

- 8) Listed below are identified factors that are likely to influence the property asset allocation decision making process for wholesale fund managers/ superannuation funds.

Please tick a box on each line as to the relative importance of the following factors. Rate every item applying the scale of 1 to 5.

IMPORTANCE				
1	2	3	4	5
Not important	Low importance	Somewhat important	Important	Significantly important

- D) Internal factors likely to influence fund managers property allocation decision

*Degree of importance*

- |   | 1                        | 2                        | 3                        | 4                        | 5                        |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Advice from internal investment team        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Relative external asset manager skills      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| General skills/ intuition of decision-maker | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Intended investment period                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other, please state: .....                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

		<i>Degree of importance</i>				
		1	2	3	4	5
<b>II) External factors likely to influence fund managers property allocation decision</b>						
	Recent trends in the property market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	External/ independent advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Actions taken by industry peers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Market sentiment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Regulatory/ legislative environment (taxation legislation/ superannuation laws)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Economic environment/ outlook (inflation/ interest rate/ exchange rate)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Financial market conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Market demand and supply factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Other, please state: .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<i>Degree of importance</i>				
		1	2	3	4	5
<b>III) Factors likely to influence how much property an institution holds</b>						
	Exploiting current buying opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Optimal target	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tactical switching between non property asset classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strategic allocation changes for non property asset classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Timing income to meet debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Correlation of returns with other assets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Periodic allocation strategy by investment board	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Asset class selected by investors/ superannuation contributors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Other, please state: .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Section 2.2: Property Asset Performance Evaluation

9) Which of the following benchmarks is used by your organisation as important evaluation measures/ hurdle for property returns when making asset allocation decisions for wholesale fund managers/ superannuation funds? Select more than one if required

- |  |  |
|--|--|
| <input type="checkbox"/> Capitalisation rate / initial yield | <input type="checkbox"/> Gross rent multiplier           |
| <input type="checkbox"/> Cash-on cash return                 | <input type="checkbox"/> Net present value (NPV)         |
| <input type="checkbox"/> Reversionary yield                  | <input type="checkbox"/> Payback period                  |
| <input type="checkbox"/> Internal rate of return (IRR)       | <input type="checkbox"/> Accounting return on investment |
| <input type="checkbox"/> Equity dividend rate                | <input type="checkbox"/> Management fees                 |
| <input type="checkbox"/> Effective tax rate                  | <input type="checkbox"/> Other, please state: .....      |

10) Please list any market indices (direct property, unlisted property and listed REITs) used by your organisation as a benchmark to assess the performance of a fund's current/ prospective property investments?

.....

.....

.....

- 11) Which of the following risk assessment technique/methods are predominantly used for your major client's (wholesale fund managers/ superannuation funds) property investment evaluation/ analysis?  
Select more than one if required

	Direct property	Unlisted property	Listed property
Sensitivity analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scenario analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debt coverage ratio (or income coverage ratio)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breakeven ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Default ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Beta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Probability analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monte Carlo simulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tracking error	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sortino ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharpe ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Treynor ratio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please state: .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Section 2.3: Property Allocation Decision-making Process

- 12) What guides property asset allocation decisions for major your clients (fund wholesale fund managers/ superannuation funds)? Please state (Example – Fund prospectus, Superannuation Act, Asset consultant advice, Investment Policy Statement etc)

.....  
 .....

- 13) Is there any written rule restricting what percentage of the portfolio can be allocated to property?  
☐ Yes      ☐ No

- 14) a) The technique predominantly used for major client's (wholesale fund managers/ superannuation funds) property asset allocation decision-making process by your organisation is:

☐ Quantitative      ☐ Qualitative      ☐ Combination of quantitative and qualitative

b) Please provide details of the quantitative and qualitative methods (including electronic softwares) used by your organisation for asset allocation decision-making process:

.....  
 .....

- 15) Please list any key indicators or market data/ industry information adopted for the asset allocation analysis and decision making process for major clients?

.....  
 .....

- 16) a) What type of forecast models does your organisation use to aid the property asset allocation decisions for major clients (wholesale fund managers/ superannuation funds)?

.....  
 .....

b) Is this function out-sourced? ☐ Yes      ☐ No

17) The property asset allocation decision-making framework adopted for major clients (wholesale fund managers/ superannuation funds) by your organisation can be described as (please feel free to use flow chart diagrams/ drawings):

18) a) Does the property asset allocation process for major clients involve (select more than one if required): ☐ Strategic asset allocation ☐ Dynamic strategic asset allocation ☐ Tactical asset allocation

b) Please briefly explain how your organisation defines or differentiates between the above selected asset allocation strategies:

.....

.....

19) Please detail the **strategic asset allocation** decision-making process for property assets generally adopted for major clients (wholesale fund managers/ superannuation funds) by your organisation.

20) Please detail the **dynamic strategic asset allocation** decision-making process for property assets generally adopted for major clients (wholesale fund managers/ superannuation funds) by your organisation.



21) Please detail the **tactical asset allocation** decision-making process for property assets generally adopted for major clients (wholesale fund managers/ superannuation funds) by your organisation.

22) In your view, are there any changes which you can recommend to the current asset allocation framework/ decision making process to improve the appropriateness of the level of allocation to property assets?

### Consent for Participating in this Research Project

I have received a statement explaining the survey questionnaire involved in this project and consent to participate in the above project, the particulars of which - including details of the interviews or questionnaires - have been explained to me. I acknowledge that having read Plain Language Statement, I agree to the general purpose, methods and demands of the study.

Participant's Consent (Please tick box before mailing the questionnaire back) ☐

Participant: \_\_\_\_\_ Date: \_\_\_\_\_  
(Signature)

-----  
The findings of this survey will form part of Wejendra Reddys' PhD thesis publication and any related journal and conference paper articles. Only aggregated results will be published and participants will not be identifiable either at data analysis or report presentation stage. Would you like a plain language executive summary and a research paper? ☐ Yes ☐ No  
If yes, please return the questionnaire and the report will be e-mailed or faxed to you.

Compiler's Name/ Title:

Company Name:

Compiler's Phone:

Compiler's E-mail Address:

**Thank you for your co-operation with this research**

Any complaints about your participation in this project may be directed to the Executive Officer, RMIT Human Research Ethics Committee, Research & Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 2251. Details of the complaints procedure are available from the above address.



## APPENDIX 20

### Refereed Papers

- i. Reddy, W, Higgins, D, & Wakefield, R 2014, 'An investigation of property-related decision practice of Australian fund managers', *Journal of Property Investment & Finance*, vol. 32, no. 3, pp. 282-305.
- ii. Reddy, W, Higgins, D, Wist, M & Garimort, J 2013, 'Australian industry superannuation funds: investment strategies and property allocation', *Journal of Property Investment & Finance*, vol. 31, no. 5, pp. 462-480.
- iii. Reddy, W 2013, 'Superannuation funds and property allocation strategies: what is the mix? direct property, listed property or both?', *Pacific Rim Property Research Journal*, vol. 19, no. 1, pp. 57-79.
- iv. Reddy, W 2012, 'Determining the current optimal allocation to property: a survey of Australian fund managers', *Pacific Rim Property Research Journal*, vol. 18, no. 4, pp. 371-387.



# An investigation of property-related decision practice of Australian fund managers

Wejendra Reddy, David Higgins and Ron Wakefield  
*School of Property, Construction and Project Management,  
RMIT University, Melbourne, Australia*

## Abstract

**Purpose** – In Australia, the A\$2.2 trillion managed funds industry including the large pension funds (known locally as superannuation funds) are the dominant institutional property investors. While statistical information on the level of Australian managed fund investments in property assets is widely available, comprehensive practical evidence on property asset allocation decision-making process is underdeveloped. The purpose of this research is to identify Australian fund manager's property asset allocation strategies and decision-making frameworks at strategic level.

**Design/methodology/approach** – The research was undertaken in May–August 2011 using an in-depth semi-structured questionnaire administered by mail. The survey was targeted at 130 leading managed funds and asset consultants within Australia.

**Findings** – The evaluation of the 79 survey respondents indicated that Australian fund manager's property allocation decision-making process is an interactive, sequential and continuous process involving multiple decision-makers (internal and external) complete with feedback loops. It involves a combination of quantitative analysis (mainly mean-variance analysis) and qualitative overlay (mainly judgement, or "gut-feeling", and experience). In addition, the research provided evidence that the property allocation decision-making process varies depending on the size and type of managed fund.

**Practical implications** – This research makes important contributions to both practical and academic fields. Information on strategic property allocation models and variables is not widely available, and there is little guiding theory related to the subject. Therefore, the conceptual frameworks developed from the research will help enhance academic theory and understanding in the area of property allocation decision making. Furthermore, the research provides small fund managers and industry practitioners with a platform from which to improve their own property allocation processes.

**Originality/value** – In contrast to previous property decision-making research in Australia which has mainly focused on strategies at the property fund investment level, this research investigates the institutional property allocation decision-making process from a strategic position involving all major groups in the Australian managed funds industry.

**Keywords** Australia, Property, Asset allocation strategies, Asset consultants, Decision-making theory, Funds management

**Paper type** Research paper



## I. Introduction

The Australian managed funds industry is the largest and fastest growing investment sector in Australia. Underpinned by the Australian Government's compulsory superannuation policy, the industry has grown nearly ninefold from A\$171 billion in

The authors would like to acknowledge the support of the many Australian fund managers and asset consultants who gave up time to complete the industry survey.

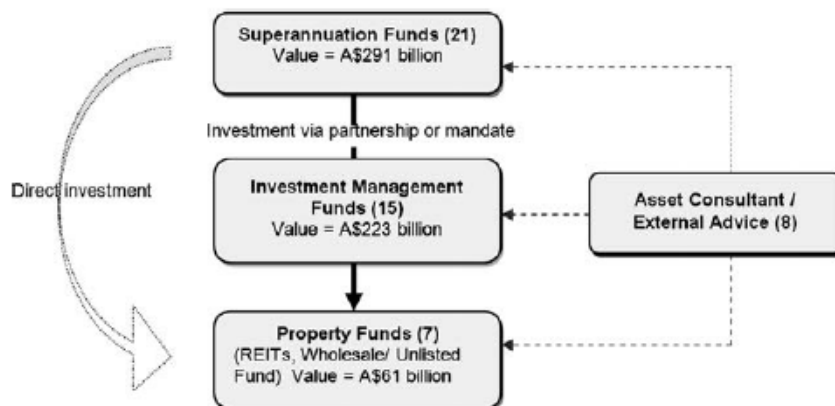
1988 to A\$2.2 trillion in 2013 (ABS, 2013). Even with this phenomenal growth rate, according to Australian Prudential Regulation Authority (APRA) (2007, 2014, p. 57), the level of allocation to property asset class in institutional portfolios has remained constant in recent decades, restricted at 10 percent or lower. This can be attributed to the property asset allocation principles and frameworks employed by individual fund managers. The focus of this research is to identify and document the Australian fund manager's property asset allocation strategies, processes and decision-making frameworks.

Property as an asset class plays an important role in institutional managed fund portfolios in Australia. The A\$300 billion Australian property market offers a diverse range of investments, differentiated by asset sectors and sub-sectors. Institutional investors have access to more than 1,000 different property funds across Australian real estate investment trusts (A-REITs), property securities funds, and unlisted funds such as wholesale property funds and property syndicates (PCA, 2011). According to Higgins (2007), when compared to the overseas markets, institutions own a significant portion (70 percent) of the Australian core property market. This can be attributed to the developed A-REITs market and the impact of introducing compulsory superannuation.

Superannuation funds, representing 82 percent of the Australian managed fund industry's assets under management, provide a good measure of institutional property allocation level in Australia. The continued aging of the population has led to higher weighting to property assets. Real estate provides the advantage of a regular income stream with the benefit of capital preservation. Superannuation fund investments in property assets have increased nearly threefold, from A\$24.4 billion at June 2004 to A\$95.9 billion as at June 2013. They hold interest in commercial property, both directly and indirectly, via exposure to property funds or through mandates and partnerships with other investment management funds (ABS, 2013; APRA, 2014, p. 38).

Figure 1 illustrates a typical Australian managed fund industry property asset allocation structure, the number of institutions that responded to the survey and their fund value. The allocation structure is developed from the superannuation fund perspective.

Each managed fund type has distinct property allocation strategies and investment processes. Fund managers' asset allocation decisions are also influenced significantly



**Figure 1.**  
Property investment  
structure and  
number/value of  
institutions surveyed

by asset consultants and external advisers. Hence, the industry survey in this research targeted a wide cross-section of experts from each managed funds industry group. This approach allowed both fund specific analysis, and general or industry evaluation of Australian fund managers' property asset allocation strategies and decisions.

The property allocation decision-making process is performed at both the strategic and investment levels. Strategic property allocation decisions involve institutional fund managers (such as superannuation funds) deciding what proportion of the total investment portfolio should be held in property assets, and via which medium (investment in property funds, mandates or partnerships). Property investment decisions deal with how property fund managers invest this allocated proportion in different markets (office, retail, industrial, and so forth) or geographic areas.

A review of literature highlights that the property investment decision-making process has been extensively covered in textbooks (Baum and Hartzell, 2012; Brown and Matysiak, 2000; Hartigay and Yu, 1993; Parker, 2011) and journal publications (Bispinck, 2012; De Wit, 1996; Farragher and Savage, 2008; Gallimore *et al.*, 2000; Roberts and Henneberry, 2007). In addition, IREI (2010) and IPF (2010, 2012) are examples of institutional investor survey reports on the US and the UK markets, respectively. In the Australian context, there are several studies that evaluate the importance of property in institutional portfolios, and the property investment decision-making process at sector level and geographic level (Armytage, 2002; De Francesco, 2005; Newell *et al.*, 1993; Rowland and Kish, 2000). In addition, Parker (2010, 2013) has investigated REITs and unlisted property funds investment decision-making processes and concluded that the process is complex, non-standardised, and potentially lacking in transparency. However, research on strategic property allocation decision-making process – that is, how fund managers determine the proportion of allocation to property in multi-asset portfolios – is lacking in Australia.

The next section provides a literature review on property allocation decision theory. Section III details the industry survey methodology. Section IV provides the empirical survey findings. The last section provides the concluding comments.

## II. Literature review

### *Importance of decision theory*

Decision theory is primarily concerned with analysing judgments. Bispinck (2012) highlighted that profound decision-making models have an impact on both the success of business and the investment world, and on every responsible person throughout life. Therefore, to come to a rational decision, undertaking a decision analysis is paramount for both individual and institutional investors.

French (2001) identified three distinct, yet interrelated, decision models:

- (1) *Descriptive analysis*. Models that describe how we do decide.
- (2) *Normative analysis*. Models that suggest how we should decide.
- (3) *Prescriptive analysis*. Models that use normative models to guide the decision-maker within other limiting cognitive parameters.

Early decision theory literature was focused generally on the descriptive and normative decision models. Normative models concentrate on “how decisions should be made”, while descriptive models ascertain “how decisions are actually made”.



Normative theories are usually based on mathematical adages, which define rational behaviour. Asset allocation models are typically described as being normative in nature as they depend on historical data to give advice on asset allocations in the future. Although past performance is an important influence on the asset allocation decision, it is a shortcoming of the model as it fails to encompass the investor's current perceptions of the relative merits of each asset class. Although descriptive models evaluate how decisions are made, it does not seek to aid people in making rational decisions. In contrast, the prescriptive model seeks to guide decision-makers toward consistent, rational choices, while recognising the cognitive limitations. The prescriptive model uses the descriptive theories of how people "do" make decisions to understand people's cognitive processes, while using the normative theories of decision making as the ideal way to make decisions. This leads to the decision-maker making effective or good decisions (Atherton *et al.*, 2008; Bispinck, 2012; French, 2001).

#### Decision-makers and functions

There are a number of professionals involved in managing investment portfolios and related asset allocation decisions. Figure 2 presents a typical organisation structure for an Australian managed fund firm.

The funds management entities have the same corporate governance structure as any other registered company. The shareholders select the board of directors, also referred in Australia as the responsible entity. The board governs the operations of the fund and ensures that the fund is administered in accordance with the trust deed. The board also determines the strategic direction of the fund, including reviewing and approving investment strategies, and monitoring investment policies and performance. The chief executive officer (CEO) sits on the board as a director and is accountable for the day-to-day administration of the firm. The chief investment officer (CIO) oversees the day-to-day management of the investment process and works closely with heads of the investment teams to ensure that their asset allocation decision making is in line with the fund's investment philosophy. The fund manager oversees the operations of a number of portfolio managers, asset managers, facility managers, and investment analysts, across various investment sectors. For example, the head of property oversees the operations of the property securities funds and direct property fund managers (Gallagher, 2002; Parker, 2011).

The strategy team (also referred as asset allocation team) provides recommendation to portfolio and investment managers on fund investment and portfolio strategy. The main contribution of the strategic team is determining the fund's strategic



Source: Author – adapted from: Gallagher (2002, p. 55) and Parker (2011, p. 6)

**Figure 2.**  
Typical organisation  
structure for Australian  
funds management firm

and tactical policies, determining asset selection criteria at fund and portfolio level, and monitoring and reviewing the funds asset allocation policies. It is typical that asset allocation decisions in funds management firms are determined by an investment committee. The investment committee is responsible for overseeing that the fund's investment policy and asset allocation decisions are consistent with the investment objectives set by the board. Although there is no prescribed structure for the investment committee, normally it involves portfolio managers, analysts and strategists who are functioning at the very highest level and have proven investment records (Gallagher, 2002; Parker, 2011). It is common for the investment committee to seek advice from asset consultancy firms and external investment managers. Dalton (2012) explains that the asset allocation decision making in many investment committees is not always democratic. It is likely that the process is often dominated by a few individuals, and sometimes one individual.

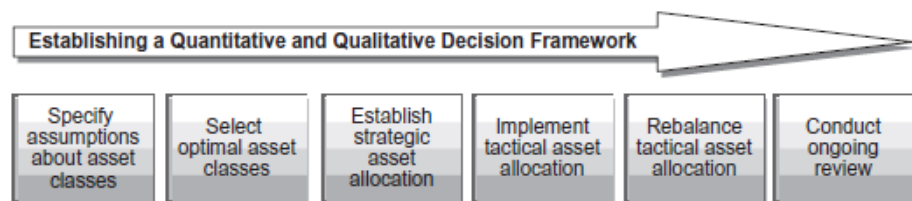
The challenge for this research is to identify and develop a framework illustrating the Australian fund manager's property asset allocation decision-making process. Before moving on to this part of research, it is important to identify and discuss key findings from previous research in this area.

#### *Property allocation decision-making theory*

Gallimore and Gray (2002) stated that asset allocation decision making is typically characterised as a structural rational process, using factual data and leading to optimal decision making. Darst (2003) outlined the asset allocation process in sequential steps, as illustrated in Figure 3.

Figure 3 illustrates that institutions generally commence their asset allocation process at strategic level by defining key assumptions on future expected return, risk, and the correlation between asset classes. Institutions or investment advisors may then select asset classes that best match the fund's investment objectives and provide the maximum expected return for a given level of risk. The third step is to establish a long-term asset allocation policy (generally referred to as SAA). Fourth, the fund manager may decide to implement shorter term (tactical and dynamic) policies, which generally is set against the investment board guidelines for SAA. Fifth, institutions periodically rebalance the portfolio of assets. The final step involves the institution regularly reviewing its SAA framework to ensure the investment objectives and targets match the outlook for each of the respective asset classes, and are in line with recent financial market developments.

In recent decades, there has been extensive research on decision-making theory within the context of property allocation. Several leading studies (Craft, 2001; De Wit, 1996; Farragher and Savage, 2008; Rowland, 2010) have concluded that property asset allocation is typically made in the context of a mean-variance framework.



**Figure 3.**  
Sequential steps in  
asset allocation

Source: Darst (2003, p. 5)

Dhar and Goetzmann (2005) explain that the application of MPT, as developed by Harry Markowitz, is almost mechanical once all the parameters of the asset return distributions are known. However, in practice, asset allocation decisions must be made in an environment of incomplete information (particularly physical assets), changing estimates of return, and shifting definitions of the acceptable investment risk. According to French (2001), while definitive inputs to the asset allocation model (historic data or predictive forecasts) are important, fund managers are also influenced by many other non-financial considerations, such as behavioural factors, judgement, intuition and market sentiment (peer group allocation).

There is a considerable diversity in the way asset allocations are made, in the use of consultants, in the discretion given to outside managers, and in the way that property investments are managed. IREI (2010) and Worzala and Bajtelsmit (1997) in their study of US pension funds, found that it is commonplace to use asset consultants and outside management firms to make initial real estate investment decisions, or to manage the investment after the real estate has been purchased. Likewise, there is widespread use of asset consultants in Australian superannuation fund property allocation decisions. According to Newell (2008), asset consultant contributions were more evident at the strategic level, in the allocation to direct property versus listed property, and at the specific property fund selection level.

For certain fund managers, such as superannuation funds, the target exposure to property and preferred types of property may also be influenced by the age profile of its members. Gerrans *et al.* (2010) investigated the age effects in retirement saving for Australian superannuation funds and found that property allocations appear least sensitive to age, peaking at age 43. In contrast, allocation to equities was more significantly related to age, with the allocation increasing up to the mid-1930s and then declining. This provides evidence that property is regarded as a cornerstone in most Australian superannuates retirement saving plans. Rowland (2010) also identified that funds with a higher proportion of members nearing retirement will generally concentrate on investments such as property that can meet regular payments. Therefore, the decision-making process related to property allocation also varies depending on the types of property investment preferred by fund members.

French and French (1997) stated that the decision-maker must be judged on the process followed in coming to the decision; that is, whether the process demonstrates rational consistency and whether, on average, the results are good. Higgins (2010) illustrated that fund managers need to undertake the investment decision-making process systematically (in an orderly manner) and persistently (consistently and repeated over time) to yield superior returns (or excess returns over a benchmark). Roberts and Henneberry (2007) investigated the investment decision-making process in France, Germany and the UK and found that the process, as perceived by institutional investors, does not deviate significantly from normative models. They identified that institutions tend to "collapse down" the decision-making process, taking shortcuts to achieve investment outcomes which leave the whole process open to the influence of bias, judgement and sentiment. In addition, decision-makers tend to resort to heuristics when facing problems requiring statistical inference or judgement under uncertainty. In the context of this research, it is important to determine whether Australian fund managers make property asset allocation decisions based on formal prescriptive analysis, or rely solely upon normative models to support their decision-making process.



### III. Survey design, administration and response rate

Several studies (Creswell, 2009; Kumar, 2005; Teddlie and Tashakkori, 2009) note the effectiveness of survey questionnaires to ascertain the participant's "self-reported" attitudes, beliefs and feelings toward a topic of interest. This study involved a survey questionnaire, based on the grounded theory strategy. The research was designed to ascertain information on Australian fund managers' property allocation strategies and decision-making processes. To do this, a semi-structured survey questionnaire was mailed to a target sample of 130 institutional fund managers and asset consultants located in different capital cities in Australia. Previous institutional surveys in Australia (Newell *et al.*, 1993; Rowland and Kish, 2000) on the subject, similar to the research topic, have generally targeted a sample size of 100 participants.

The survey involved two versions of the questionnaires: fund manager and asset consultant versions. Both versions of the survey questionnaire were tested during the pilot study phase (February 2011-March 2011). The respondent selection was based on purposive or judgemental sampling. In particular, only people involved in the property asset allocation decision-making process were targeted as potential respondents. The survey data was collected between May and August 2011. Of the targeted 130 institutions, 125 agreed to participate in the research. Participation was voluntary. Table I details the response rate for the survey.

Overall, the completed response rate for the survey was 41 percent, refusals 22 percent, and non-response rate 37 percent. From the 28 institutions that did not agree to be part of the survey, 19 were superannuation funds that mainly outsourced their property asset allocation functions to asset consultants or external managers. The list of survey respondents/compilers included chief executive officers (8), chief investment officers (18), asset/portfolio managers (14) and analysts/consultants (11). The response rate is comparable to previous Australian institutional surveys (Newell *et al.*, 1993; Rowland and Kish, 2000) that recorded 41-43 (or 43-50 percent) useable responses.

For confidentiality reasons, all information is reported in an aggregate format and no information on individual organisations is disclosed.

### IV Results

The results are presented in four parts, looking first at the property allocation level of funds surveyed, followed by an analysis of how the fund managers and asset consultants conduct the property allocation process, the documentation of the decision-making frameworks, and discussion on key factors that influence the decision-making models.

Institution type	Completed response	Refusal	Non-response
Superannuation fund <sup>a</sup>	21	19	
Investment management fund	15	6	
Asset consultant <sup>b</sup>	8	1	
Property fund	7	2	
Total number of respondent	51	28	46
Proportion of total response (%)	41	22	37

**Table I.**  
Survey response rate

**Notes:** <sup>a</sup>Includes public sector funds (9), industry funds (7), corporate funds (3) and retail funds (2); <sup>b</sup>includes response for two institutions that had recently merged but operate the business functions separately



*Property allocation level of funds surveyed*

The funds under management of institutions surveyed (excluding asset consultants) were approximately A\$576 billion, distributed approximately 50 percent in superannuation funds, 39 percent in investment management funds, and 11 percent in property funds (Figure 2). The property exposure for these institutions was approximately A\$115 billion. Table II provides details of the Australian fund managers' property asset allocation level in relation to their funds under management.

Property formed 12 percent of the superannuation funds' portfolios, and 8 percent of the investment management funds' portfolios. The average property asset allocation level for superannuation funds and investment management funds surveyed was 10 percent (3 percent direct and 7 percent indirect). The results are consistent with earlier studies (Armytage, 2002; Newell *et al.*, 1993; Newell, 2008; Rowland, 2010) and show that in recent decades the allocation to property has remained unchanged (average of 10 percent or lower) for Australian managed funds.

The level of property in superannuation funds in Australia is one of the highest by pension funds in the major developed countries. Newell (2008, p. 670) found that pension fund property allocations in other countries were The Netherlands (10 percent), Germany (7 percent), the USA (6 percent), the UK (5 percent), France (4 percent) and Japan (2 percent). In most countries, pension fund allocation to property is mostly through direct property, with only The Netherlands (5 percent) and the USA (1 percent) having significant exposure to listed property assets.

*How fund managers conduct the property allocation process?*

The response indicates that Australian managed funds' property asset allocation models generally run on a seven to ten years (strategic allocation), and on a one to three years (active allocation) time horizon. The decision-making process for these long and short-term strategies is the same, but the timing within which decisions are made or reviewed differs (annually, quarterly or monthly/weekly).

The asset allocation process includes setting strategy, establishing risk/return objectives, searching for investment opportunities, forecasts, risk assessment, decision making and implementing the proposal. The survey investigated how the institutions undertook these processes in relation to property assets (that is, internally or

Property type (% of FUM <sup>a</sup> )	Superannuation funds (21) (%)	Investment management funds (15) (%)	Average <sup>b</sup> (%)
Direct property	4	2	3
Indirect property			
REITs	3	4	4
Unlisted property fund	5	1	3
Total indirect property	8	5	7
CMBS	0	1	0
Total property exposure	12	8	10

**Notes:** <sup>a</sup>FUM refers to funds under management; <sup>b</sup>total valid sample size was 36 (excluding property funds and asset consultants)

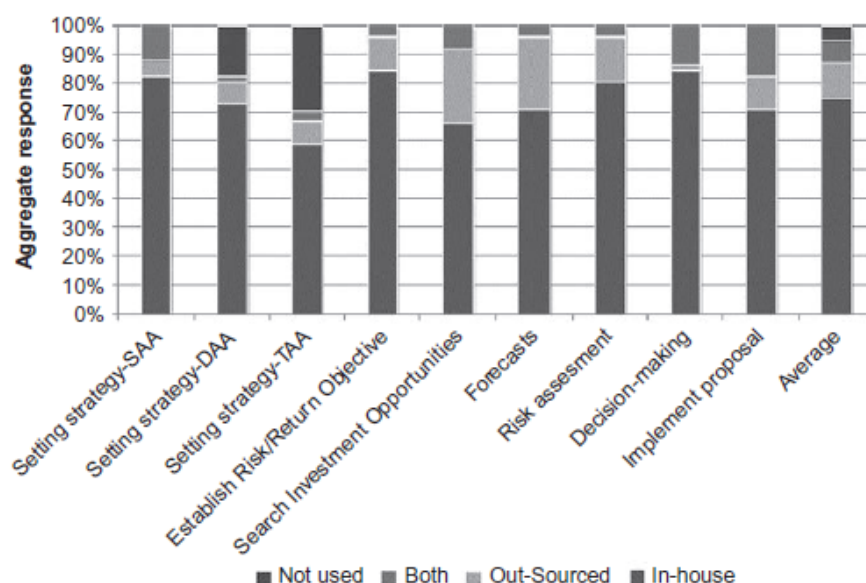
**Table II.**  
Property allocation level  
for funds surveyed

by outsourcing). Figure 4 details the Australian superannuation funds and investment management funds property asset allocation process and how institutions undertook those functions.

The findings indicate that SAA is the dominant asset allocation strategy used by the fund managers for property; this reflects the nature of the property asset class (illiquid and long-term investments). Setting dynamic asset allocation (DAA or DSAA) and tactical asset allocation (TAA) policies were two functions that some fund managers did not use as part of their property asset allocation decision-making process. In total, 15 of the 51 institutions surveyed do not use TAA as part of their property asset allocation decision-making process. Parker (2013) in a recent survey of nine leading unlisted property fund managers in Australia also found that tactical approaches received a low score in terms of property investment decision-making process.

The DAA is a more common active property asset allocation strategy among Australian fund managers, with the exception of property funds, where only 18 percent (9) institutions surveyed do not use DAA. The results also illustrate that while a majority of the fund managers' property asset allocation processes are carried in-house, identifying investment opportunities and running risk/return and market forecasts are two tasks most likely to be out-sourced. The funds that do implement active management strategies normally outsource the functions to asset consultants.

Of the 43 managed funds surveyed, approximately 79 percent carry out their property asset allocation functions in-house. Table III provides a more detailed analysis of how all fund managers (including property funds) carry out their property asset allocation functions. A significant number of superannuation funds surveyed (63 percent) carry out the asset allocation function in-house. However, the use of external managers and advisers is prominent for superannuation funds in all functions and processes (from setting the asset allocation strategy to implementing the proposal). Approximately, 24 percent of the



**Figure 4.**  
Asset allocation functions  
for funds surveyed

	Setting strategy – SAA (%)	Setting strategy – DAA (%)	Setting strategy – TAA (%)	Establish risk/ return objective (%)	Search investment opportunities (%)	Forecasts (%)	Risk assessment (%)	Decision making (%)	Implement proposal (%)	Average (%)
<i>Superannuation fund (21)</i>										
In-house	71	71	48	62	45	48	62	90	71	63
Outsourced	14	14	14	29	40	48	29	5	24	24
Both	15	5	5	10	15	5	10	5	5	8
Not used	0	10	33	0	0	0	0	0	0	5
<i>Investment management fund (15)</i>										
In-house	87	60	53	100	73	80	93	93	80	80
Outsourced	0	7	7	0	20	13	7	0	7	7
Both	14	0	7	0	7	7	0	7	13	6
Not used	0	33	33	0	0	0	0	0	0	7
<i>Property fund (7)</i>										
In-house	86	71	86	100	100	100	100	100	100	94
Outsourced	14	0	0	0	0	0	0	0	0	0
Both	0	0	0	0	0	0	0	0	0	0
Not used	0	29	14	0	0	0	0	0	0	6

**Table III.**  
Asset allocation functions  
for funds surveyed

21 superannuation funds surveyed outsourced their property allocation functions, and 8 percent use both internal and external managers. The functions likely to be outsourced by superannuation funds include "searching for investment opportunity" and "undertaking forecasts". From the 21 superannuation funds surveyed, 10 percent do not use DAA strategy. In addition, TAA strategy is not part of the asset allocation process for 33 percent superannuation funds surveyed.

The level of influence from outside managers or asset consultants is limited in investment management funds' property allocation decisions. Only 7 percent of the investment management funds outsourced their property allocation function. Approximately, 14 percent of the investment management funds surveyed do seek advice in setting the fund SAA strategy. Other asset allocation functions most likely to be outsourced by the investment management funds are "searching for investment opportunity" and "undertaking forecasts".

In contrast to superannuation funds and investment management funds, a significant number of the property fund managers surveyed (94 percent) conducted the property allocation functions in-house. The only time that property fund managers sought external advice was when setting their SAA policy. Implementing proposals (stock selection and investments) and "decision-making" functions are exclusively carried in-house by property fund managers. Some 7 percent of investment management funds, and 24 percent of superannuation funds, seek external advice during the stock selection and investment phase. In addition, only a limited number of investment management funds (7 percent) and superannuation funds (10 percent) do seek external advice for the "decision-making" functions.

Of the total number of 51 institutions surveyed, only 15 (or 29 percent) outsourced their asset allocation models, with 11 being superannuation funds and four being investment management funds. Approximately, 39 percent of the superannuation funds surveyed sought external advice in "establishing risk/return objectives", while this function was exclusively conducted in-house by investment management funds and property funds. A significant majority (92 percent) of the institutions that outsource their property allocation and investment management processes do not provide complete discretion to outside managers or consultants.

Consistent with theory, Australian fund manager's strategic property allocation policy is not designed to beat the market and reviewed annually by fund managers. The main objective of SAA policy for funds surveyed is to meet the long-term investment objectives and risk/return requirements of fund investors. TAA was described as short term, opportunistic policy moves, linked to the fund's annual plan review. Fund managers described DAA as a medium term "tilt", to or from their fund's strategic policy, set to defend against or exploit market extremes. Due to its active investment approach, respondents suggested that in practice TAA is only relevant to listed property. While the market conditions may provide opportunities for investments in direct property, these may be limited.

TAA committee meetings are normally convened monthly, or on a more frequent basis (weekly) in some funds. Funds surveyed consider DAA tilts during quarterly or bimonthly investment committee meetings. From the asset consultant viewpoint, the primary focus of managing any medium term asset allocation strategy should be the management of risk. Asset consultants further stated that fund managers will need to consider how the new investment opportunities will perform in



current and emerging conditions, and whether such strategies are implementable given the cost and other constraints.

The survey also identified that property allocation strategy can be a static process for some fund managers. Some fund managers stated that their exposure to property is significantly small in relation to the size of their total funds under management, and that given the small amount of property holding, the process of property allocation decision was made many years ago and is not something that prompts substantial resources or time being allocated to it thereafter. The next section details the Australian fund managers' and asset consultants' property allocation decision-making frameworks.

#### *Fund manager and asset consultant decision-making frameworks*

The survey investigated the institutions' property asset allocation decision-making frameworks. The institutions surveyed were asked to describe their property asset allocation decision-making frameworks using commentary and flowcharts or diagrams. In addition, institutions surveyed were asked to explain their SAA, DAA and TAA process. Table IV provides details of the level of response for institutions surveyed that offered commentary and frameworks/diagrams describing their property asset allocation decision-making process.

In total, 51 percent or 26 institutions surveyed provided commentary and flowcharts describing their property asset allocation decision-making framework. This included 13 superannuation funds, six investment management funds, four property funds, and three asset consultants. Approximately, 50 percent of the institutions surveyed provided insight to their SAA process. However, responses describing the DAA and TAA processes were limited at 37 and 33 percent, respectively. This can be attributed to the limited use of these policies for property asset allocation decisions (Table III).

#### *Superannuation fund decision-making framework*

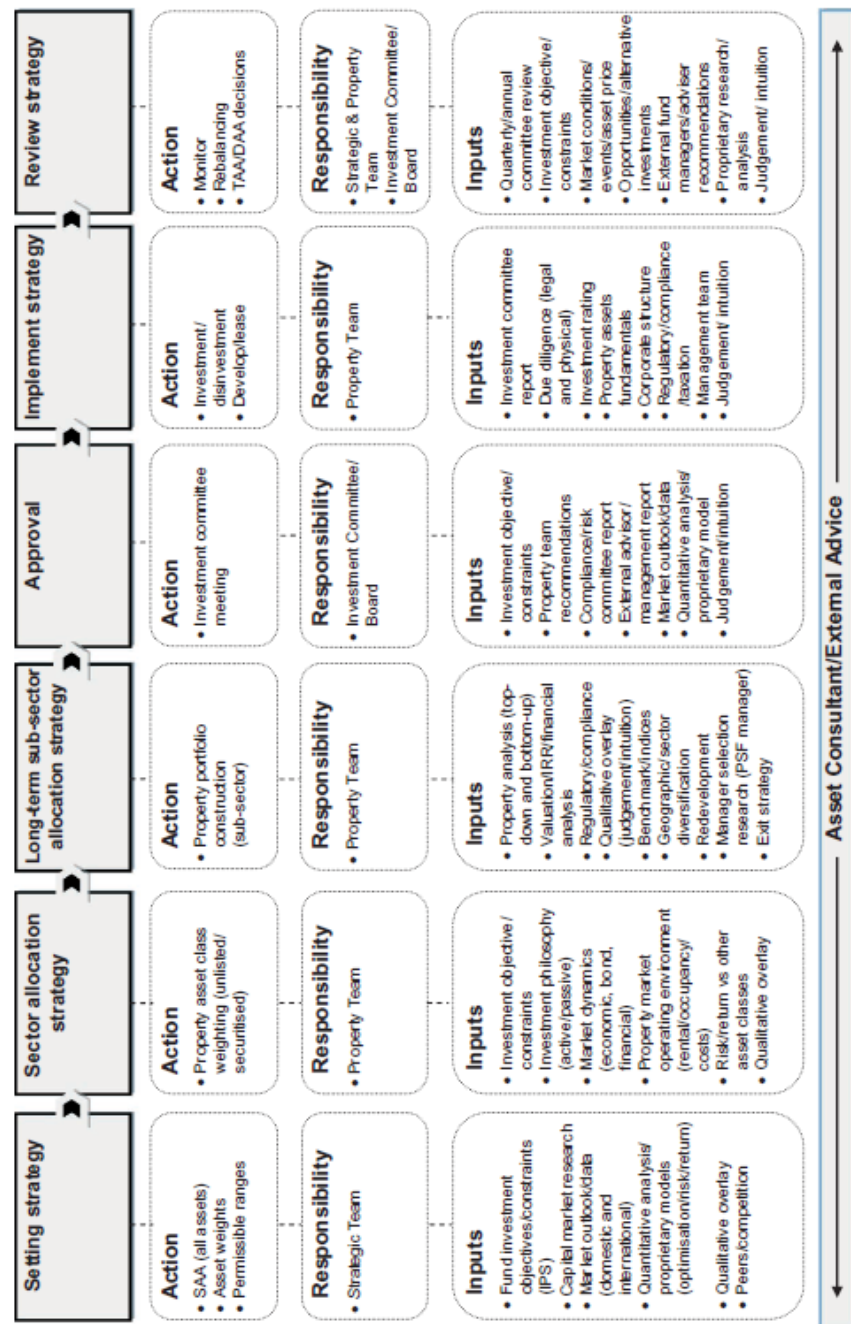
Figure 5 outlines the typical Australian fund manager's property asset allocation framework, the key decision-makers, and the inputs involved in the process. This model represents nine large superannuation funds that employ 1-3 + property professionals, and have an aggregate of A\$1.6-3.2 billion of funds invested in property assets. The large superannuation funds invest in both direct property and listed property sectors (Table II). These funds have the capacity to manage direct property assets in-house, and also through mandates and partnerships.

Australian fund managers' property allocation decisions are an interactive, sequential and continuous process, involving a range of decision-makers (both internal and external). The key stages in the allocation to property assets include

Institutions surveyed	Allocation framework	SAA process	DAA process	TAA process
Superannuation (21)	13	14	11	10
Investment management fund (15)	6	4	3	2
Property fund (7)	4	3	2	2
Asset consultant (8)	3	3	3	3
Total number of respondents	26	24	19	17
Response rate (%)	51	47	37	33

**Table IV.**  
Property allocation  
decision-making  
framework response rate

**Figure 5.**  
Property asset allocation  
decision-making  
framework for  
funds surveyed



strategy setting, establishing risk/return objectives, searching for investment opportunities, undertaking asset performance and market forecasts, risk assessment, decision making, implementing the proposal, and reviewing investment strategies. The process of establishing investment policies is the function of the fund's strategic team, generally in consultation with the plan's external adviser and with consideration of internal capital markets team research. The key factors considered include, but are not limited to, liquidity, risk/return preference for fund members (investment policy statement or IPS), and sector outlook for each investment asset class, including property.

A managed fund's strategic team generally consists of four to 12 committee members, with property staff representation being 1-2. The strategic team runs models and simulations to create performance outlooks for each asset class, and to determine whether there is a need to increase allocation to property and other assets, and by what range. Funds set broad asset class weights and permissible ranges during this process. Once the fund's long-term asset class weights are established, reports and recommendations are presented to the property team for consideration. The property team considers whether it is viable to pursue investments, and in which asset class and sub-sector. The property team's reports and recommendations are then presented at the investment committee meeting for approval. The fund investment committee and board make the final decision on whether or not to increase allocation to property assets. If the decision is to increase allocation then the property division is allocated the funding. The property team is then tasked to undertake the due diligence and make the investment decision.

The findings illustrate that the level of allocation to property assets depends on the investment objectives of the fund (whether it is set up to meet the investor's short- or long-term investment goals). The fund's property asset class investment decision (whether to allocate to unlisted or listed property) depends on three key factors:

- (1) Which option is cheaper (listed property or direct property)?
- (2) The outlook for the sector.
- (3) Whether the fund wants to buy and manage the investment directly or through external managers.

Fund managers surveyed also deal with the choice between property asset sub-classes (such as retail and office), and core and opportunistic investments. If funds elect to invest in property assets via mandates and partnership with external managers, then manager selection research is also undertaken. In most cases, selecting external investment managers is based on asset consultant advice.

Once the property asset allocation policies are implemented, asset performance and market conditions are continuously monitored. Each portfolio performance is tracked on a relative basis to a specific benchmark. The property team submits regular reports with changes to investment strategy at TAA/DAA meetings. The investment committee considers reports and recommendations from external advisers and managers during the review process. Any tactical changes or re-evaluation of asset weighting must be approved by the fund investment committee and board. Superannuation fund asset allocation strategies are reviewed annually. The review process also suggests tactical changes to the portfolio to reflect expected shorter term economic and property market factors. These recommendations also form the basis for any changes to the fund's long-term (strategic) asset allocation policies. The board of directors has final approval rights for setting strategic policies and related changes, or rebalancing.



Some Australian fund managers and asset consultants are now adopting internal procedures where the investment committee needs to provide a report citing specific reasons why certain asset allocation recommendations were not approved. The “rights of refusal” could have legal implications if fund performance is affected by poor asset allocation choices. Asset consultants provide quarterly SAA advice, including a view on the relative attractiveness of the property asset.

The research provides evidence that the property asset allocation process varies, depending on the type and size of the fund managers. Figure 6 displays the property asset allocation decision-making process for small superannuation funds. The model represents four superannuation funds that do not employ property professionals, and with investment in the range of A\$0.1-1.0 billion in property.

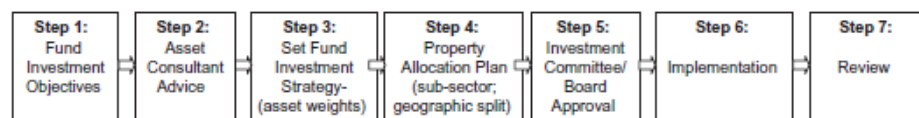
Generally, superannuation funds with limited exposure to property do not have property teams. The small funds do not have the capacity to invest and manage property assets directly and mainly hold interest in indirect property funds, such as REITs. Some funds do not even have a set asset allocation strategy for property assets. For these small funds, the investment committee’s property allocation decisions are guided by external advice (mainly asset consultants). Similar to large superannuation funds, these funds establish the investment objectives based on member risk/return preference and profile. However, due to limitations of staff and resources, the fund managers need to engage external advisers to formulate the investment policy and asset allocation plans, including that for property assets. The investments are managed mainly by external managers. It is common that asset consultants and external managers (property fund managers and other investment managers) attend the fund’s investment committee meetings. The final decision on the property allocation component in multi-asset portfolios is determined by the board. The review process is similar to the larger superannuation funds. However, any TAA/DAA policy shifts are implemented through external fund managers. Decision-making processes for small funds are mostly qualitative because of limits on the quality of data and the limited staff to undertake quantitative analysis.

*Investment management fund and property fund decision-making framework*

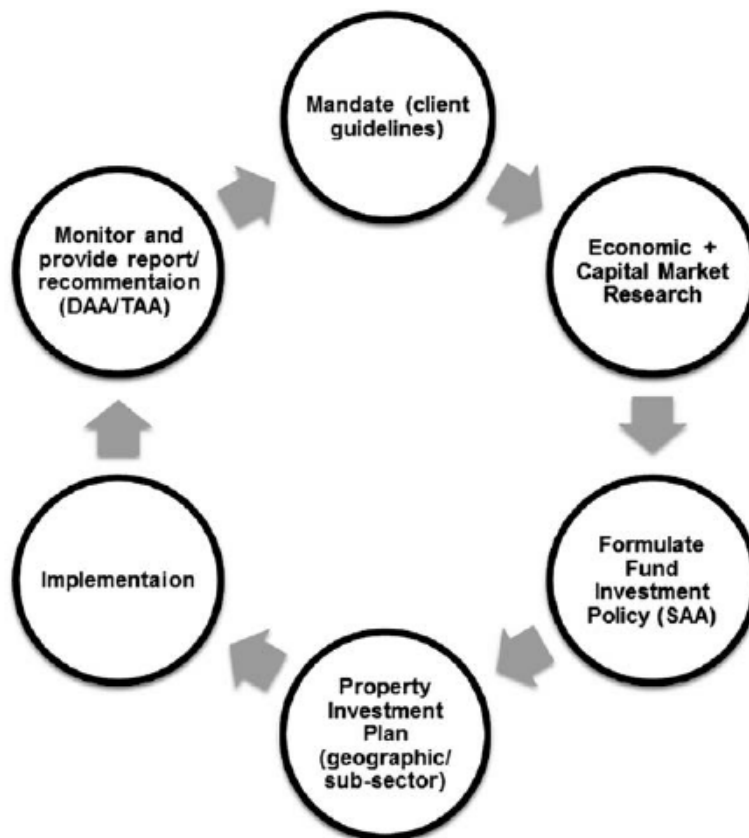
The asset allocation process for investment management funds and property funds differ slightly from that of superannuation funds. Figure 7 provides details of a typical investment management fund and property fund asset allocation framework. The model represents six investment management funds, and four property funds, that have dedicated property teams.

The property allocation decisions and strategies for investment management funds and property funds are mainly driven by the client investment mandate and predominantly are based on proprietary analysis and models. Generally, the use of external advisers (such as asset consultants) is restricted to formulating IPS. The investment management fund’s strategic policy is generally set at a three to five year timeframe. Like superannuation funds, the investment management fund’s

**Figure 6.**  
Property allocation  
decision-making process:  
small superannuation  
funds







**Figure 7.**  
Investment management  
fund and property fund  
asset allocation  
framework

weighting for each class, including property, is based on the fund's IPS and internal/capital market assumptions. Investment management funds and property funds rely on asset consultant/external research advice to formulate the fund's asset allocation plan. Funds generally have a predetermined or permissible range, and allocations are confined to the set ranges around the benchmark. Liquidity again is the major determinant. Unlike superannuation funds, investment management funds ranked peer comparison or market competition as highly important for their property asset allocation decisions. Respondents also highlighted subjective judgement as another key factor guiding their property asset allocation decisions.

Property funds provide a common means of investment in property for both superannuation funds and investment management funds. Like investment management funds, generally property funds are guided by investment mandates from large institutional investors. As property funds are purely invested in property assets, their asset class weighting decision is mainly confined to direct or unlisted allocation, or sub-sector/geographic allocation strategies. The market analysis and portfolio optimisation models for property specific funds are conducted in-house by the fund's securities analysts and portfolio managers. Respondent comments indicate

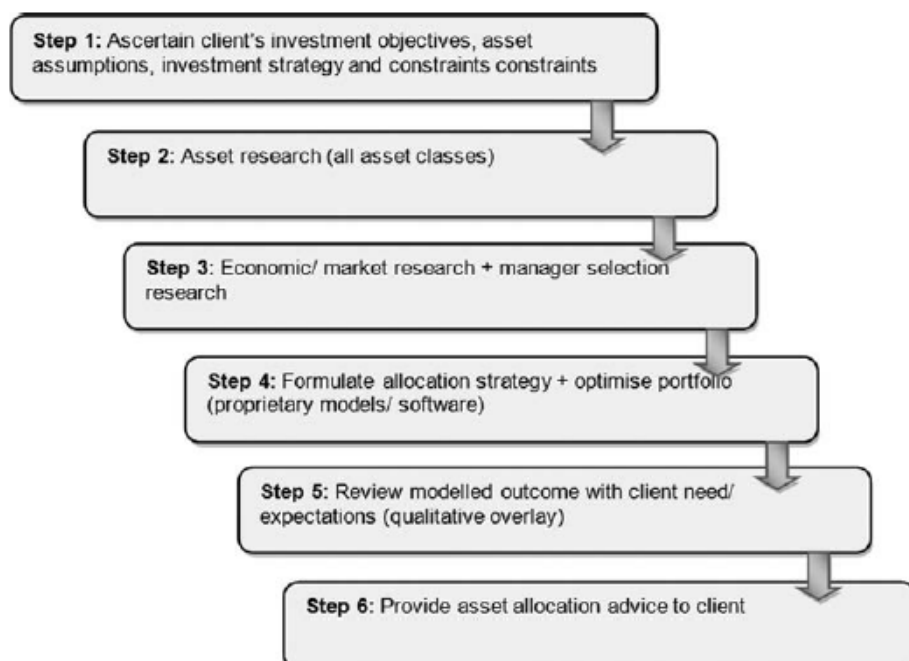
that qualitative overlay (management expertise/views) is an important part of property fund asset allocation decision-making processes.

Both the investment management funds and property funds monitor property asset performances, and conduct regular reviews to ensure the allocation policies align with client investment objectives and mandates. The funds provide reports and recommendations (buy/sell/hold rating) on a monthly or quarterly basis to clients. Any changes or tilts to the fund's long-term investment policy depend on the market environment, opportunities and the cost associated to those opportunistic changes. For the investment management funds that do not employ any property personnel, the asset allocation and asset selection functions are outsourced to external advisers.

*Asset consultant property allocation recommendation framework*

The findings so far illustrate that the Australian fund managers' property allocation decision-making processes and frameworks are influenced to a large extent by the thought process of external managers and advisers, particularly asset consultants. The framework for asset consultants' property asset allocation advice differs from client to client. Figure 8 outlines the asset consultant property asset allocation advice model for institutional investment managers. The model was developed based on responses from three asset consultant firms.

Asset consultants' property asset allocation advice processes start with the consultant determining the client's investment objectives and constraints. In addition, the asset consultants need to ascertain the fund's asset assumptions and investment strategy (active or passive), liquidity requirements, member/investor demography, investment management preference (internal or external), and the client's preferred



**Figure 8.**  
Asset consultant property  
asset allocation  
advice process

markets for investment (local or offshore). The asset consultant will then undertake asset-based research, including that for property (comparison of listed and unlisted property – benefits, opportunities, risk/return forecasts). The common approach is the “top-down” investment investigation. Asset consultants undertake extensive economic/market research and take other considerations into account (regulatory, benchmark, peer comparison). In addition, asset consultants undertake investment manager selection research for their clients. Asset consultants formulate a client’s asset allocation plan and test the models against the client’s investment needs and expectations using both proprietary models and commercial software. Both quantitative and qualitative factors are considered during the process. The asset consultant’s investment committee considers all analysis, reports and recommendations prior to approving the client property asset allocation advice.

#### *Factors influencing property allocation decisions*

*Quantitative and qualitative analysis.* The institutions surveyed used a combination of quantitative and qualitative inputs in their property asset allocation decisions (Figure 5). From the total number of 51 respondents, only 2 percent used purely quantitative models, 8 percent relied only on qualitative factors, whilst the majority (90 percent) use a combination of both quantitative and qualitative analysis for property asset allocation decisions. The type of quantitative analysis that generally aids Australian fund managers’ property asset allocation decisions includes valuation, financial/investment analysis models, and economic analysis. Asset allocation models used are Modern Portfolio Theory (mean-variance optimisation and efficient frontier) analysis based on historical returns, and scenario analysis. Risk factor modelling such as “stress test” is also becoming important in deciding the appropriate asset allocation. One of the most widely used methods of stress testing is the Monte Carlo simulation. Cuffe and Goldberg (2012) explain that stress testing is important for detecting a portfolio’s vulnerabilities and assesses its expected reaction to market scenarios. Fund managers stress test their portfolios to analyse the impact of extreme events, such as the recent GFC. Funds generally want to select lower risk strategies. For example, superannuation fund asset allocation is tailored to meet liabilities and maximise the surplus, given an acceptable risk level.

Fund managers surveyed also placed greater importance on qualitative overlay to any quantitative output before decisions were finalised. The key qualitative overlays identified by the Australian fund managers included judgement (“gut-feeling”), experience and understanding of investing in property assets, feedback from clients or shareholders, fund manager skills, asset quality assessment and peer comparison. The results are comparable to similar studies conducted overseas (French, 2001; Gallimore and Gray, 2002; Worzala and Bajtelsmit, 1997) that identified general experience/intuition, judgement and the use of personal feel of the market, as key qualitative factors that influence institutional property allocation decisions in the USA and the UK. Recent studies by Parker (2011, 2013) also identified factors such as judgement, intuition and experience as key qualitative factors that affect property fund manager investment decisions. In addition, these studies identified that reference to portfolio theory, capital market theory, and optimal portfolios, were rare.

*Market factors and industry benchmarks.* The survey investigated key market indicators and industry information that influence property asset allocation models.

The property asset allocation decision-making process varies among different managed funds-based according to fund size, investment objectives, and the number of research professionals employed. Regardless of these variables, generally the funds surveyed adopted a set of key market indicators/data and industry information in their asset allocation models. Figure 9 summarises the market factors that influence Australian fund manager and asset consultant property asset allocation decisions.

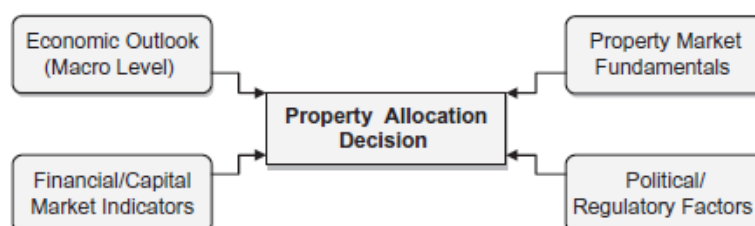
Generally, large managed funds surveyed had a team of in-house professionals dedicated to conducting industry research, and developing and maintaining databases on various markets and submarkets, such as economic, political, capital and property markets. Such databases also track the performance of various property sectors and sub-sectors. The property market fundamentals considered include:

- property statistics (rental, occupancy, vacancy rates, net absorption, outgoing, lease profile, etc.);
- demand and supply forecasts (sector specific market rental and growth forecast);
- risk/return analysis (historical and forecast, yield);
- transaction volume;
- valuation (capitalisation rate);
- construction/redevelopment costs;
- market indices/benchmark;
- factsheet/data from external asset managers;
- market data sourced from agents and industry institutions; and
- correlation matrix (property vs other assets).

Apart from property market fundamentals, fund managers also include macroeconomic data, such as interest rates, gross domestic product, consumer price index, unemployment, retail sales and demographic data. Local and global financial/capital market and political factors are also important in Australian fund managers' property asset allocation models. Reference to industry research reports, and market indices and benchmarks, is also common across all institutions surveyed. Generally decisions to invest in REITs are based on stockbroker research notes and financial ratios (price/NTA, dividend yield, payout ratio, gearing ratio, net asset value, liquidity ratios, and return on equity). Long-term government bond rate forecasts are important for direct property allocation analysis.

Generally, managed funds that did not employ any property professionals, or had small research teams, based their property asset allocation decisions on analysis conducted by industry consultants. The property industry market reports are sourced

**Figure 9.**  
Market information  
influencing property  
asset allocation decisions





from agents such as Jones Lang LaSalle Australia (JLL), Colliers International, CB Richard Ellis Australia (CBRE), Knight Frank, and institutions such as the Housing Industry Association, Australian Bureau of Statistics (ABS), Property Council of Australia (PCA), Australian Property Institute (API), and Investment Property Databank (IPD). Generally, economic market reports were obtained from Access Economics, BIS Shrapnel, Reserve Bank of Australia (RBA), state governments, federal government, ABS, and banking/financial institutes. Australian fund managers investing globally also consider information such as transparency index, exchange rate, and global property market performance indicators.

The fund managers and asset consultants use a number of forecast models and software (property, capital markets, financial markets, mathematical, covariance, and portfolio optimisation) to aid their property asset allocation decisions. In addition, the institutions surveyed used a number of market indices (both domestic and global) as benchmarks for different property sectors, while evaluating property assets for investment or portfolio allocation purposes. The key direct and unlisted property market benchmark indices include IPD/Mercer Direct Property Index, IPD/Mercer Unlisted Property Index, PCA Sector Indices, PCA/IPD Investment Performance Index, Intech Direct Property Index, S&P Citigroup World Property Index, UBS Global Real Estate Investors Index, Mercer Unhedged Property Index and Rainmaker Financial Standard Property Index. For the listed property sector, fund managers used the S&P/ASX A-REIT Accumulation Index as the domestic benchmark. For offshore exposure fund managers used a series of global REIT indices such as FTSE/NAREIT Global Property Index, FTSE EPRA/NAREIT Global REIT Index and S&P Citigroup Global REIT Index.

Institutional investment in global markets is predominantly through listed property funds or REITs. Findings also revealed that institutions develop and follow proprietary (or in-house) indices and benchmarks. The key inputs in their models include the ten year bond rate (absolute return relative to bonds) and consumer price index (CPI + benchmark). Australian managed fund industry has consistently used similar property market benchmark in recent years. Newell (2008) also highlighted the S&P/ASX A-REIT Accumulation Index and the Mercer Unlisted Property Index as key domestic property measures and EPRA/NAREIT Global Property Securities Index for global property investments.

## V. Conclusion

The research investigated the property asset allocation strategies, processes and decision-making frameworks of the A\$2.2 trillion Australian fund management industry. At a strategic level, this research is the first to investigate and document in a single study the property asset allocation decision-making practice of a wide cross-section of Australian fund managers (superannuation funds, investment management funds, and property funds) and asset consultants.

The decision-making frameworks developed from the industry survey illustrate that property asset allocation is a sequential and continuous process involving constant interaction between a number of decision-makers (both internal and external). The typical fund manager strategic property allocation decision-making framework moves through several key stages:

- *Market research (economic, capital markets).* The strategic team runs models and simulations to determine the proportion of allocation to each asset class, including property.
- *Setting investment objectives/constraints.* Fund formulates the investment policy statement.
- *Setting strategy.* Fund sets long-term SAA policy, asset weights and permissible investment range for all asset classes, including property. The asset allocation policies are discussed with the property team.
- *Property allocation plan.* The property team decides whether it is viable to pursue investments, and in which sectors (direct, unlisted or securitised), markets (office, retail, industrial or other), and geographical locations. The property team prepare reports for the investment committee meeting.
- *Investment committee and board approval.* The investment committee and board make the final decision on the allocation level to property and related investment strategies.
- *Implementation.* If the decision is to increase allocation to property, the property team is provided with the funding, and need to implement the investment plan (due diligence, acquisition, and asset manager selection).
- *Monitoring and review.* The property team (or external asset manager) monitors asset performance and provides ongoing reports in monthly asset allocation meetings. These reports form the basis for any TAA and DAA policy shifts, and also help formulate the fund's future SAA guidelines.

The research also provided evidence that the property asset allocation decision-making process in Australia varies depending on the size and type of managed fund:

- Large superannuation funds generally employ an in-house property team and have the capacity to run more sophisticated models and simulations. Generally, these funds are able to hold investments predominantly in both direct and indirect property investments.
- Small superannuation funds mainly depend on external advice (primarily from asset consultants) for property asset allocation decisions, and their allocation to property is mainly via listed REITs. Decision-making processes for small funds are mostly qualitative because of limits on the quality of data and the limited staff to undertake quantitative analysis.
- Investment management funds and property funds' property asset allocation processes are guided by client mandates. For these funds, external advice (mainly from asset consultants) is limited to setting up a fund's SAA targets.

Overall, the construction of various models highlight that Australian fund managers' property asset allocation framework is not based entirely on traditional normative or descriptive decision theory. The process leans more towards prescriptive decision theory, displaying a consistent and rational approach that recognises cognitive limitations. The key quantitative asset allocation analyses include Modern Portfolio Theory analysis based on historical returns. Fund managers also placed significant importance on a qualitative overlay, mainly judgement ("gut-feeling") and experience.

The qualitative, or gut feel, overlay is important as it can guide decision-makers to make more effective asset allocation decisions in line with investors' current perceptions of the relative merits of each asset class, including property. The use of quantitative analysis is important as it brings a methodical approach to the decision-making process, given that qualitative factors such as "gut feel" may make decisions bias and less than "rational".

The investigation of the various decision-making frameworks has important practical implications for the industry. The research found that the property allocation strategy for small sized fund managers can be a static process. Given their limited resources (funds under management and personnel) it is common for small fund managers generally to rely on asset consultant advice for property allocation decisions, or even to base their property allocation decisions on neutral market view. Thus, the decision-making frameworks developed in this research will both assist and educate investors and the industry to better understand institutional strategic property allocation methodology. This could provide a platform for industry practitioners to improve their own institution's property allocation decision-making processes. In addition, the conceptual frameworks developed from the research will help enhance academic theory and understanding in the area of property allocation decision making.

## References

- ABS (2013), *Managed Funds Australia Time-Series Workbook 5655.0: September 2013 (data file)*, Australian Bureau of Statistics, Commonwealth of Australia, Canberra.
- APRA (2007), *Insight: Celebrating 10 Years of Superannuation Data Collection 1996-2006*, Australian Prudential Regulation Authority, Sydney, Special Edition, Issue 2.
- APRA (2014), *Annual Superannuation Bulletin June 2013*, January edition, Australian Prudential Regulation Authority, Sydney.
- Armytage, P. (2002), "What is property? Property: challenging conventional thinking", *Australian Property Journal*, May edition, pp. 104-111.
- Atherton, E., French, N. and Gabrielli, L. (2008), "Decision theory and real estate development: a note on uncertainty", *Journal of European Real Estate Research*, Vol. 1 No. 2, pp. 162-182.
- Baum, A. and Hartzell, D. (2012), *Global Property Investment: Strategies, Structures, Decisions*, Wiley, Oxford.
- Bispinck, H. (2012), "Real estate investment decision-making – a review", *Journal of Property Investment & Finance*, Vol. 30 No. 5, pp. 529-544, Practice Review.
- Brown, G.R. and Matysiak, G.A. (2000), *Real Estate Investment: A Capital Market Approach*, Prentice-Hall, Harlow.
- Craft, T.M. (2001), "The role of private and public real estate in pension plan portfolio allocation choices", *Journal of Real Estate Portfolio Management*, Vol. 7 No. 1, pp. 17-23.
- Creswell, J.W. (2009), *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, 3rd ed., Sage, Los Angeles, CA.
- Cuffe, S.L. and Goldberg, L.R. (2012), "Allocating assets in climates of extreme risk: a new paradigm for stress testing portfolios", *Financial Analysts Journal*, Vol. 68 No. 2, pp. 85-108.
- Dalton, T.G. Jr (2012), "The chief investment strategist/economist", in Smith, D.M. and Shawky, H.A. (Eds), *Institutional Money Management: An Inside Look at Strategies, Players and Practices*, Wiley, Hoboken, NJ, pp. 73-87.
- Darst, D.M. (2003), *The Art of Asset Allocation: Asset Allocation Principles and Investment Strategies for Any Market*, McGraw-Hill, New York, NY.



- De Francesco, A. (2005), "The role of direct property in asset allocation", *Australian Property Journal*, February edition, pp. 386-393.
- De Wit, D.P.M. (1996), "Real estate portfolio management practices of pension funds and insurance companies in The Netherlands: a survey", *Journal of Real Estate Research*, Vol. 11 No. 2, pp. 131-148.
- Dhar, R. and Goetzmann, W. (2005), *Institutional Perspectives on Real Estate Investing: The Role of Risk and Uncertainty*, Pension Real Estate Association, Hartford, CT.
- Farragher, E.J. and Savage, A. (2008), "An investigation of real estate investment decision-making practices", *Journal of Real Estate Practice and Education*, Vol. 11 No. 1, pp. 29-40.
- French, N. (2001), "Decision theory and real estate investment: an analysis of the decision-making processes of real estate investment fund managers", *Managerial and Decision Economics*, Vol. 22, pp. 399-410.
- French, N. and French, S. (1997), "Decision theory and real estate investment", *Journal of Property Valuation & Investment*, Vol. 15 No. 3, pp. 226-232.
- Gallagher, D.R. (2002), *The Australian Investment Management Industry*, SIRCA, Sydney.
- Gallimore, P. and Gray, A. (2002), "The role of investor sentiment in property investment decisions", *Journal of Property Research*, Vol. 19 No. 2, pp. 111-120.
- Gallimore, P., Hansz, J.A. and Gray, A. (2000), "Decision-making in small property companies", *Journal of Property Investment & Finance*, Vol. 18 No. 6, pp. 602-612.
- Gerrans, P., Clark-Murphy, M. and Speelman, C. (2010), "Asset allocation and age effects in superannuation investment choices", *Accounting and Finance*, Vol. 50 No. 2, pp. 301-319.
- Hartigay, S. and Yu, S.M. (1993), *Property Investment Decision-making: A Quantitative Approach*, E&FN Spon, London.
- Higgins, D. (2007), "Placing commercial property in the Australian capital markets", *RICS Research Paper Series*, Vol. 7 No. 12.
- Higgins, D. (2010), "Investment styles and performance in the Australian unlisted wholesale property fund market", *Pacific Rim Property Research Journal*, Vol. 16 No. 3, pp. 254-272.
- IPF (2010), *UK Institutional Investors: Property Allocations, Influences and Strategies*, Investment Property Forum, London.
- IPF (2012), *Real Estate's Role in the Mixed-Asset Portfolio: A Re-Examination*, Investment Property Forum, London.
- IREF (2010), *The Language & Culture of the Pension Real Estate Investment Market*, Institutional Real Estate Inc., San Ramon, CA.
- Kumar, R. (2005), *Research Methodology: A Step by Step Guide for Beginners*, 2nd ed., Pearson Education, Sydney.
- Newell, G. (2008), "The significance of property in superannuation funds", *Australian and New Zealand Property Journal*, Vol. 1 No. 8, pp. 670-677.
- Newell, G., Stevenson, K. and Rowland, P. (1993), "Institutional investor criteria for property investment", *The Valuer and Land Economics*, Vol. 32 No. 6, pp. 450-454.
- Parker, D. (2010), "REIT investment decision-making: a multi step process", *Proceedings of the 16th Annual Pacific RIM Real Estate Society Conference, Wellington, New Zealand, 24-27 January*.
- Parker, D. (2011), *Global Real Estate Investment Trusts: People, Process and Management*, Wiley, Chichester.



- Parker, D. (2013), *Decision-making by Australian Property Funds*, Royal Institute of Chartered Surveyors Research Report, RICS, London.
- PCA (2011), *Australian Property Investment Industry: Autumn 2011*, Property Council of Australia, Sydney.
- Roberts, C. and Henneberry, J. (2007), "Exploring office investment decision-making in different European contexts", *Journal of Property Investment & Finance*, Vol. 25 No. 3, pp. 289-305.
- Rowland, P.J. (2010), *Australian Property Investments and Financing*, Thomson Reuters (Professional Australia), Sydney.
- Rowland, P.J. and Kish, J. (2000), "Decision making by property fund managers: a survey", *Australian Property Journal*, May edition, pp. 104-111.
- Teddlie, C. and Tashakkori, A. (2009), *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences*, Sage, Thousand Oaks, CA.
- Worzala, E.M. and Bajtelsmit, V.L. (1997), "Real estate asset allocation and the decision-making framework used by pension fund managers", *Journal of Real Estate Portfolio Management*, Vol. 3 No. 1, pp. 47-56.

#### Further reading

- Reddy, W. (2012), "Determining the current optimal allocation to property: a survey of Australian fund managers", *Pacific Rim Property Research Journal*, Vol. 18 No. 4, pp. 371-387.

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# ACADEMIC PAPER

## Australian industry superannuation funds

### Investment strategies and property allocation

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#### Abstract

**Purpose** – To achieve long-term performance, superannuation balanced funds typically invest in a range of defined asset classes based on a strategic asset allocation approach. In an Australian context, the purpose of this paper is to examine the performance of the balanced investment option against eight different investment strategies and how the property allocation changes with different asset allocation models.

**Design/methodology/approach** – The analysis is based on ex post data covering 17 years (1995 to 2011). The selected passive and active allocation models are set within the modern portfolio theory framework utilising Australian ten year bonds as the risk free rate. The Sharpe ratio is used as the key risk-adjusted return performance measure.

**Findings** – Property provided the second highest risk adjusted return profile behind the alternative asset class. The different asset allocation models perform as well as the conventional strategic approach and in many instances property allocation is found to be under-allocated on a return optimisation basis. Depending on the asset allocation model, property when included within a multi-asset portfolio improves the portfolio risk-adjusted return profile by 2 per cent to 28 per cent.

**Practical implications** – For an Australian superannuation balanced fund, the empirical results show that there is scope to increase the property allocation level from current 10 per cent to 23 per cent. This knowledge will be beneficial for funds currently re-profiling investment portfolios to achieve stable risk-adjusted returns.

**Originality/value** – The research contributes to both practical and academic fields, as it offers a methodological approach on how allocation to property assets can be improved using a series of passive and active asset allocation strategies.

**Keywords** Australia, Investment funds, Assets management, Property, Superannuation, Asset class performance, Allocation strategies, Diversification options

**Paper type** Research paper



## I. Introduction

A central aim of superannuation funds is to generate returns that will allow their members to meet long-term retirement income goals. To achieve long-term performance, superannuation funds invest in a range of asset classes that can enhance returns and provide desired levels of risk stability and liquidity. This research compares the conventional strategic asset allocation (SAA) approach used by superannuation funds to a range of alternative investment strategies and reports on the underlying property allocation. In making a comparison of investment strategies, there is the scope to improve superannuation funds performance and with an increased allocation to property.

Australia has an established superannuation industry. As at December 2011, there was AU\$1.4 trillion (£875 billion) in Australian superannuation funds, which makes Australia the fourth largest superannuation market in the world, behind the USA, Japan and the UK. Australian superannuation funds are projected to grow to AU\$2 trillion by 2014, AU\$3 trillion by 2019 and AU\$7 trillion by 2028. The continued flow of money in the superannuation products has been driven by the government's compulsory contribution policy since 1992. The initial compulsory contribution rate was 3 per cent and has since gradually increased to 9 per cent over ten years. During 2010, the Australian Government announced an increase in the compulsory superannuation rate from 9 to 12 per cent by 2020 (Allen Consulting, 2011; APRA, 2013; Deloitte, 2009).

The Australian superannuation industry consists of 352 institutional funds and 481,605 small self-managed or DIY funds (less than five members). The institutional sector, consisting of the not-for-profit funds (corporate funds, industry funds, public sector funds) and retail funds, make-up 65 per cent of the \$1.4 trillion superannuation industry assets under management each superannuation fund type provides specific benefits. Industry superannuation funds are a popular passive choice as offering past reliable performance, low fees, additional benefits (life insurance) and a defined range of investment options. The large industry funds, designed for employees working in a common industry or group of associated industries, generally have five to 15 investment options which aim to meet member investment objectives. The default balanced fund is the most popular investment option, accounting for 67 per cent of the industry fund's investments. Balanced funds offer stable income returns and capital growth derived from a diversified range of asset classes (APRA, 2007, 2013).

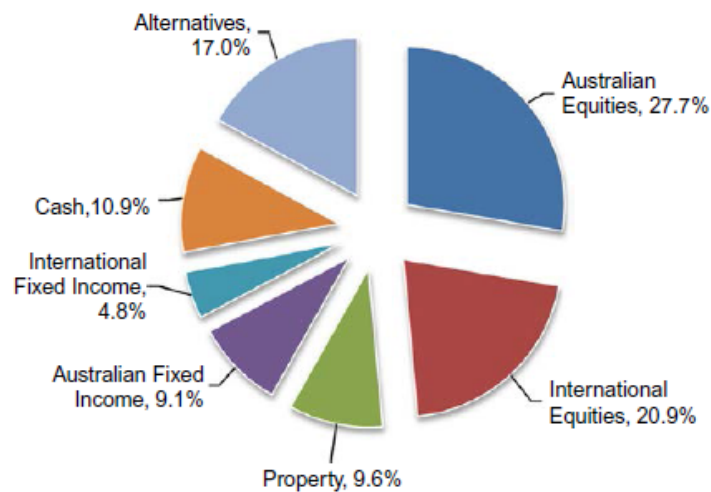
Figure 1 shows the aggregated balanced industry superannuation fund default option as at December 2011.

Figure 1 shows the default asset class allocation for industry superannuation funds balanced investment option as at December 2011. This research examines the performance of industry superannuation balanced fund asset classes over a 17 year period (1995-2011) using quarterly benchmark data for each asset class. For the alternative asset class, the index comprises infrastructure, hedge fund, private equity and commodity data, which follows a UK alternative asset class index structure (Bond *et al.*, 2007).

Superannuation funds generally set long-term asset investment objectives and guidelines to meet member investment objectives. This is commonly referred to as a SAA and is generally based on set modelling parameters that follows modern portfolio theory (MPT) as first outlined by Harry Markowitz. Funds regularly adjust the allocation to the asset classes to optimise performance and maximise risk adjusted return outcomes (Darst, 2003; Maginn *et al.*, 2007).



**Figure 1.**  
Average asset allocation  
for industry  
superannuation balance  
fund option:  
December 2011



Source: Rainmaker Group (2012)

According to Newell (2008) and Parker (2012) property is a key investment asset class and offers considerable benefits in a mixed-asset portfolio that include portfolio diversification, inflation-hedging, low volatility for unlisted/direct property and improved risk-adjusted returns. In Australia, superannuation fund allocation to property historically has averaged between 8 and 10 per cent (APRA, 2013). Many in the property profession have seen this allocation as a subjective measure. As part of this research, the asset allocation modelling can back up this property allocation level.

With the focus on superannuation fund investment strategies and property allocation, this research critically evaluates a variety of asset allocation models and evaluates their allocation to property. In particular it examines nine asset allocation models, being:

- (1) *Strategic*. SAA forms the foundation for superannuation funds asset class allocation and follows MPT methodology. Asset allocations are adjusted over time (mostly on an annual basis) based on expected long term asset performance within predetermined superannuation fund policies and guidelines and liquidity availability (Anson, 2004; Reddy, 2012).
- (2) *Buy and hold*. Passive investment strategy, where superannuation fund buys and holds the assets over the long term. The asset weighting is determined at the start of the investment period and remains constant throughout the investment period (Schmidt, 2012).
- (3) *Traditional*. Asset allocation restricted to equities, bonds and cash. This MPT strategy was common prior to the 1980s when there were limited asset class options. It offers liquidity across the selected asset classes (Bernstein, 2007).
- (4) *Optimal – no constraints*. Asset allocation model that assigns funds to asset classes based on highest risk adjusted returns without restrictions on the level of investment in individual asset classes. This asset allocation model is reviewed annually. This technique is known as Markowitz mean-variance portfolio optimisation (Fabozzi and Markowitz, 2011; Hauss, 2004).

- (5) *Optimal – weighted constraints.* The strategy is the same as the optimal – no constraints model but with pre-defined weight parameters for all asset classes. Table I illustrates the assumed pre-determined weight constraints for industry superannuation funds.

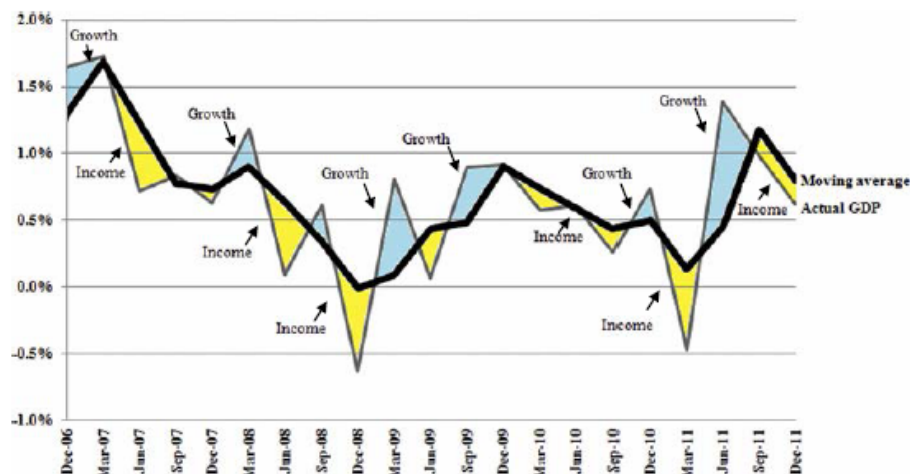
Table I details the benchmark Australian industry superannuation fund asset allocation range across the recognised asset classes. The level of allocation can relate to historical performance, liquidity and transaction costs. This information is prepared based on consensus data from six leading industry superannuation funds with A\$146 billion of funds under management. Industry superannuation fund asset allocation parameter appears to place high weighting on the equities.

- (6) *Turning points.* Asset allocation based on the cyclical movement of gross domestic product (GDP) to the long term moving average. Figure 2 shows Australian GDP (actual and moving average trend) for a five year period.

Figure 2 shows a turning point asset allocation model where switching in asset portfolios depends on economic conditions. Funds are allocated to growth focused assets (equity, alternatives and property) during improved economic conditions; while income focused assets (fixed income, cash and property) are selected on declining market conditions.

Asset class	Minimum weight (%)	Maximum weight (%)
Australian equities	20	40
International equities	10	30
Property	0	20
Australian fixed	0	20
International fixed	0	15
Cash	0	15
Alternatives	0	25

**Table I.**  
Industry superannuation  
funds asset weight  
parameters: December  
2011



**Figure 2.**  
Australian GDP: actual,  
moving average:  
2006-2011

Source: ABS (2012)

(7) *Equal weighted*. Passive investment strategy, which allocates equal weighting to all asset classes. The strategy completely ignores return and risk prospects, with all asset classes given the same weighting (Lee, 2011).

(8) *Tactical – no constraints*. Tactical asset allocation (TAA) is an active investment strategy where investment in assets are regularly adjusted (over-weighted or under-weighted) to benefit from short term market movements. TAA attempts to continuously beat the prevailing market, offering active fund managers the opportunity to generate enhanced returns above the fund's stated SAA policy (Paff *et al.*, 2005; Sharpe *et al.*, 2007; Stockton and Shtekhman, 2010).

For industry fund superannuation funds, tactical asset weight shifts can be determined on a quarterly basis using the risk parity and momentum portfolio construction technique. Risk parity (a simple volatility-weighted technique) over-weights less volatile assets and under-weights more volatile assets. Then each asset class is ranked based on its respective quarterly momentum signal. This ranking is used to determine the tactical weights. Exposure to assets with negative quarterly returns is reduced to zero with the weight redistributed (Faber, 2007; Gray *et al.*, 2012; Wang and Kochard, 2011). There are no pre-defined asset weight constraints for this strategy.

(9) *Tactical – weighted constraints*. The strategy involves the risk parity and momentum portfolio construction technique (similar to (8)) but with pre-defined asset weight parameters from Table I.

In detailing asset allocation strategies, the research focus is on performance profiles and the allocation to property. In addition, industry superannuation funds would need to consider operational features associated with the asset allocation strategies as shown in Table II.

Table II details the industry fund management operational issues with the selected asset allocation strategies. Generally, institutions would prefer investments with low transaction and management costs, along with high liquidity. The default risk relates to diversification consideration, as some asset allocation models have high exposure to a specific asset class at specific points of time. In highlighting the operational features, industry funds are primarily measured on fund performance.

The next section provides a literature review on Australian superannuation and investment styles and the allocation to property assets. Section III details the historical

**Table II.**  
Nine asset allocation  
models: operational  
features

Asset allocation strategies	Transaction costs	Management costs	Liquidity benefits	Default risk
Strategic	Medium	Medium	Medium	Low
Buy and hold	Low	Low	High	Low
Traditional	Low	Low	High	Medium
Optimal – no constraints	High	Medium	Medium	High
Optimal – weighted constraints	High	Medium	Medium	Medium
Turning points	High	High	Low	High
Equal weighted	Low	Low	Medium	Low
Tactical – no constraints	High	High	Low	High
Tactical – weighted constraints	High	High	Medium	Medium



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performance of selected asset classes and associated methodology. Section IV provides the empirical findings and the implications for fund managers. The last section provides the concluding comments.

## II. Literature review

### *Superannuation funds and property asset allocation*

The Australian property industry has more than 1.3 million direct investors comprising of retail/private, institutional and global investors. Institutional investment represents approximately 40 per cent of the Australian core property market. Managed funds such as superannuation, insurance companies and other industry diversified funds have access to more than 1,000 different property funds across REITs, property securities funds and unlisted funds including wholesale property funds and property syndicates (Higgins, 2007; PCA, 2011).

Superannuation funds currently represent 81 per cent of the Australian fund management industry's assets under management. The significant growth in the Australian managed fund industry has also seen investments in the Australian property market increase from just under AU\$100 billion in 2000 to approximately AU\$300 billion in 2011 (Austrade, 2010a, b; PCA, 2011; RBA, 2012).

Despite the significant growth in the Australian fund management industry, allocation to the property asset class within the superannuation mixed asset portfolios is generally restricted to less than or equal to 10 per cent (Newell, 2008; Rowland, 2010).

The role of property in the multi-asset portfolio and the optimal allocation decision to property has been the subject of several studies. Asset allocation studies have invariably concluded that property is significantly underrepresented in the typical investment portfolio. Studies by Bajtelsmit and Worzala (1997), Craft (2001) and Hoesli *et al.* (2003) have concluded that the optimal weight for property in mixed-asset portfolios should be within the 10-30 per cent range and that the inclusion of property in such portfolios leads to a 15-25 per cent reduction in the portfolio's risk level. A recent report by JP Morgan Asset Management (2012) anticipates that the institutional real assets allocation will increase to 25 per cent in the next decade. The re-profiling institutional investment portfolios following the recent global financial crisis has seen fund managers place higher emphasis on investment sectors such as property to achieve stable risk-adjusted return performances.

Australian industry-based superannuation funds generally have extensive property portfolios, both via unlisted (direct property and wholesale unlisted property funds) and listed property (REITs). Typically industry superannuation funds favour indirect property for diversification and stability reasons. Each superannuation fund investment option has different mandates and risk profiles (e.g. conservative, balanced, growth funds, etc.) and the level of property can vary slightly across the investment options. Although, property as an asset class features prominently in most superannuation funds mandates (Newell, 2007).

Reddy (2012) also noted that larger industry-based superannuation funds use direct property more extensively than smaller funds (generally with investments of less than \$1 billion in property) which favour the flexibility and liquidity provided by REITs. Medium sized funds mostly have both direct property and REITs. Direct property exposure for large and medium sized funds is generally in the core property sector typically via unlisted wholesale property funds. Direct property exposure for the smaller

*Asset allocation theory and concepts*

The allocation of investment capital into different asset classes has long been recognised as the greatest single determinant of an investment fund performance. Asset allocation decisions refer to the appropriate asset mix and relative weighting of asset classes in an investment portfolio. Markowitz and subsequent researchers, such as Jack Treynor, William Sharpe and Frank A. Sortino established the field of MPT, the analysis of rational portfolio choices based on efficient use of risk. MPT concepts, like efficient frontier, mean-variance optimisation, Sharpe ratio (risk adjusted return performance) and Sortino ratio to assist investors evaluate the trade-off between risk and return, and offer the means of achieving greater diversification benefits (Maginn *et al.*, 2007; Rowland, 2010; Sharpe *et al.*, 2007).

There are two steps involved in selecting a balanced portfolio; asset allocation (where resources are allocated to various asset classes and sub-classes) and asset selection (where the choice is made on the specific assets to be selected). For fund managers, asset allocation involves calculating the rates of return, standard deviation, and correlation between various asset classes and running these variables through a mean-variance optimisation program to select asset mixes with different risk-reward profiles. The analysis and implementation of the desired asset allocation is guided by but not limited to the institution's goals, history, constraints and industry benchmarks (Darst, 2003; Robinson, 2002).

Balanced investment portfolios generally consists five major components, namely: equities (Australian and international), fixed income (Australian and international), property, alternatives and cash. Managed funds with capital growth mandate generally have higher allocations to equities and property. Funds that aim for more stable returns with limited capital growth generally have higher allocation to bonds and cash. Fund managers often compare the return on their portfolio with asset benchmarks such as recognised market indices. Any over or under performance by the funds can be analysed to ascertain the fund managers success or failure.

**III. Data and methodology**

Asset data for this study covers a 17 year period: 1995-2011, and comprises of 68 quarterly data points. Table III outlines the source of the accumulative benchmark data series.

Table III details the benchmark data series for the selected asset classes. The sourced overseas data was converted to Australian dollars based on the prevailing exchange rate. For the alternative asset class data series, the Australian managed fund industry appears to have a range of benchmark data series which seem incomplete to that included in the alternative asset class. The index is constructed from the commencement of selected Australian data series for infrastructure and utilities, hedge funds (AU), private equity, commodity prices (AU) based on an equal weighted formula.

For the nine asset allocation models, the optimal allocation to the seven asset classes is explained in the introduction. The traditional, optimal, turning point models have set parameters and then the standard MPT approach is applied with the efficient frontier, mean variance optimisation utilising Australian ten year bonds as the risk free rate.

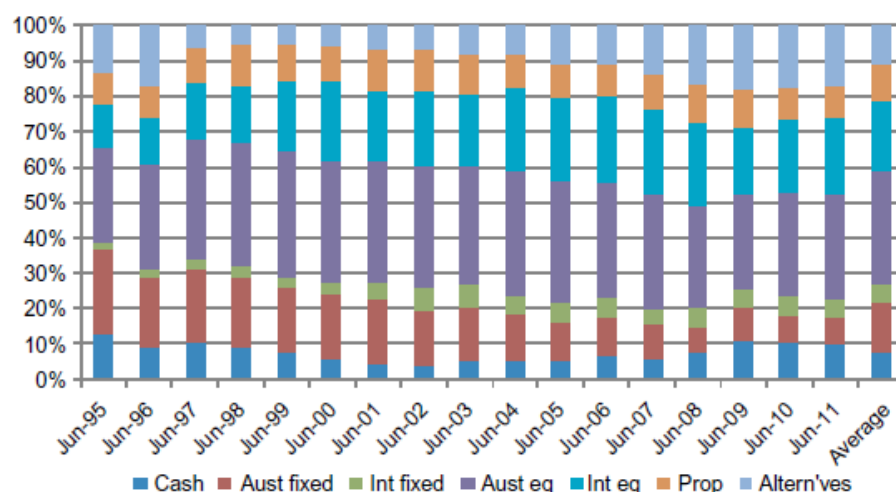


			Industry superannuation funds
Asset class	Representation	Source	469
Cash	Interbank rate	Reserve Bank of Australia	
Australian fixed income (Aust. fixed)	<i>CBA Bond: All Series, All Maturities</i>	Commonwealth Bank of Australia	
International fixed income (int. fixed)	<i>Citigroup World Global Bond Index (local)</i>	Citigroup Inc.	
Australian equities (Aust. eq.)	<i>ASX All Ordinaries Accumulation</i>	Australian Securities Exchange	
International equities (int. eq.)	<i>MSCI WORLD Standard (Large + Mid Cap) Index (AU\$)</i>	Morgan Stanley Capital International World Inc.	
Property			
Direct property (direct prop.)	<i>PCA/IPD Composite Property Index</i>	Investment Property Databank Australia	
Listed property (listed prop.)	<i>S&amp;P/ASX 200 A-REIT Index</i>	Australian Securities Exchange	
Alternatives assets (Altern'ves)	Infrastructure and utilities; hedge funds; private equity; commodity prices	UBS Wealth Management; Dow Jones Credit Suisse; AVCAL & Cambridge Associates; Reserve Bank of Australia	
			<b>Table III.</b> Summary of sourced asset allocation data

The risk, return and correlation measures used by the MPT are ex-post. The key parameters from past market data provide the platform for the analysis of the recorded benchmark industry superannuation fund's strategic allocation against the suitability of different asset allocation models.

The benchmark allocation series data for the industry superannuation balanced fund seven asset classes was sourced from the Rainmaker Group, a leading superannuation service provider in Australia. Figure 3 shows the changes in asset allocation weighting for the industry superannuation default balanced funds.

Figure 3 shows the varying benchmark asset allocation weighting for the industry superannuation balanced funds. The aggregated average over the study period (17 years)



**Figure 3.**  
Industry superannuation  
balanced fund asset  
weights: 1995-2011

was Australian equities 32.2 per cent, international equities 20.4 per cent, Australian fixed income 13.8 per cent, international fixed income 4.7 per cent, alternatives 11.2 per cent, property 10.3 per cent and cash 7.4 per cent. Property allocation includes both direct/unlisted property and listed securitised property (REITs), on average 4.8 and 5.5 per cent, respectively. The range of asset allocation is exhibited in Table IV.

Table IV shows that Australian fixed income had the highest asset allocation range (18.7 per cent), followed by alternatives (17.4 per cent). Allocation to property ranged between 9 and 11 per cent, having peaked at 14.0 per cent in September 1998, which corresponded with the push by REITs to offshore property investment. The lowest allocation to property was recorded in at 8.7 per cent in March 2010. This was during the recent global financial crisis storm that led to major falls in REIT prices and property valuations. The allocation to the alternative asset class has been growing steadily from 1998 to the peak level of 21 per cent in 2009. It now represents the third largest asset group for industry superannuation funds.

#### IV. Results

The results are presented in two parts, looking first at the performance of the defined asset classes, followed by an analysis of the asset allocation models and the roles of property in these asset allocation models. Figure 4 shows the performance of the seven defined asset classes.

Figure 4 shows the quarterly returns for the selected asset classes. It shows evidence of short-term volatility in the performance of asset classes, in particular, the sharp fluctuations in the Australian and international equity markets, compared to the relatively smooth cash and fixed income returns. This is further illustrated by examining the descriptive statistics as shown in Table V.

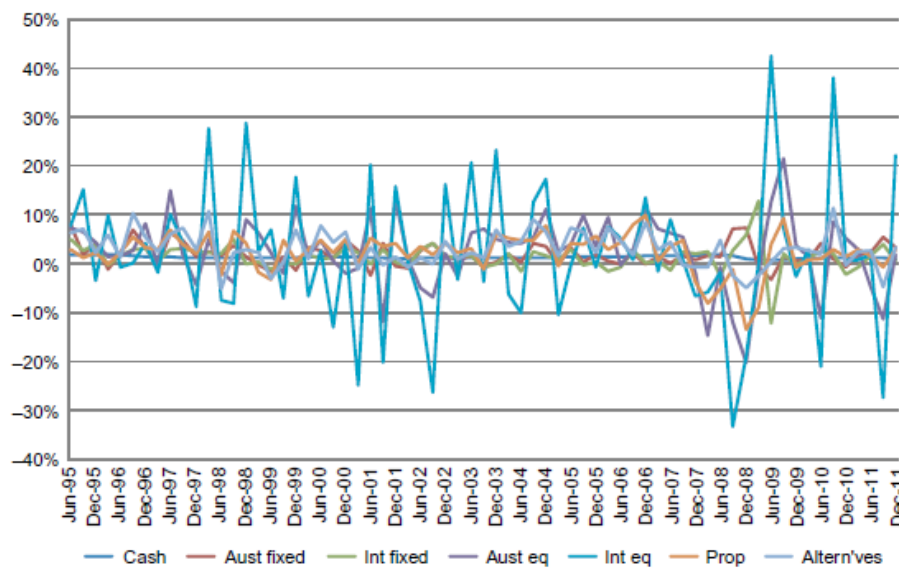
Table V illustrates the quarterly performance of the asset classes. The mean quarterly total return for the seven asset classes ranged between 1.3 and 3.1 per cent (5.4-12.8 per cent annualised). The best performing asset on a risk adjusted basis was alternative asset class with an impressive risk adjusted return (Sharpe ratio) of 0.44. Australian equities, international equities and property also recorded returns of over 2 per cent. Property (excluding alternative asset class) out-performed all other asset classes with a risk adjusted return of 0.21. International equities and Australian equities were the most volatile assets, with a standard deviation of 14.6 and 7.3 per cent, respectively. International fixed income displayed high kurtosis, reflecting a low even return distribution from its mean. Property and fixed income securities returns displayed attractive greater negative skewness.

The performance of the alternative asset class can be explained by the increase in allocation to the underlying alternatives sector assets – specifically private equity,

**Table IV.**  
Industry superannuation  
balanced fund range  
of asset allocations:  
1995-2011

	Aust. eq. (%)	Int. eq. (%)	Prop. (%)	Aust. fixed (%)	Int. fixed (%)	Cash (%)	Altern'ves (%)
Average	32.2	20.4	10.3	13.8	4.7	7.4	11.2
Minimum	24.3	12.0	8.7	5.3	2.0	3.3	3.6
Maximum	37.0	27.6	14.0	24.0	7.9	13.0	21.0
Range	12.7	15.6	5.3	18.7	5.9	9.7	17.4

**Source:** Rainmaker Group (2012)



Source: ASX (2012a, b), Australian Private Equity and Venture Capital Associated Limited & Cambridge Associates (2012), CBA (2012), Citigroup Inc. (2012), Dow Jones Credit Suisse Hedge Index LLC (2012), IPD Australia (2012), MSCI Inc. (2012), RBA (2012) and UBS (2012)

**Figure 4.**  
Asset class quarterly  
performance: 1995-2011

Asset class	Mean return (%)	SD (%)	Risk adjusted return	Kurtosis	Skewness	Annualised return (%)	Annualised SD (%)
Cash	1.32	0.26	-0.45	-0.09	0.28	5.37	0.52
Aust. fixed	1.87	2.35	0.19	0.32	0.55	7.70	4.71
Int. fixed	1.38	2.80	-0.02	10.94	-0.62	5.62	5.60
Aust. eq.	2.43	7.28	0.14	1.24	-0.56	10.07	14.56
Int. eq.	2.10	14.59	0.05	0.70	0.19	8.69	29.17
Prop.	2.29	4.12	0.21	3.16	-1.19	9.50	8.24
Altern'ves	3.06	3.65	0.44	-0.08	-0.01	12.80	7.30

**Table V.**  
Descriptive statistics  
for asset performance:  
quarterly data 1995-2011

infrastructure and commodity investments in recent years. On average, the allocation to alternative assets within the industry superannuation fund portfolio has risen from 8 per cent (prior to 2005) to 15 per cent in 2012, having peaked at 21 per cent in March 2009. Over a period of ten years (2001-2011), the alternative asset class has significantly outperformed all other asset classes with a mean return of 2.5 per cent. The only other asset to have recorded mean return of over 2 per cent during this period was property.

The diverse movements in the asset classes can be further examined by correlation analysis as shown in Table VI.

Table VI illustrates the diversification benefits of the selected asset classes. Asset classes with a strong correlation ( $>0.50$ ) were linked to the same local and overseas asset class (for example Australian and international equities). In addition,

the alternative asset class showed a relatively strong relationship with Australian and international equities ( $>0.50$ ). In part, this may relate to underlying asset classes behind the performance of private equity and hedge funds.

For property, the strong correlation ( $>0.50$ ) with Australian equities would in part relate to the allocation of REITS within the property asset class. REIT short term performance is traditionally linked to the equity market. Likewise, property's strong relationship to alternative asset class can be due to similar underlying legal structures of assets such as infrastructure, providing a continuity of income.

The performance of industry superannuation funds is also largely influenced by its asset allocation strategy. Table VII details the performance of the nine asset allocation models developed for this research.

Table VII illustrates the quarterly performance of the various asset allocation strategies. Apart from the buy and hold and equal weights strategies, each asset allocation strategy has an allocation range that can change over time. Tactical (weighted constraints) asset allocation strategy produced the highest mean total return (4.0 per cent), followed by the turning points strategy (3.0 per cent). Mean total returns for all other strategies were similar (around the low 2 per cent mark). Traditional investment strategy, consisting of equities, fixed income and cash recorded the highest standard deviation (6.2 per cent). Tactical (no constraints) strategy was the least volatile investment option with a risk level of less than 1.0 per cent. The result is expected given that TAA (no constraints) strategy is based on risk parity model which over-weights

**Table VI.**  
Correlation matrix: asset  
benchmark returns:  
quarterly data 1995-2011

	Cash	Aust. fixed	Int. fixed	Aust. eq.	Int. eq.	Prop.	Altern'ves
Cash	1.00						
Aust. fixed	0.28	1.00					
Int. fixed	0.10	0.55	1.00				
Aust. eq.	-0.09	-0.38	-0.37	1.00			
Int. eq.	-0.16	-0.39	-0.38	0.69	1.00		
Prop.	-0.02	0.01	-0.22	0.58	0.37	1.00	
Altern'ves	0.24	0.05	-0.10	0.52	0.55	0.55	1.00

**Table VII.**  
Industry fund  
asset allocation  
strategies: descriptive  
statistics, quarterly  
performance data  
1995-2011

Asset allocation strategy	Mean return (%)	SD (%)	Risk adjusted return	Annualised return (%)	Annualised SD (%)
Strategic – SAA	2.19	5.25	0.14	9.04	10.50
Buy and hold	2.15	3.77	0.19	8.86	7.55
Traditional	2.05	6.15	0.10	8.45	12.30
Optimal – no constraints	2.19	2.86	0.26	9.04	5.72
Optimal – weighted constraints	2.17	3.98	0.18	8.96	7.96
Turning points	2.96	5.21	0.29	12.38	10.42
Equal weights	2.04	3.42	0.18	8.40	6.84
Tactical – TAA (no constraints)	2.25	0.95	0.86	8.98	1.90
Tactical – TAA weighted constraints	4.02	5.30	0.49	17.08	10.60



assets with low volatility such as cash, fixed income and property and under-weights assets with high volatility such as equities.

Tactical (no constraints) and tactical (weighted constraints) recorded high risk adjusted return profiles, 0.86 and 0.49, respectively. The worst performing asset allocation option on a risk adjusted return basis was traditional asset allocation strategy. With the exception of traditional strategy, all other asset allocation strategies have out-performed the industry superannuation fund strategic or SAA asset allocation option.

Table VIII details the maximum and minimum weightings for the selected asset classes within the nine asset allocation models.

Table VIII illustrates that the minimum and maximum allocation for different asset class varies within each asset allocation strategy (except for equal weights). The highest level of allocation was to cash at 94 per cent in the tactical (no constraints) and optimal (no constraints) asset allocation strategies. The other assets to attain over 50 per cent allocation at some point in time during the 17 year sample period were alternatives (85 per cent), property (75 per cent), international equities (62 per cent), international fixed (61 per cent) and Australian equities (52 per cent). All asset classes recorded a minimum asset allocation of 0 per cent at some point in time during the analysis period, mainly in the tactical (no constraints) and optimal (no constraints) asset allocation strategies. Both tactical (no constraints) and optimal (no constraints) asset allocation strategies work on the premise of allocating most weighting to assets that display the lowest volatility in performance.

The average asset weighting range across all strategies were cash (5-34 per cent), Australian fixed (6-34 per cent), international fixed (2-24 per cent), Australian equities (16-35 per cent), international equities (8-28 per cent), alternatives (3-28 per cent) and property (5-23 per cent). Australian equities dominate all other asset classes in terms of the level of average minimum and maximum asset weighting.

Excluding optimal and tactical unconstrained strategies, the allocation range for assets were cash (6-15 per cent), Australian fixed (9-22 per cent), international fixed (3-11 per cent), Australian equities (23-34 per cent), international equities (12-25 per cent), alternatives (5-16 per cent) and property (5-13 per cent). This is comparable to the industry superannuation fund conventional SAA approach guided by the weight parameters in Table I.

In the context of property assets, the results illustrate that industry fund balanced investment option weighting to property assets can range within 5-23 per cent based on the alternative asset models. This analysis provides evidence that allocation to property assets can be higher than the current average 10 per cent reported for the Australian market by APRA (2013) and Rainmaker Group (2012) and in line with future market predictions of 25 per cent (JP Morgan Asset Management, 2012).

Furthermore, the maximum allocation to the property and alternatives asset classes appeared similar for unconstrained and weighted constrained asset models. For example, optimal – no constraint maximum was property 75 per cent and alternatives 85 per cent. Likewise, optimal – weighted constraint maximum was property 20 per cent and alternatives 25 per cent. On evidence that these occurred at the same time, it would suggest that the strong correlation readings between property and the alternative asset class would lead to property and assets such as infrastructure being considered within a single asset class portfolio. Findings from an earlier survey of Australian fund managers by Reddy (2012) highlighted that some funds now categorise direct property in the unlisted

**Table VIII.**  
Asset allocation  
strategies: maximum and  
minimum weightings

Asset allocation strategy	Cash		Aust. fixed		Int. fixed		Aust. eq.		Int. eq.		Prop.		Altern'ves	
	Min. (%)	Max. (%)	Min. (%)	Max. (%)	Min. (%)	Max. (%)	Min. (%)	Max. (%)	Min. (%)	Max. (%)	Min. (%)	Max. (%)	Min. (%)	Max. (%)
Strategic – SAA	3	13	5	24	2	8	24	37	12	28	9	14	4	21
Buy and hold	13	13	24	24	2	2	27	27	12	12	9	9	13	13
Traditional	4	17	7	31	2	10	35	44	15	38	0	0	0	0
Optimal – no constraints	0	94	0	32	0	61	0	52	0	62	0	75	0	85
Optimal – weight const.	0	15	0	20	0	15	20	40	10	30	0	20	0	25
Turning points	0	32	0	51	0	20	0	52	0	33	11	35	0	27
Equal weights	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Tactical – TAA (no constraints)	9	94	0	86	0	71	0	9	0	6	0	22	0	44
Tactical – TAA (weight constraints)	0	15	0	20	0	15	20	40	10	30	0	20	0	25
Average	5	34	6	34	2	24	16	35	8	28	5	23	3	28

**Notes:** With the exception of the buy and hold and equal weights strategies, all other asset allocation models were updated on a quarterly basis; the minimum and maximum weighting for each asset class represent allocations ascertained during modelling at different time period during the 17 year study period (June 1995-December 2011)

“real asset” band together with infrastructure assets. The analysis undertaken within this research paper substantiates the survey findings.

The level of exposure to property also has an influence on the performance of the industry superannuation funds sector. Table IX details the performance of the asset allocation models by including and excluding property in their portfolio.

Table IX results overall demonstrate that the inclusion of property assets within a multi-asset portfolio improves returns and provides stability by reducing the overall portfolio risk. This is evident both with conventional asset allocation models such as strategic – SAA, buy and hold, traditional investment strategies and more active asset allocation strategies. On a risk adjusted return basis, property asset when included in a multi-asset portfolio improves the portfolio performance by 1.5-28.1 per cent. Except for the tactical (no constraints) asset allocation strategy, all property inclusive strategies demonstrate reduced risk level (0.5-10.9 per cent) when compared to property excluded portfolios. Tactical – TAA (no constraints) is the only asset allocation strategy that illustrated higher portfolio risk with the inclusion of property. This is mainly due to the fact that tactical – TAA (no constraints) is based on the risk parity model which benefits from pre-dominantly allocating higher portfolio weights to least volatile asset, which in this research analysis was mainly cash.

Overall, the analysis of the asset allocation models, with and without property assets suggests that the inclusion of property provides a substantial portfolio risk reduction even with limited risk adjusted return difference of 1.5 per cent (turning points strategy). The turning points portfolio allocation to property ranged from 11 to 35 per cent. This high allocation suggests that property provides strong risk reduction features when compared to alternative asset classes. The results overall conform with earlier studies (Bajtelsmit and Worzala, 1997; Craft, 2001; Hoesli *et al.*, 2003) which have argued that that allocation to property should be in the range of 10-30 per cent and that inclusion of property leads to a substantial improvement in portfolio performance.

To industry practitioners operating in the competitive superannuation environment, this research should attract fund managers to explore alternative asset allocation models where risk adjusted returns can be improved compared to the common strategic allocation approach. Based on the alternative asset allocation models, the inclusion of a property asset class offers an improved performance profile with property allocations moving above the current 10 per cent average.

## V. Conclusion

The research examined the role of property in the Australian industry superannuation fund balanced investment option by constructing and critically evaluating a variety of passive and active asset allocation models against the fund's conventional SAA technique. The analysis is undertaken over a 17 year timeframe (1995-2011) using ex-post quarterly total return asset benchmark data and the industry superannuation fund asset allocation data.

The performance analysis over the 17 year period show that property provided the second highest risk-adjusted return profile (0.21) behind alternative assets (0.44). The various asset allocation strategies recorded quarterly mean total returns of 2.05-2.96 per cent, apart from tactical-weight constraints strategy which produced the highest mean total return (4.0 per cent). The tactical strategy generally overweight best

**Table IX.**  
Industry fund descriptive  
statistics: property  
included and excluded  
portfolio performance  
(1995-2011)

Investment strategies	Property inclusive portfolio performance				Property excluded portfolio performance				Benefits of including property			
	Mean return (%)	SD (%)	Risk adjusted return (%)	Annualised return (%)	Annualised SD (%)	Mean return (%)	SD (%)	Risk adjusted return (%)	Annualised SD (%)	Risk adjusted return difference (%)	Portfolio risk reduction (%)	
Strategic –												
SAA	2.19	5.25	0.14	9.04	10.50	2.17	5.60	0.13	8.98	11.20	8.7	6.6
Buy and hold	2.15	3.77	0.19	8.86	7.55	2.15	3.88	0.18	8.87	7.75	2.7	2.7
Traditional <sup>a</sup>	2.07	5.69	0.11	8.55	11.38	2.05	6.15	0.10	8.45	12.30	12.1	8.1
Optimal – no constraints	2.19	2.86	0.26	9.04	5.72	2.16	3.13	0.23	8.93	6.27	13.3	9.6
Optimal – weight constraints	2.17	3.98	0.18	8.96	7.96	2.15	4.34	0.17	8.89	8.68	11.7	8.9
Turning points	2.96	5.21	0.29	12.38	10.42	3.10	5.78	0.29	12.99	11.56	1.5	10.9
Equal weights	2.04	3.42	0.18	8.40	6.84	2.03	3.52	0.17	8.35	7.04	5.2	3.0
Tactical –												
TAA (no constraints)	2.25	0.95	0.86	8.98	1.90	1.95	0.77	0.67	7.79	1.54	28.1	–18.9
Tactical –												
TAA (weight constraints)	4.02	5.30	0.49	17.08	10.60	3.85	5.33	0.45	16.30	10.66	7.7	0.5

**Note:** <sup>a</sup>Property included with equities, fixed income and cash

**Note:** <sup>a</sup>Property included with equities, fixed income and cash



performing assets to benefit from short term market movements. The process requires considerable manager skills and can involve high operational costs and portfolio volatility. Interestingly, all asset allocation models, except for the traditional approach, out-performed the industry superannuation fund conventional SAA technique.

Furthermore, the empirical results show that there is scope to increase the industry fund property allocation level to 23 per cent. This high allocation is in line with JP Morgan Asset Management (2012) prediction of real assets occupying 25 per cent of institutional portfolios in the next decade. Depending on the asset allocation model, property when included within a multi-asset portfolio improves the portfolio risk-adjusted return profile by 1.5-28.1 per cent.

In conclusion, the research has the potential to change how the Australian fund managers view property asset allocation. In highlighting the reliable returns and a relatively low standard deviations performance of property in asset allocation models, there is a case to increase property allocation above the current 10 per cent exposure for the popular SAA model. The continued reeling effects of the global financial crisis on the equities and bonds market mean that fund managers seeking improved risk-adjusted return profile have the scope to increase allocation to stable investment sectors such as property. In evaluating this option, further research needs to examine the components of the property asset class, listed property (REITs) and direct property (including unlisted wholesale property) within different asset allocation strategies and their impact on portfolio performance.

## References

- ABS (2012), *Australian National Accounts: National Income, Expenditure and Product 5206.0, Table I: Key National Accounts Aggregates*, Australian Bureau of Statistics, Canberra, release date 5 September 2012, available at: [www.abs.gov.au](http://www.abs.gov.au) (accessed 29 September 2012).
- Allen Consulting (2011), *Enhancing Financial Stability and Economic Growth: The Contribution of Superannuation*, The Allen Consulting Group, Melbourne.
- Anson, M. (2004), "Strategic versus tactical asset allocation", *The Journal of Portfolio Management*, Winter edition, pp. 8-22.
- APRA (2007), *Annual Superannuation Bulletin June 2006*, February edition, Australian Prudential Regulation Authority, Sydney.
- APRA (2013), *Annual Superannuation Bulletin June 2012*, January edition, Australian Prudential Regulation Authority, Sydney.
- ASX (2012a), *S&P/ASX All Ordinaries Accumulation Index*, Australian Stock Exchange, Sydney, available at: <http://au.spindices.com/indices/equity/all-ordinaries> (accessed 23 October 2012).
- ASX (2012b), *S&P/ASX 200 A-REIT Index*, Australian Stock Exchange, Sydney, available at: <http://au.spindices.com/indices/equity/sp-asx-200-a-reit-sector> (accessed 23 October 2012).
- Austrade (2010a), *Alternative Investment in Australia*, Australian Trade Commission Financial Services Division, Canberra.
- Austrade (2010b), *Investment Management Industry in Australia*, Australian Trade Commission Financial Services Division, Canberra.
- Australian Private Equity and Venture Capital Associated Limited & Cambridge Associates (2012), *Cambridge Associates LLC Australia/AVCAL Index Returns*, Australian Private Equity and Venture Capital Associated Limited & Cambridge Associates, Sydney, available at: [www.avcal.com.au](http://www.avcal.com.au) (accessed 23 June 2012).

- Bajtelsmit, V.L. and Worzala, E.M. (1997), "Real estate asset allocation and the decision-making framework used by pension fund managers", *Journal of Real Estate Portfolio Management*, Vol. 3 No. 1, pp. 47-56.
- Bernstein, P. (2007), *Capital Ideas Evolving*, Wiley, Hoboken, NJ.
- Bond, S.A., Hwang, S., Mitchell, P. and Satchell, S.S. (2007), *Asset Allocation in the Modern World*, Investment Property Forum, London.
- CBA (2012), *CBA Bond: All Series, All Maturities*, Commonwealth Bank of Australia, Sydney.
- Citigroup Inc. (2012), *Citigroup World Global Bond Index*, Citigroup Global Fixed-Income Index Group, Sydney, available at: [www.citigroup.com](http://www.citigroup.com) (accessed 21 September 2012).
- Craft, T.M. (2001), "The role of private and public real estate in pension plan portfolio allocation choices", *Journal of Real Estate Portfolio Management*, Vol. 7 No. 1, pp. 17-23.
- Darst, D.M. (2003), *The Art of Asset Allocation: Asset Allocation Principles and Investment Strategies for Any Market*, McGraw-Hill, New York, NY.
- Deloitte, T.T. (2009), *Dynamics of the Australian Superannuation System: The Next 20 Years*, Deloitte Actuaries & Consultants, Melbourne.
- Dow Jones Credit Suisse Hedge Index LLC (2012), *Dow Jones Credit Suisse Core Hedge Fund Indices*, Dow Jones Credit Suisse Hedge Index LLC, New York, NY, available at: [www.hedgeindex.com](http://www.hedgeindex.com) (accessed 23 June 2012).
- Faber, M.T. (2007), "A quantitative approach to tactical asset allocation", *The Journal of Wealth Management*, Vol. 9 No. 4, pp. 69-79.
- Fabozzi, F.J. and Markowitz, H.M. (Eds) (2011), *The Theory and Practice of Investment Management: Asset Allocation, Valuation, Portfolio Construction and Strategies*, 2nd ed., Wiley, Hoboken, NJ.
- Faff, R., Gallagher, D.R. and Wu, E. (2005), "Tactical asset allocation: Australian evidence", *Australian Journal of Management*, Vol. 30 No. 2, pp. 261-282.
- Gray, W.R., Wang, T., Zhang, S., Kanner, C. and Gray, C. (2012), *A Horse Race Between Tactical Asset Allocation Model*, Empiritrage LLC, Cleveland, OH, July.
- Hauss, H. (2004), "The role of institutional property investments in the global asset allocation process", *Australian Property Journal*, August, pp. 198-205.
- Higgins, D. (2007), "Placing commercial property in the Australian capital markets", RICS Research Paper Series, Vol. 7 No. 12, RICS, London.
- Hoesli, M., Lekander, J. and Witkiewicz, W. (2003), *International Evidence on Real Estate as a Portfolio Diversifier*, International Centre for Financial Asset Management and Engineering, Geneva.
- IPD (2012), *PCA/IPD Australia Quarterly Composite Property Index*, Investment Property Databank Australia and New Zealand, Sydney, available at: [www.ipd.com](http://www.ipd.com) (accessed 21 September 2012).
- JP Morgan Asset Management (2012), *The Realization: A New World – A New Normal – A Tectonic Shift*, J.P. Morgan Chase & Co., New York, NY.
- Lee, S. (2011), "Risk-based asset allocation: a new answer to an old question", *The Journal of Portfolio Management*, Vol. 37 No. 4, pp. 11-28.
- Maginn, J.L., Tuttle, D.L., McLeavey, D.W. and Pinto, J.E. (Eds) (2007), *Managing Investment Portfolios: A Dynamic Process*, 3rd ed., Wiley, Hoboken, NJ.
- MSCI Inc. (2012), *MSCI WORLD Standard (Large+Mid Cap) Index*, Morgan Stanley Capital International World (MSCI) Index Performance, Sydney, available at: [www.msci.com](http://www.msci.com) (accessed 17 October 2012).

- Newell, G. (2007), "The significance of property in industry-based superannuation funds in Australia", *Australian and New Zealand Property Journal*, Vol. 1 No. 1, pp. 34-43.
- Newell, G. (2008), "The significance of property in superannuation funds", *Australian and New Zealand Property Journal*, Vol. 1 No. 8, pp. 670-677.
- Parker, D. (2012), *Global Real Estate Investment Trusts: People, Process and Management*, Wiley, Chichester.
- PCA (2011), *Australian Property Investment Industry: Autumn 2011*, Property Council of Australia, Sydney.
- Rainmaker Group (2012), *Australian Superannuation Industry Information: Asset Class Weights June 1995 to December 2011*, Rainmaker Group, Sydney.
- RBA (2012), *Financial and Economic, Tables Series F & G*, Reserve Bank of Australia, Sydney, Release Date June-August 2012, available at: [www.rba.gov.au](http://www.rba.gov.au) (accessed 31 August 2012).
- Reddy, W. (2012), "Determining the current optimal allocation to property: a study of Australian fund managers", *Proceedings of the 18th Annual Pacific Rim Real Estate Society Conference, Adelaide, Australia, 15-18 January*.
- Robinson, J. (2002), "Asset allocation in balanced portfolios: a note on the place of property", *Proceedings of the 8th Annual Pacific RIM Real Estate Society Conference, Christchurch, New Zealand, 20-22 January*.
- Rowland, P.J. (2010), *Australian Property Investments and Financing*, Thomson Reuters (Professional Australia) Limited, Pyrmont.
- Schmidt, M. (2012), "Buy-and-hold investing vs market timing, investopedia US", available at: [www.investopedia.com/articles/stocks/08/passive-active-investing.asp#ixzz2ABKhQknk](http://www.investopedia.com/articles/stocks/08/passive-active-investing.asp#ixzz2ABKhQknk) (accessed 27 October 2012).
- Sharpe, W.F., Chen, P., Pinto, J.E. and McLeavey, D.W. (2007), "Asset allocation", in Maginn, J.L., Tuttle, D.L., McLeavey, D.W. and Pinto, J.E. (Eds), *Managing Investment Portfolios: A Dynamic Process*, Wiley, New York, NY, pp. 231-327.
- Stockton, K.A. and Shtekhman, A. (2010), *A Primer on Tactical Asset Allocation Strategy Evaluation*, Vanguard Group Inc., Valley Forge, PA.
- UBS (2012), *UBS Australia Infrastructure and Utilities Accumulation Index*, UBS Wealth Management, Sydney, available at: [www.ubs.com](http://www.ubs.com) (accessed 26 June 2012).
- Wang, P. and Kochard, L. (2011), *Using a Z-score Approach to Combine Value and Momentum in Tactical Asset Allocation*, working paper, Georgetown University, Washington, DC.

#### Further reading

- Gitman, L.J., Joehnk, M.D., Juchau, R.H., Wheldon, B.J. and Wright, S.J. (2004), *Fundamentals of Investing*, Australian edition 2, Pearson Education Australia, Frenchs Forest.
- Markowitz, H. (1952), "Portfolio selection", *The Journal of Finance*, Vol. 7 No. 1, pp. 77-91.

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# **SUPERANNUATION FUNDS AND PROPERTY ALLOCATION STRATEGIES: WHAT IS THE MIX? DIRECT PROPERTY, LISTED PROPERTY OR BOTH?**

**WEJENDRA REDDY**  
RMIT University

## **ABSTRACT**

*Property as an asset class plays an important role in Australian superannuation fund investment portfolios. This research examines the diversification benefits of direct and listed property in a mixed asset portfolio using nine different asset allocation models, including the industry superannuation fund conventional strategic investment approach. Over a 17-year sample period (1995 to 2011) direct property significantly outperforms all other asset classes in the industry fund balanced investment option. In addition, direct property figures more prominently than listed property across all investment strategies. Although statistically small, the contribution of listed property cannot be ignored as several strategies that included both property assets demonstrated improved performance. On looking at specific time periods, an average mixed allocation of direct property (16%) and listed property (5%) was beneficial across all strategies. Excluding unconstrained investment strategies, an increased 17% allocation to property (12% direct property and 5% listed property) is recommended for the industry fund balanced portfolio. This high allocation is backed by improved risk-adjusted return performance.*

**Keywords:** property investment, asset allocation, diversification, portfolio construction.

## **INTRODUCTION**

Property has traditionally been regarded as a key investment asset class for the A\$268 billion industry superannuation funds. Industry superannuation funds, designed for employees working in the same industry, are the largest not-for-profit (or institutional) superannuation investment option in Australia. Approximately 67% of their assets are held in the balanced or default investment option which consists of equities (Australian and International), fixed income (Australian and International), property, alternatives and cash (APRA 2013, p50). This research paper examines the performance and the asset allocation components of different property assets in the industry fund balanced investment option using nine different asset allocation techniques, including the industry fund conventional strategic approach.

Past asset allocation studies (Bajtelsmit and Worzala 1995; Brown and Schuck 1996; Hoesli, Lekander and Witkiewicz 2003) have invariably concluded that the optimal weight which should be allocated to property in mixed-asset portfolios is in the 10-30% range and the inclusion of property leads to a 15-25% reduction in the portfolio risk. In reality, Australian superannuation fund allocation to property has historically averaged 8% to 10%. Newell (2008) notes that institutional investors normally justified property's low allocation by small market size and illiquidity constraints. In addition, Reddy (2012) identified management fees, limits on listed/ unlisted split, declining market conditions, entry restrictions and time and staff limitations as other institutional constraints to optimal property allocation. Regardless of these constraints, fund managers have used their property allocations to improve portfolio performance by adding an uncorrelated asset class.

Combined with its comparatively good returns, real estate's low volatility (even after adjusting for the effects of valuation smoothing) emphasise its attractive risk and return characteristics to investors.

The recent poor performance of the equities markets has seen Australian fund managers place greater emphasis on stable investment sectors such as property to achieve improved risk-adjusted return performance. Leading industry superannuation fund managers Australian Super and Unisuper have recently announced increased appetite for property assets (Friemann 2012, p50; Hughes, p47). In addition, market reports by JP Morgan Asset Management (2012) and Jones Lang LaSalle (2012) anticipate superannuation real estate asset allocation to increase to 25% in the next decade as fund managers re-profile investment portfolios following the 2007 global financial crisis. The need to generate continued retirement income for Australia's growing and ageing population means that allocation to property assets will remain important for the Australian superannuation sector's growth in future.

Reddy (2012) in a recent survey of Australian fund managers and asset consultants identified that the current property allocation trend is to diversify away from REITs with higher allocation to direct/unlisted property funds due to the stability of income. The allocation of capital to different property assets provides several challenges for fund managers. Although both direct and listed property investments are backed by the same real estate physical assets, their return and risk profile are distinct. Direct property is the traditional form of property which is tangible and exposes investors to the physical real estate assets. Although direct property provides an attractive mix of attributes (inflation-hedging, relative stability, bond-like income, global exposure and improved risk-adjusted returns), there are numerous problems associated with investing directly (higher investment and management cost, appraisal-smoothing vs transaction-based pricing, illiquidity and lag reaction to market information). Therefore, institutional investors generally prefer to use indirect property such as real estate investment trusts (REITs) in conjunction with, or in lieu of, investments in direct property. Indirect property such as REITs were designed to provide a more liquid, easily tradable and cost effective way to gain exposure to commercial real estate for institutional and retail investors (De Francesco 2005; Higgins and Ng 2009).

	<i>Public Markets</i>	<i>Private Markets</i>
Equity Assets	Shares <ul style="list-style-type: none"> <li>- A-REITs</li> </ul>	Private Equities <ul style="list-style-type: none"> <li>- Unlisted Property (wholesale property trusts and syndicates)</li> </ul>
Debt Assets	Traded Debt Securities <ul style="list-style-type: none"> <li>- Commercial mortgage backed securities</li> <li>- Property trust bonds</li> </ul>	Bank Loans <ul style="list-style-type: none"> <li>- Whole commercial property mortgages</li> </ul>

#### Four Quadrant Property Investment Product Markets

Source: Higgins 2007, p.13

Table 1



Higgins (2007) used the four quadrant investment model to define the Australian property market. Table 1 provides details of the four quadrant Australian property investment model and illustrates that property investment products can offer different risk and return profiles and deliver different diversification benefits. For the purpose of this research paper, direct property is a representation of investments in direct commercial property assets and unlisted property funds. Listed property is a representation of the Australian REITs.

Newell (2006) found that while direct property is the underlying asset in all REITs, property was only a small contributor to A-REITs performance. The returns of direct property are underpinned on fundamental macroeconomic factors such as employment growth and retail trade. While A-REITs returns are mainly driven by financial and capital market variables and stock market sentiment. The general consensus is that REITs are not a surrogate for the ownership of direct property over the short to medium term, rather more like common stocks than property. Therefore, the co-integration of direct property and A-REITs is expected to be low in the short term but returns are expected to display convergence in the long-run.

Reddy (2012) and Worzala and Bajtelsmit (1997) using industry surveys found that a significant number of institutions classified REITs within the equities portfolio. In addition, Reddy (2012) identified that some fund managers allocated alternative assets in existing real estate portfolios.

This research will investigate the above issues by evaluating the diversification benefits and performance matrix for direct property and listed property assets within the setting of two asset and multi-asset portfolios.

The allocation of resources between different asset classes is based on set modelling parameters that follow modern portfolio theory (MPT) methodology. Industry funds start their asset allocation process by setting long-term investment objectives and guidelines, referred to as the strategic asset allocation (SAA) policy. Fund managers (mainly active managers) attempt to earn additional return above the SAA policy by altering the asset class exposures over time, a process termed as tactical asset allocation strategy or TAA (Fabozzi and Markowitz 2011; Sharpe et al 2007).

MacKinnon and Al Zaman (2009) identified that there is a need to examine the optimal holdings for direct and listed property assets within more dynamic portfolios when the asset weighting can be continuously rebalanced. Reddy (2012) in a survey of Australian fund managers and asset consultants identified that the SAA is the dominant asset allocation model used in the industry. The study also identified that, due to the continued uncertain investment markets, some Australian fund managers are increasingly changing to shorter term strategies such as the TAA. In addition to the industry fund conventional SAA model, Reddy et al (2013) identified a series of eight alternative investment strategies to determine the optimal allocation to property assets, detailed in Table 2.

Asset Allocation Strategies	Model Characteristics	Transaction Costs	Management Costs	Liquidity Benefits	Default Risk
Strategic	Industry fund conventional long term strategy.	Medium	Medium	Medium	Low
Buy and Hold	Asset weighting remains constant for the investment horizon.	Low	Low	High	Low
Traditional*	Allocation restricted to equities, bonds and cash.	Low	Low	High	Medium
Optimal – No constraints	Mean-variance optimization with no asset weight constraints.	High	Medium	Medium	High
Optimal – Weighted constraints	Mean-variance optimization with pre-defined weight parameters.	High	Medium	Medium	Medium
Turning Points	Allocation based on cyclical movement of GDP.	High	High	Low	High
Equal Weighted	Equal weighting to all assets.	Low	Low	Medium	Low
Tactical – No constraints	Short term asset rebalancing with no asset weight constraints.	High	High	Low	High
Tactical – Weighted constraints	Short term asset rebalancing with pre-defined weight parameters.	High	High	Medium	Medium

\*Note for the purpose of this research, property assets are included in the Traditional portfolio.

### Nine Asset Allocation Models: Key Characteristics and Operational Features

Source: Reddy et al (2013)

Table 2

The Buy and Hold and Equal Weights strategies are passive techniques. The Optimal strategies seek the highest risk adjusted returns, a technique known in the field of MPT as Markowitz mean-variance portfolio optimization. The Traditional strategy in this research also includes property assets. The Turning Points allocation is based on the cyclical movement of GDP. The Strategic allocation is a representation of an industry fund conventional asset allocation model. The Tactical strategies are based on a risk parity and momentum investment technique. The Traditional, Buy and Hold and Equal Weights strategies are less management intensive with low transaction and medium to high liquidity benefits. Most of the active asset allocation techniques encompass medium to high transaction and management costs and generally offer low to medium liquidity benefits. The default risk assesses if certain asset allocation models have high exposure to a specific asset class. The Optimal-No Constraints and Tactical-No Constraints models overweight assets with low variance



and thus involve high default risk. Although consideration of operational features are important, industry funds are primarily measured on performance.

In addition to the SAA policies, industry superannuation funds also formulate a range of permissible investable asset weights as a primary risk management tool. Table 3 illustrates the assumed pre-determined weight constraints.

<i>Asset Class</i>	<i>Minimum Weight</i>	<i>Maximum Weight</i>
Australian Equities	20%	40%
International Equities	10%	30%
Direct Property	0%	20%
Listed Property	0%	20%
Australian Fixed	0%	20%
International Fixed	0%	15%
Cash	0%	15%
Alternatives	0%	25%

**Industry Superannuation Funds Asset Weight Parameters: December 2011**

Source: Author

**Table 3**

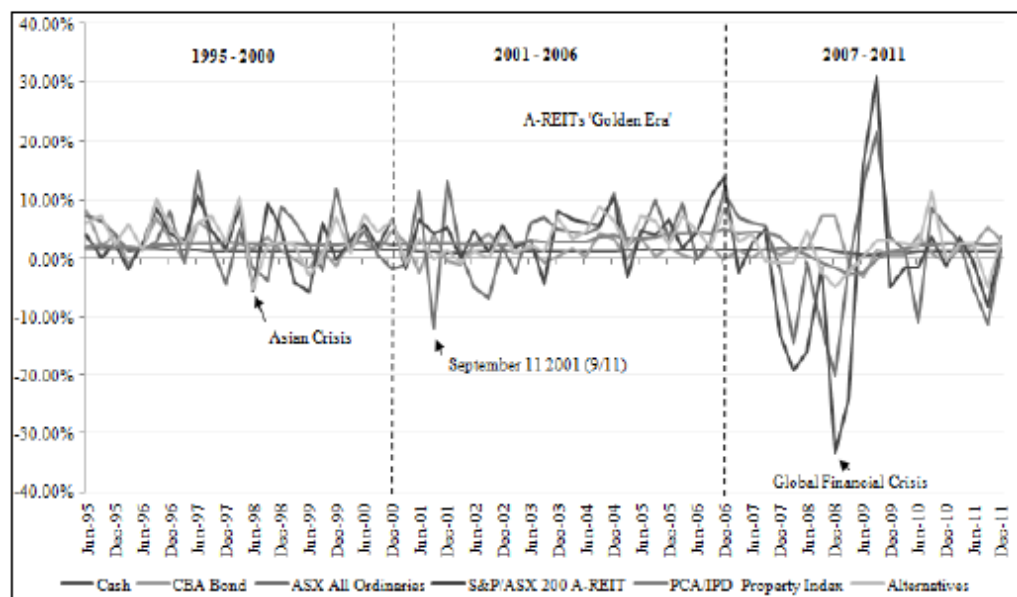
Table 3 illustrates that industry funds place high weighting on the equity markets. The property allocation range is set as 0% to 20%. This information is prepared based on consensus data from six leading Australian industry superannuation funds with A\$146 billion of funds under management. Except for the Optimal-No Constraints and Tactical-No Constraints investment techniques, all strategies are modelled within the above pre-defined asset weight parameters.

The following sections include: section two which provides a literature review; section three details the historical performance of industry superannuation fund balanced investment option asset classes and the associated research methodology; section four provides the empirical research findings; and the last section provides the research conclusions.

## **LITERATURE REVIEW**

### **Overview of Australian Property Assets**

Institutional investors in Australia generally gain allocation to property assets by investing in property funds and via mandates or partnership with other wholesale managed funds. Fund managers have access to more than 1,000 different property funds including listed property (A-REITs) and unlisted property such as wholesale property funds, property syndicates and retail property funds. The largest is the A-REITs sector, which represent 48% of the Australian A\$290 billion property market, followed by unlisted wholesale funds (33%). A-REITs are listed and traded on the Australian Stock Exchange (ASX). Unlisted property funds are traded through the manager on the private market and are designed as open or closed ended vehicles. Compared to A-REITs, unlisted property funds and property syndicates have a total return focus and offer lower investment risk profile (PCA 2011, p6; Higgins 2010; Parker 2012).



**Australian Market Asset Performance: Quarterly Data (June 1995: December 2011)**

Source: Author

**Figure 1**

Figure 1 shows the Australian assets historical performance from June 1995 to December 2011 and illustrates that the A-REITs and the Australian equities markets display significant variance compared to the more stable investment sectors such as direct property, cash and Australian fixed income. At the height of the recent global financial crisis (March 2009), A-REITs market capitalisation declined by 70% to approximately A\$47 billion from a peak of approximately A\$148 billion in August 2007. Unlisted wholesale property funds, a better representation of direct property, declined from A\$78 billion in 2008 to \$61 billion in 2009 (PCA 2011, p8; Parker 2013, p2).

The more severe collapse in the A-REITs sector has been attributed to structural alteration in recent years, including increased gearing levels, higher exposure to offshore property assets, diversification in other activities such funds management and property development which has given rise to stapled REITs (De Francesco and Hartigan 2009; Higgins and Ng 2009; Newell 2006).

#### **Direct Versus Listed Property Asset Allocation**

Markowitz (1952) and subsequent researchers, such as Jack Treynor, William Sharpe and Frank A. Sortino established the field of MPT, the analysis of rational portfolio choices based on efficient use of risk. MPT concepts, like Efficient Frontier, Mean-Variance Optimization and Sharpe Ratio (risk adjusted return performance) assist investors evaluate the trade-off between risk and return and achieve greater diversification benefits (Fabozzi et al 2012).

Geltner, Rodriguez and O'Conner (1995) found that although both listed and direct property are essentially similar neither form of property is a perfect substitute for the other in a portfolio. Other

studies have found that the inclusion of both direct and listed property within a multi-asset portfolio is regarded as beneficial and can lead to improved portfolio performance. In addition, timing may be an important factor in choosing between direct and securitised property, that is, there will be certain times when it is better to buy (or sell) one form of property over the other (Clayton and MacKinnon 2003; Lee and Stevenson 2005; Mueller and Mueller 2003; Yunus, Hansz and Kennedy 2012).

Numerous studies conclude that the Australian direct property and A-REITs markets move in counter-cyclical nature in the short term but show convergence in the long-run (CFS 2008; De Francesco and Hartigan 2009; Newell 2008; Radanovic 2010). Despite the lack of short-term co-integration there is evidence of a common 'real estate factor' driving both property markets. However, the consensus generally is that the relationship between listed property and direct property is considerably stronger when a lead in REIT returns is considered (Brounen and Eichholtz 2003; Giliberto 1990; Hoesli and Oikarinen 2012). These studies found that whilst direct and listed property markets are closely linked, 'real estate shocks' take place first in the REIT market after which the direct market adjusts to these shocks.

Chiang and Lee (2007), MacKinnon and Al Zaman (2009), Pagliari, Scherer and Monopoli (2005) and Seiler, Webb and Myer (2001) found that when both direct property and listed property are available as asset classes, REITs play little or no role in optimal portfolios. In addition, MacKinnon and Al Zaman (2009) examined the optimal allocation to property assets with different investment horizons and found that on all horizons REITs displayed greater risk and the optimal portfolios displayed large allocations to direct property. Waggle and Moon (2006) used mean-variance function to determine the optimal allocation to REITs. Their study found that using recent data rather than the full time-series data results in optimal allocations in REITs that are considerably higher. Lee and Stevenson (2006) investigated the role of direct property in mixed asset portfolios and found that real estate consistently had positive allocation over different time-periods ranging from five to 25 years. The research states that direct property should be considered as a strategic asset in the mixed-asset portfolio. Previous research on Australian market (CFS 2008; De Francesco and Hartigan 2009; Newell and Razali 2009) also anticipate higher allocation to direct property in the short to medium term as institutional investors seek greater portfolio stability and control after the global financial crisis. CFS (2008) found that increased A-REITs market volatility may warrant a direct property allocation in property asset portfolio to exceed 65%-70% in the short term.

The literature highlights that, although both direct and listed property are classed as property, they offer different portfolio diversification benefits. Therefore, it is important to cater for these differences when making asset allocation decisions. Direct property and listed property need to be analysed as separate asset classes and their inclusion in multi-asset portfolios based solely on respective asset return, risk and correlation matrix against other assets.

## **RESEARCH DATA AND METHODOLOGY**

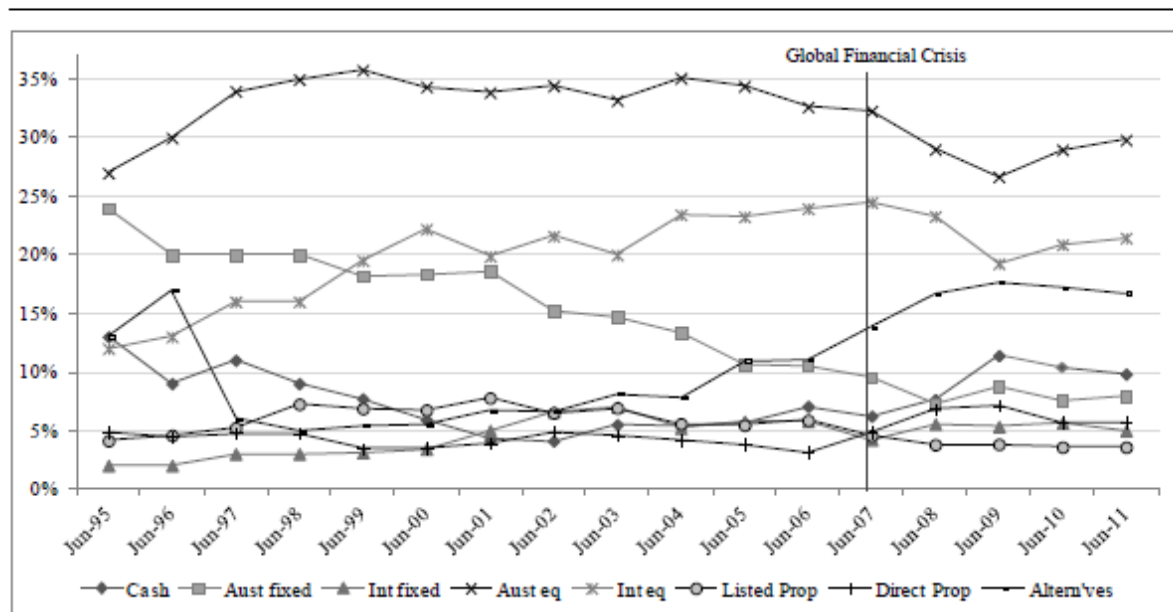
### **Data**

The research data covers a sample period of 17 years (1995 to 2011), comprising 68 quarterly data points. The asset data and benchmark representations for the research include:



- Australian Equities (Aust eq) = S&P/ ASX 200 Accumulation Index or All Ordinaries Index;
- International Equities (Int eq) = MSCI WORLD Standard (Large+Mid Cap) Index (AU);
- Australian Fixed Income (Aust fixed) = CBA Bond (All Series, All Maturities);
- International Fixed Income (Int fixed) = Citigroup World Global Bond Index (AU);
- Cash = Reserve Bank of Australia (RBA) Interbank Rate;
- Direct Property (Direct Prop) = PCA/IPD Composite Property Index;
- Listed Property (Listed Prop) = S&P/ASX 200 A-REIT Index; and,
- Alternatives Assets index (Altern'ves) = infrastructure, hedge fund, private equity and commodity assets.

The Alternatives index is constructed based on the UK alternative asset class index structure (Bond et al 2007). The data was sourced from UBS Wealth Management, Dow Jones Credit Suisse, AVCAL and Cambridge Associates and RBA. All international index data was converted to Australian Dollars (AU).



**Industry Superannuation Balanced Fund Asset Weights (1995 – 2011)**

Source: Rainmaker Group 2012

**Figure 2**

Figure 2 provides details of the asset allocation weights for the industry superannuation balanced fund. The data was sourced from the Rainmaker Group, a leading superannuation service provider in Australia. Figure 2 demonstrates that over the 17-year sample period, equities (Australian and

International) were the most dominant asset class. The aggregated average (from highest to lowest) was Australian equities 32.2%, international equities 20.4%, Australian fixed 13.8%, alternatives 11.2%, cash 7.4%, listed property 5.4%, direct property 5.0% and international fixed 4.7%. Allocation to listed property has generally been higher than direct property in the pre-GFC period. Post 2007 allocation to listed property has declined from 6% to 3%. In contrast, the allocation level to direct property has improved significantly, from an average of 4% prior to 2007 to 7% at December 2011.

## Methodology

The asset performance, portfolio risk, returns and correlation measures for this research are based on quarterly ex-post data. The portfolio return for all asset allocation models was calculated using Equation 1.

$$R_p = w_1R_1 + w_2R_2 + \dots + w_GR_G \text{ Equation 1: Portfolio Return}$$

Equation 1 states that the return on a portfolio ( $R_p$ ) of  $G$  assets is equal to the sum of all individual assets' weights in the portfolio multiplied by their respective return (Fabozzi et al 2012). For all nine asset allocation models, the individual asset return is represented by the time-series benchmark return data (see Data sub-section). Detailed individual asset return performance data is provided in the 'Results and Discussion' section. The individual asset weighting data was sourced from the Rainmaker Group (see Figure 2). Except for the industry fund Strategic portfolio, the asset weight data in the eight alternative asset allocation models was modified to suit the different investment styles.

The Strategic portfolio is the industry fund original balanced investment option and includes investments in equities (Australian and International), fixed income (Australian and International), cash, property (direct and listed) and alternative assets. For the Buy and Hold strategy the asset weights were determined at the start of the investment period (June 1995) and remained constant throughout the investment period. The Traditional portfolio includes investments in equities (Australian and International), fixed income (Australian and International), property (direct and listed) and cash. Consequently, the industry fund balanced portfolio is re-weighted to the four traditional assets. For example, the weighting for traditional assets as at 30 June 1995 was equities (39%), fixed income (26%), cash (13%) and property (9%). The re-weighted traditional portfolio to 100% was equities (45%), fixed income securities (30%), cash (15%) and property (10%). The Equal Weighted model allocates equal weighting to all asset classes. For the eight asset industry fund balanced investment portfolio, individual asset weight was approximately 13% throughout the investment period. The Turning Points model is based on the Australian GDP moving average trend. Funds are allocated to growth focused assets (equity, alternatives and property) during improved economic conditions, while income focused assets (fixed income, cash and property) are selected in declining market conditions. The industry fund balanced portfolio is re-weighted to either growth or income focused assets on a quarterly basis similar to the Traditional model.

The Optimal – No Constraints and Optimal – Weighted Constraints models are based on the MPT mean-variance portfolio construction technique. For  $n$  number of assets involved in the portfolio,

the asset allocation is optimised by minimising portfolio risk for a given level of expected return following Markowitz (1952) quadratic programming problem:

$$\text{Minimise } \sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n x_i x_j \sigma_{ij} \quad \text{Equation 2: Quadratic Mean-Variance Function}$$

$$\text{subject to } \mu_p = \sum_{i=1}^n x_i \mu_i$$

$$\mu_p \geq \mu_0$$

where:

$x_i$  = proportion of portfolio allocated to asset  $i$

$\mu_p$  = expected portfolio return

$\mu_i$  = expected return on asset  $i$

$\mu_0$  = given level of expected return

$\sigma_{ij}$  = covariance between asset  $i$  and asset  $j$  returns.

The covariance and correlation coefficient matrix tests the portfolio diversification benefits for the industry fund balanced investment option asset classes. The Microsoft Excel spreadsheet ‘Solver’ function, a what-if analysis tool, is used to find the optimal weightings at a risk minimised and targeted expected portfolio return value. The use of Solver allows application of constraints to restrict the values the program can use in the model. The individual asset weights were constrained to being positive (greater than or equal to zero) and the total portfolio weight should sum to 100%. The model does not allow short selling. The construction of efficient frontiers involved calculating the possible portfolio weighting at 10% intervals for return and standard deviation. The Australian Government 10 year bonds are used as the risk free rate. For the Optimal – No Constraints strategy, there is no weight restriction on the level of investment for individual asset classes. This resulted in extreme allocation in specific assets. For more industry practical application of the mean-variance optimisation problem, the Optimal – No constraints equation is expanded by adding minimum and maximum asset weight constraints. Fabozzi et al (2011) explain that the minimal and maximal exposure for individual assets can be controlled by the constraint:

$$L_i \leq w_i \leq U_i \quad \text{Equation 3: Weight Constraints}$$

where:

$L_i$  and  $U_i$  are vectors representing the minimum and maximum holding in asset  $i$ .

The Optimal – Weighted Constraints strategy is modelled using minimum and maximum holding constraints based on the industry fund strategic portfolio asset weight parameters (see Table 3).

The industry fund Tactical asset weight shifts were determined on a quarterly basis using the ‘Risk Parity and Momentum’ portfolio construction technique. Risk parity (a simple volatility-weighted



technique) over-weights less volatile assets and under-weights more volatile assets. Exposure to assets with negative quarterly returns is reduced to zero with the weight redistributed to cash. This allows increases in risk-adjusted return (higher Sharpe ratio) in the long run because of capital preservation. The Momentum portfolio construction technique ranks each asset class based on its respective quarterly momentum signal. This ranking is used to determine the tactical weights. For asset class  $i$ , the weight ( $W_m$ ) is calculated using the formula:

$$W_m(i) = \text{Base}(i) + R \times [\text{rank}(i) - \text{average}(\text{rank})] \text{Equation 4: Momentum Ranking}$$

For the chosen 7 asset class portfolio, the average rank (by definition) is 4. The changes to asset classes are always within the  $-3xR$ ,  $-2xR$ ,  $-R$ ,  $0$ ,  $R$ ,  $2xR$  and  $3xR$  based on rankings from 1 to 7.  $R$  is a parameter that can be changed depending on the investor's risk preference. A higher value of  $R$  means higher risk (Gray et al 2012; Wang and Kochard 2011). For the purpose of this exercise  $R$  is set as the risk free rate (Australian Government 10 year bonds). There are no pre-defined asset weight constraints for the Tactical – No Constraints strategy. For the Tactical – Weighted Constraints strategy, the portfolio is modelled on pre-defined weight parameters for all asset classes (see Table 3).

The individual asset and portfolio performances were compared using the Sharpe ratio. The Sharpe ratio, developed by William F. Sharpe (1966, 1994) is the most common measure of comparative performance in the financial markets. The Sharpe ratio is calculated using Equation 5

$$(rp - rf)/op \quad \text{Equation 5: Sharpe Ratio}$$

where:

$op$  = portfolio standard deviation

$rp$  = expected portfolio return

$rf$  = is the risk-free rate (Australian 10 year bond rate)

Bernstein (2007) explains that a high Sharpe ratio performance is preferred by fund managers, with the target benchmark being 1.00. Whilst a portfolio may demonstrate high total returns, the associated risk for that return may also be high. The risk-adjusted return performance attempts to capture the trade-off between risk and return.

## RESULTS AND DISCUSSION

The results are divided in two major parts. Firstly, the individual asset performance statistics and correlation matrix are discussed. Then the results from the nine asset allocation models are discussed using different property allocation scenarios.

### Asset Return Performance

The industry fund balanced investment option historical performance trend was highlighted in Figure 1 earlier. Table 4 provides the quarterly total return data for all asset classes at different time intervals, demonstrating that there is significant variance in quarterly total returns for most asset classes at different time intervals. The data displays sharp fluctuations for the Australian equities, International equities and A-REITs markets. The returns for cash, direct property and fixed assets (Australian and International fixed) remained relatively stable. A-REITs recorded strong

performance in 1995-2000 and enjoyed a 'golden era' during 2001-2007, recording the highest total return (4.4%). However, during 2007-2011 (post GFC period) the sector declined to its lowest point, recording the only negative mean return (-3.1%). Although direct property performance lagged the A-REITS returns for most of the analysis period, it outperformed the listed property sector during 2007-2011.

Time Period	Cash	Aust Fixed	Int Fixed	Aust eq	Int eq	Direct Prop	Listd Prop	Alter'ves
<b>1995 – 2000</b>								
Mean Return	1.4%	2.4%	1.9%	3.7%	4.5%	2.4%	3.0%	4.0%
Standard Deviation	0.3%	2.7%	1.7%	5.0%	10.9%	0.3%	4.7%	4.0%
Variance	0.0%	0.1%	0.0%	0.2%	1.1%	0.0%	0.2%	0.2%
<b>2001 – 2007</b>								
Mean Return	1.3%	1.4%	1.1%	3.3%	1.5%	3.2%	4.4%	3.6%
Standard Deviation	0.1%	1.9%	1.6%	6.1%	13.9%	0.8%	4.2%	3.0%
Variance	0.0%	0.0%	0.0%	0.4%	1.9%	0.0%	0.2%	0.1%
<b>2008 – 2011</b>								
Mean Return	1.2%	1.9%	1.2%	0.5%	0.4%	1.6%	-3.1%	1.4%
Standard Deviation	0.3%	2.6%	4.5%	10.0%	18.7%	2.2%	13.9%	3.7%
Variance	0.0%	0.1%	0.2%	1.0%	3.3%	0.0%	1.8%	0.1%

#### Asset Total Return at Different Intervals: Quarterly Data (1995 – 2011)

Source: Author

Table 4

Asset Class	Mean Return	Std Dev'n	Sharpe Ratio	Kurtosis	Skewness	Variance	Ann'd Return	Ann'd Std Dev'n
Cash	1.32%	0.26%	-0.45	-0.09	0.28	0.00%	5.37%	0.52%
Aust fixed	1.87%	2.35%	0.19	0.32	0.55	0.05%	7.70%	4.71%
Int fixed	1.38%	2.80%	-0.02	10.94	-0.62	0.08%	5.62%	5.60%
Aust eq	2.43%	7.28%	0.14	1.24	-0.56	0.52%	10.07%	14.56%
Int eq	2.10%	14.59%	0.05	0.70	0.19	2.10%	8.69%	29.17%
Direct Prop	2.46%	1.42%	0.72	4.16	-1.60	0.02%	10.22%	2.85%
Listed Prop	1.76%	8.91%	0.04	5.06	-1.04	0.78%	7.25%	17.82%
Altern'ves	3.06%	3.65%	0.44	-0.08	-0.01	0.13%	12.80%	7.30%

#### Descriptive Statistics for Asset Performance: Quarterly Data 1995 - 2011

Source: Author

Table 5



Table 5 details the individual asset performance descriptive statistics for the 17 year sample period and illustrates that direct property was the best performing asset class over the 17 year period. Direct property recorded the highest risk-adjusted return (0.72), followed by the alternatives sector (0.44). All listed assets displayed significant risk and variance. International equities recorded the highest standard deviation (14.59%), followed by listed property (8.91%) and Australian equities (7.28%). In contrast, cash and direct property displayed relatively low standard deviation, 0.26% and 1.42% respectively.

Table 6 details the covariance of direct property and listed property asset classes at different time intervals and demonstrates that the co-movement of returns between direct property and listed property is significantly low when compared to the A-REITs and Australian equities matrix. There is no evidence of a linear relationship between the direct property and listed assets during 1995-2007. Although, in the post GFC period, direct property and listed property return covariance has improved, it is still not as strong as the A-REITs and Australian equities co-movement.

<i>Covariance between:</i>	<i>1995 – 2000</i>	<i>2001 - 2007</i>	<i>2008 - 2011</i>	<i>1995 - 2011</i>
Direct Prop & Listed Prop	0.0000	0.0001	0.0005	0.0004
Listed Prop & Aust eq	0.0003	0.0008	0.0104	0.0040

**Covariance Matrix: Direct and Listed Property at Different Intervals**

Source: Author

**Table 6**

The diversification benefits of the industry fund balanced investment option asset classes can be attained by examining the correlation matrix. Tables 7 and 8 assess the correlation between direct and listed property and other assets over different time periods. This follows the Jones Lang LaSalle (2012) correlation reporting methodology for property assets. Each time period involves a different number of data points. For example, 1-Year represents 4 quarterly data points in 2011, 2-Year represents 8 quarterly data points from 2010 to 2011 and 17-year represents 68 quarterly data points from 1995 to 2011. The alternative index assets are separated as infrastructure (Infr), hedge funds, private equity and commodity to better evaluate the correlation of different property assets to the specific alternative asset classes.

Table 7 demonstrates that over the short term period (1 to 2 years), the correlation between direct property and listed property is high (0.59 and 0.45) which indicates lower diversification potential between the assets. In the medium term (3-7 years) the correlation between direct and listed property ranges from 0.19 to 0.32, being 0.31 over the 17-year sample period. Direct property displays strong diversification potential with most asset classes including alternative assets such as infrastructure and commodity in both the short and long term horizon.

	<i>Direct Property correlation to:</i>									
<i>Time Period</i>	<i>Cash</i>	<i>Aust fixed</i>	<i>Int fixed</i>	<i>Aust eq</i>	<i>Int eq</i>	<i>Listed Prop</i>	<i>Infr</i>	<i>Hedge Funds</i>	<i>Private Equity*</i>	<i>Commodity</i>
1-year	0.15	-0.94	-0.86	0.78	0.55	0.59	0.77	0.44	-0.16	0.12
2-year	0.91	0.20	-0.01	-0.09	0.14	0.45	-0.18	0.12	-0.60	-0.10
3-year	0.79	0.26	-0.08	-0.08	-0.16	0.19	0.27	-0.32	0.55	0.61
5-year	0.50	-0.09	-0.10	0.21	0.03	0.23	0.28	-0.03	0.60	0.21
7-year	0.52	-0.11	-0.12	0.28	0.07	0.32	0.31	-0.01	0.66	0.22
10-year	0.49	-0.10	-0.10	0.28	0.08	0.33	0.32	0.01	0.55	0.19
17-year	0.32	-0.08	-0.11	0.24	0.06	0.31	0.19	-0.01	0.52	0.19

\*Private Equity data is available from June 2000.

### Correlation Matrix: Direct Property and Other Asset Classes at Different Intervals

Source: Author

Table 7

	<i>Listed Property correlation to:</i>									
<i>Time Period</i>	<i>Cash</i>	<i>Aust fixed</i>	<i>Int fixed</i>	<i>Aust eq</i>	<i>Int eq</i>	<i>Direct Prop</i>	<i>Infrast.</i>	<i>Hedge Funds</i>	<i>Private Equity*</i>	<i>Commodity</i>
1-year	-0.49	-0.47	-0.63	0.78	0.89	0.59	0.88	0.86	0.23	-0.12
2-year	0.16	-0.30	-0.33	0.57	0.78	0.45	0.45	0.76	0.03	-0.16
3-year	-0.31	-0.46	-0.62	0.83	0.53	0.19	0.58	0.23	0.78	-0.14
5-year	-0.25	-0.36	-0.52	0.79	0.50	0.23	0.62	0.22	0.66	-0.22
7-year	-0.18	-0.30	-0.47	0.78	0.50	0.32	0.60	0.22	0.62	-0.21
10-year	-0.19	-0.25	-0.44	0.73	0.46	0.33	0.57	0.23	0.55	-0.21
17-year	-0.09	-0.04	-0.32	0.62	0.40	0.31	0.52	0.21	0.47	-0.19

\*Private Equity data is available from June 2000.

### Correlation Matrix: Listed Property and Other Asset Classes at Different Intervals

Source: Author

Table 8

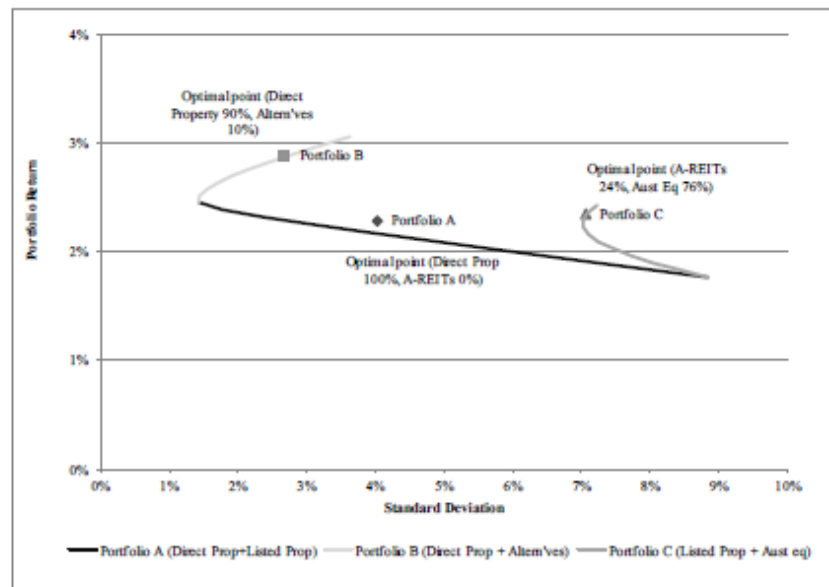
Listed property displayed strong diversification benefits with cash, fixed income (Australian and International) and to some extent with hedge funds in the short to long term horizon. The correlation between A-REITs and Australian equities was high ( $> 0.60$ ) in both the short and long term, displaying potential lack of diversification benefit.

### Property in Two Asset Portfolio Models

The research investigates the diversification benefits of property assets with Australian equities and alternative assets by constructing two asset portfolio models. The asset allocation is determined using the mean-variance portfolio optimisation technique. Figure 3 displays the efficient frontier and optimal allocation results and illustrates that the inclusion of listed property in direct property portfolio is insignificant, evident by the 100% allocation to direct property in Portfolio A. However, listed property does gain an allocation of 25% in the Australian equities portfolio (Portfolio C). The listed and direct property portfolio provides a much better risk-adjusted return performance (0.21) than the inclusion of A-REITs in the Australian equities portfolio (0.13). The inclusion of

alternative assets in the direct property portfolio (Portfolio B) provides the best risk-adjusted return performance (0.55), although portfolio weighting is dominated by direct property.

Overall, the results provide evidence that including listed property in the equities portfolio is not a viable investment option. However, the inclusion of alternatives assets in the real estate portfolio seems beneficial. The performance of different property assets needs to be further tested within the parameters of multi-asset allocation models.



### Efficient Frontier: Property in Two Asset Portfolios

Source: Author

Figure 3

### Property in Multi-Asset Portfolios

Industry superannuation fund balanced investment option average property allocation is 10.3% for the 17-year sample period, comprising direct property (5.0%) and listed property (5.3%). The research investigates the diversification benefits of different property assets in the industry fund balanced portfolio within the setting of nine different investment strategies. The analysis is undertaken using three scenarios, including either direct property, listed property or both property asset classes. For the 'direct property inclusive portfolios', industry fund balanced investment option property asset allocation is represented by the direct property component only. Similarly, the industry fund 'listed property inclusive portfolios' have property represented by the listed property component. The 'direct and listed property inclusive portfolios' includes both property asset classes added separately to the balanced portfolio.

Table 9 details the performance statistics for the asset allocation strategies using different property investment scenarios and highlights that, except for the Tactical - No Constraints strategy, all direct property led portfolios outperformed the listed property inclusive portfolios. Buy and Hold, Traditional, Turnings Points and Tactical-Weight Constrained strategies perform better when



property is represented by direct property assets. In contrast the Tactical-No Constraints was the only strategy that displayed improved performance when property was represented as listed property assets.

However, the inclusion of both property asset classes in a multi-asset portfolio does provide improved risk-adjusted return performance for several strategies including the Strategic (lower risk mainly), Optimal strategies and Tactical-No Constraints strategy. The Tactical-No Constraints strategy which included both direct and listed property assets produced the highest risk-adjusted return performance (1.10). The results also illustrate that, except for the Traditional strategy, all direct and listed property inclusive investment strategies have outperformed the industry fund Strategic investment portfolio.

Investment Strategies	Direct Prop Inclusive Portfolios			Listed Prop Inclusive Portfolios			Direct and Listed Prop Inclusive Portfolios		
	Mean Return	Standard Deviation	Sharpe Ratio	Mean Return	Standard Deviation	Sharpe Ratio	Mean Return	Standard Deviation	Sharpe Ratio
Strategic	2.19%	5.29%	0.14	2.17%	5.54%	0.13	2.19%	5.25%	0.14
Buy and Hold	2.16%	3.69%	0.20	2.13%	3.95%	0.18	2.15%	3.77%	0.19
Traditional*	2.08%	5.74%	0.11	2.04%	6.06%	0.10	2.05%	6.15%	0.10
Optimal – No constraints	2.18%	2.69%	0.28	2.16%	3.03%	0.24	2.19%	1.01%	0.75
Optimal – constrained	2.16%	3.89%	0.19	2.15%	4.09%	0.17	2.17%	2.78%	0.26
Turning Points	3.08%	5.30%	0.31	2.96%	5.64%	0.27	2.96%	5.21%	0.29
Equal Weighted	2.36%	3.50%	0.27	2.36%	3.50%	0.27	2.04%	3.42%	0.18
Tactical – No constraints	2.09%	0.83%	0.79	2.32%	0.95%	0.94	2.45%	0.93%	1.10
Tactical – constrained	4.08%	4.75%	0.56	4.25%	5.58%	0.50	4.13%	5.16%	0.52

\*Property included with Equities, Cash and Fixed Income assets.

### Performance Statistics: Direct Property, Listed Property and Both Property Inclusive Asset Allocation Strategies

Source: Author

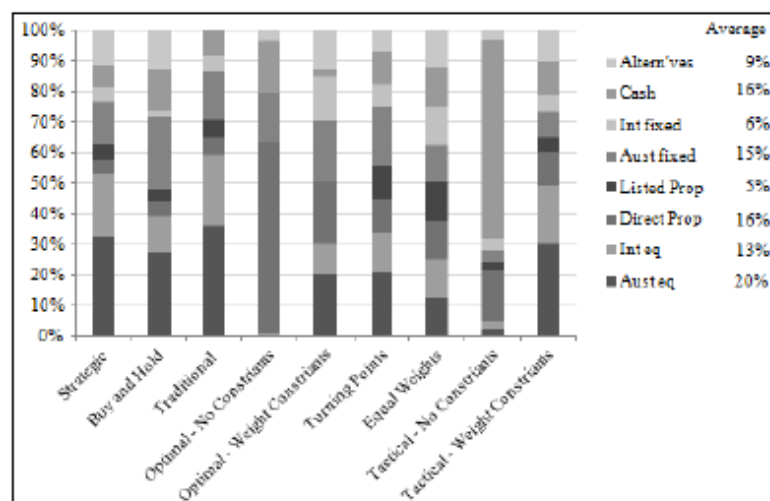
Table 9

The asset allocation model returns and asset weighting is susceptible to variations in economic and financial market conditions. For example, in periods of financial market collapse such as the 2007 global financial crisis and 9/11 (September 2001), Strategic portfolio is rebalanced with greater attention to stable investment sectors such as property and alternatives. In contrast, the early 1990s and mid 2000s period were characterised by high investment returns, with the Strategic portfolio overweighted in assets such equities and listed property (see Figure 2).

The performance variations for the different asset allocation models are also largely explained by their asset weighting. Changes in market conditions had no material impact on the Buy and Hold and Equal Weighted portfolio weights. In contrast, the Turning Points model asset weighting was constantly shifted based on the movements in GDP. The movement in investment markets had significant material impact on the optimal and tactical portfolio performance. The Optimal – No Constraints models are predominantly overweighted in assets that demonstrated the lowest volatility each quarter. The Tactical models are overweighted quarterly to the best performing assets (see Figure 1 for asset performance trend).

The performance of listed property led Tactical asset allocation strategies must be read with some caution. Tactical strategies work on the premise of overweighting assets with least volatility and reduce allocation for assets with negative performance to zero. Listed property recorded negative total return in 13 out of 20 quarters leading up to December 2011 and 21 out of 68 quarters for the entire sample period. Although, in theory, listed property offers better tactical allocation options due to direct property's illiquidity issues, the A-REITs performance during the 2007-2011 period would have made it impracticable for active fund managers to earn extra returns using listed property. Recent data however shows that the A-REITs sector has recovered strongly which may lead to improved portfolio allocation in future.

Figure 5 details the average asset weights for the industry fund balanced investment option when both property assets are included in the multi-asset portfolio and demonstrates that, when both direct and listed property investments are available, the allocation to direct property mostly outweighs listed property in all investment strategies.



**Average Asset Weights: Both Direct and Listed Property Inclusive Strategies**

Source: Author

**Figure 5**

Australian equities was the dominant asset class with an average 20% allocation, followed by direct property and cash both at 16%. Listed property recorded the lowest average asset allocation at 5%. Except for the Strategic, Traditional and Turning Points strategies, direct property had a higher representation than listed property across all investment strategies.

Despite the higher asset allocation range assigned to alternative assets (0% - 25%) than to property assets (0% - 20%), the average allocation to alternatives was 9%, lower than the direct property allocation (16%). Recent studies (Finkenzeller, Dechant and Schäfers2010; Newell and Lee2011; Newell, Peng and De Francesco2011) have concluded that direct property may play a less significant role in the multi-asset portfolio when alternative assets are included. However, the consensus was that both are distinct assets and offer different diversification benefits. The strong allocation to direct property in both the two asset and multi-asset portfolios in this research further highlights that direct property will command significant allocation in institutional portfolios despite the availability of similar real assets such as infrastructure.

Table 10 further details the direct and listed property allocation level in three year rolling intervals. Note that passive investment strategies (Buy and Hold, Equal Weights) are excluded from the analysis.

<i>Asset Allocation Strategy</i>	<i>Jun-98</i>		<i>Jun-01</i>		<i>Jun-04</i>		<i>Jun-07</i>		<i>Jun-10</i>		<i>Dec-11</i>		<i>17-year Average</i>	
	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>	<i>Direct Prop</i>	<i>Listed Prop</i>
Strategic	5%	5%	4%	7%	5%	7%	4%	5%	6%	4%	7%	3%	5%	5%
Traditional	5%	6%	4%	8%	5%	7%	4%	6%	8%	5%	8%	4%	6%	6%
Optimal - No Constraints	44%	0%	54%	2%	31%	0%	69%	4%	37%	2%	41%	1%	47%	2%
Optimal - Weight Constraints	20%	5%	16%	9%	8%	0%	18%	8%	14%	7%	19%	3%	16%	6%
Turning Points	9%	10%	8%	14%	10%	14%	10%	13%	15%	10%	14%	7%	10%	11%
Tactical - No Constraints	20%	3%	25%	3%	28%	4%	6%	3%	6%	1%	8%	2%	16%	3%
Tactical - Weight Constraints	11%	4%	16%	5%	13%	6%	7%	6%	7%	2%	7%	3%	11%	5%
<b>Average</b>	<b>16%</b>	<b>5%</b>	<b>18%</b>	<b>7%</b>	<b>14%</b>	<b>5%</b>	<b>17%</b>	<b>6%</b>	<b>13%</b>	<b>4%</b>	<b>15%</b>	<b>3%</b>	<b>16%</b>	<b>5%</b>

### 3-Year Rolling Direct Property and Listed Property Asset Allocation Level

Source: Author

Table 10

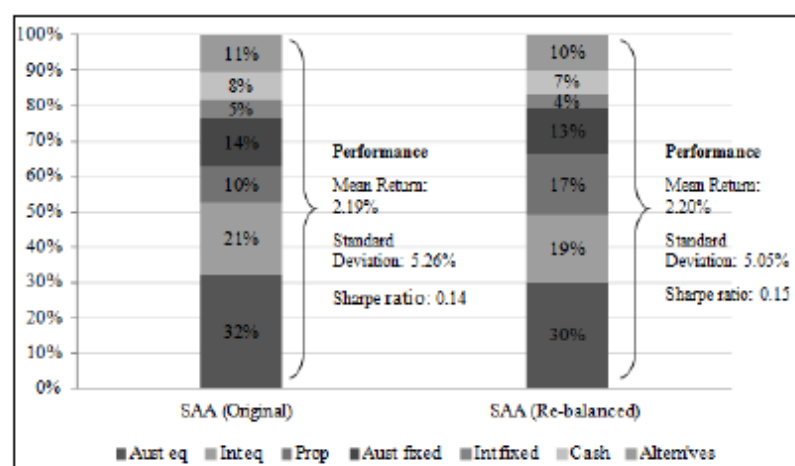
Table 10 analysis confirms that the allocation to direct and listed property assets is time-varying. Direct property allocation was prominent for the Optimal and Tactical investment strategies, while listed property received higher allocation in the Strategic, Traditional and Turning Points strategies. Both direct and listed property peaked in the 3-year period leading to 2001, with an average allocation across all strategies at 18% and 7% respectively. Since then direct property allocation has declined to as low as 13% (June 2010). Listed property allocation was prominent across most investment strategies in the 3-year period to June 2007. However, the post GFC period trend highly



favours direct property allocation across all investment strategies. The average allocation to direct property and listed property during the 3-year period leading to December 2011 was 15% and 3% respectively. Overall, the results demonstrate that, even at different time intervals, the average allocation to direct property is significantly higher than listed property across most investment strategies.

Over the 17 year sample period, the industry fund strategic balanced investment option average property allocation was 10%, invested in direct property (5%) and listed property (5%). In comparison, the allocation to property in the alternative active asset allocation models ranged from 12% to 49%. The approximate 50% allocation in the Optimal – No Constraints strategy is expected given that the model works on the premise of overweighting assets with least volatility. The average allocation to property across the alternative investment strategies was 21%, comprising direct (16%) and listed property (5%). Excluding unconstrained investment strategies, the average allocation to property was 17%, invested in direct property (12%) and listed property (5%).

Overall the results demonstrate that there is scope to increase the industry fund property exposure from its current 10% position. For industry application, whilst an allocation of 50% to property assets may not be practically justifiable, Australian fund managers can benefit from the increased 17% average property allocation recommended within the constrained investment strategies. The increased 17% allocation to property can be implemented by rebalancing the industry superannuation fund strategic portfolio. Figure 6 compares the performances of the industry fund original strategic portfolio (which includes 10% property allocation) against a rebalanced industry fund strategic portfolio with 17% allocation to property.



**Industry Fund Strategic Balanced Investment Option:  
Original and Re-balanced Portfolio (Jun 95 – Dec 11)**

Source: Author

**Figure 6**

Figure 6 shows the rebalanced industry fund strategic investment portfolio, with property allocation increased to 17%. The results show that allocation to equities (Australian and International), although slightly lower, still dominates the industry fund balanced investment portfolio. Cash and fixed income (Australian and International) also recorded slight declines in the rebalanced SAA model. Allocation to property is higher (17%), while the proportion invested in alternative assets remains steady at 10%. The combined real asset (property and alternatives) allocation accounts for 27% of the rebalanced portfolio. This high allocation is in line with JP Morgan Asset Management (2012) and Jones Lang LaSalle (2012) prediction of real assets occupying 25% of institutional portfolios in the next decade. The increased allocation to property is backed by the improved risk-adjusted return performance. The Sharpe ratio for the rebalanced portfolio is 0.15, higher than 0.14 recorded for the original portfolio.

This finding will be beneficial for funds currently re-profiling investment portfolios to achieve stable risk-adjusted return. The rebalanced industry fund strategic portfolio property allocation has 12% invested in direct property and 5% listed property. The results substantiate the findings from recent studies (CFS 2008; De Francesco and Hartigan 2009; Newell and Razali 2009; Reddy 2012) that anticipate higher allocation to direct property in the short to medium term in Australia.

## CONCLUSIONS

This research used nine different asset allocation strategies to determine which property allocation scenario, that is including either direct property, listed property or both, provides the best diversification benefits in the industry superannuation fund balanced investment portfolio.

The results demonstrate that over the 17-year sample period direct property significantly outperforms the listed property sector with higher returns, low risk and variance statistics. Despite A-REITs performance being tightly linked to the Australian equities market, the research provides evidence that including listed property in the equities portfolio is not a viable strategy. However, the inclusion of alternative assets in direct property does provide better results.

The findings also provide evidence that substituting direct property with listed property is not likely to benefit the industry fund's balanced portfolio performance. Whilst the asset allocation models predominately favour higher allocation to direct property than listed property, the results are time-varying. Listed property allocation remained steady prior to 2007. However, the post GFC (2008-2011) trend highly favours direct property allocation. The inclusion of both property assets in a multi-asset portfolio does however demonstrate improved risk-adjusted return for several strategies, including the Tactical-No Constraints strategy which produced the highest risk-adjusted return (1.10). Except for the Traditional strategy, all direct and listed property inclusive investment strategies have outperformed the industry superannuation fund conventional strategic investment portfolio.

In conclusion, the results demonstrate that there is scope to increase the industry superannuation fund direct property exposure to 12% from the current average of 5%. However, listed property allocation is expected to remain at 5%. The recommended 17% allocation to property in the industry fund strategic portfolio is backed by high risk-adjusted return profile. The overall push towards direct property is reflective of the need for fund managers to achieve greater portfolio



stability and deliver sound risk-adjusted return and for institutions to have more control in how they invest in property. Whilst lack of liquidity could act as a deterrent for higher allocation to direct property, the continued evolution of unlisted property fund vehicles such as wholesale property funds and property syndicates could provide the medium through which fund managers can attain higher direct property allocation to meet specific member investment and liquidity requirements alongside retaining some input into property allocation decisions.

Interestingly, the allocation to direct property was higher than alternative assets in most investment strategies, indicative of direct property's importance in institutional portfolios despite the presence of similar real asset investments such as infrastructure. However, this needs to be examined in more detail in future research.

## REFERENCES

- APRA 2013, *Annual Superannuation Bulletin June 2012*, Australian Prudential Regulation Authority, January edn, Sydney.
- Bajtelsmit VL and Worzala EM 1995, 'Real estate allocation in pension fund portfolios', *Journal of Real Estate Portfolio Management*, Vol. 1, No. 1, pp. 25-38.
- Bernstein P 2007, *Capital ideas evolving*, John Wiley and Sons, New Jersey.
- Bond SA, Hwang S, Mitchell P and Satchell SS 2007, *Asset allocation in the modern world*, Investment Property Forum, London.
- Brounen D and Eichholtz P 2003, 'Property, common stock and shares: increased potential for diversification', *Journal of Portfolio Management*, Special Issue 2003, pp. 129-137.
- Brown GR and Schuck EJ 1996, 'Optimal portfolio allocations to real estate', *The Journal of Real Estate Portfolio Management*, Vol. 2, No. 1, pp. 63-73.
- CFS 2008, *Allocating capital between Australian direct property, Australian REITs and global listed property*, Research Paper: 12 June 2008, Colonial First State Global Asset Management, Sydney.
- Chiang KCH and Lee ML 2007, 'Spanning tests on public and private real estate', *Journal of Real Estate Portfolio Management*, Vol. 13, No. 1, pp. 7-15.
- Clayton J and MacKinnon G 2003, 'The relative importance of stock, bond and real estate factors in explaining REIT returns', *Journal of Real Estate Finance and Economics*, Vol. 27, No. 1, pp. 39-60.
- De Francesco A and Hartigan LR 2009, 'The impact of changing risk characteristics in the A-REIT sector', *Journal of Property Investment and Finance*, Vol. 27, No. 6, pp. 543-562.
- De Francesco A 2005, 'The role of direct property in asset allocation', *Australian Property Journal*, February Edition, pp. 386-393.
- Fabozzi FJ, Markowitz HM, Kolm PN and Gupta F 2012, 'Mean-variance model for portfolio selection' in *Encyclopedia of Financial Models*, John Wiley and Sons, Inc, New Jersey.
- Fabozzi FJ and Markowitz HM (Eds.) 2011, *The Theory and Practice of Investment Management: Asset Allocation, Valuation, Portfolio Construction and Strategies*, 2nd Edition, John Wiley and Sons, Inc, New Jersey.
- Finkenzeller K, Dechant T and Schäfers W 2010, 'Infrastructure: a new dimension of real estate? an asset allocation analysis', *Journal of Property Investment and Finance*, Vol. 28, No. 4, pp. 263-274.
- Friemann G 2012, 'UniSuper first to renew appetite for listed trusts', *The Australian Financial Review*, Thursday 7 June, p.50.

- Geltner D, Rodriguez J and O'Conner D 1995, 'The similar genetics of public and private real estate and the optimal long-horizon portfolio mix', *Real Estate Finance*, Vol. 12, No. 3, pp. 13-25.
- Giliberto SM 1990, 'Equity real estate investment trusts and real estate returns', *The Journal of Real Estate Research*, Vol. 5, No. 2, pp. 259-263.
- Gray WR, Wang T, Zhang S, Kanner C and Gray C 2012, *A horse race between tactical asset allocation models*, July 2012, Empiritrage LLC, Cleveland, Ohio.
- Higgins D 2010, 'Investment styles and performance in the Australian unlisted wholesale property fund market', *Pacific Rim Real Estate Society Journal*, Vol. 16, No. 3, pp. 254-272.
- Higgins D and Ng B 2009, 'Australian securitised property funds: an examination of their risk-adjusted performance', *Journal of Property Investment and Finance*, Vol. 27, No. 4, pp. 404-412.
- Higgins D 2007, 'Placing commercial property in the Australian capital markets', *RICS Research Paper Series*, Vol. 7, No. 12, London.
- Hoesli M and Olikarinen E 2012, 'Are REITs real estate? evidence from international sector level data', *Journal of International Money and Finance*, Vol. 31, pp. 1823-1850.
- Hoesli M, Lekander J and Witkiewicz W 2003, *International evidence on real estate as a portfolio diversifier*, International Center for Financial Asset Management and Engineering, Geneva.
- Hughes D 2012, 'Australian Super to double real estate', *The Australian Financial Review*, Tuesday 20 November, p.47.
- Jones Lang LaSalle 2012, *Real assets and the Asia Pacific*, October 2012, Jones Lang LaSalle, Sydney.
- JP Morgan Asset Management 2012, *The realization: a new world - a new normal - a tectonic shift*, J.P. Morgan Chase & Co., United States.
- Lee S and Stevenson S 2006, 'Real estate in the mixed-asset portfolio: the question of consistency', *Journal of Property Investment and Finance*, Vol. 24, No. 2, pp. 123-135.
- Lee S and Stevenson S 2005, 'The case for REITs in the mixed-asset portfolio in the short and long run', *Journal of Real Estate Portfolio Management*, Vol. 11, No. 1, pp. 55-80.
- MacKinnon GH and Al Zaman A 2009, 'Real estate for the long term: the effect of return predictability on long-horizon allocations', *Real Estate Economics*, Vol. 37, No. 1, pp. 117-153.
- Markowitz H 1952, 'Portfolio selection', *The Journal of Finance*, Vol. 7, No. 1, pp. 77-91.
- Mueller AG and Mueller GR 2003, 'Public and private real estate in a mixed-asset portfolio', *Journal of Real Estate Portfolio Management*, Vol. 9, No. 3, pp. 193-203.
- Newell G and Lee CL 2011, 'The impact of alternative assets on the role of direct property in Australian mixed-asset portfolios', *Pacific Rim Property Research Journal*, Vol. 17, No. 4, pp. 531-559.
- Newell G, Peng HW and De Francesco A 2011, 'The performance of unlisted infrastructure in investment portfolios', *Journal of Property Research*, Vol. 28, No. 1, pp. 59-74.
- Newell G and Razali MN 2009, 'The impact of the global financial crisis on commercial property investment in Asia', *Pacific Rim Property Research Journal*, Vol. 15, No. 4, pp. 430-452.
- Newell G 2008, 'The significance of property in superannuation funds', *Australian and New Zealand Property Journal*, Vol. 1, No. 8, pp. 670-677.
- Newell G. 2006, 'The changing risk profile of listed property trusts', *Australian Property Journal*, Vol. 39, No. 3, pp. 172-180.



- Pagliari JL, Scherer KA and Monopoli RT 2005, 'Public versus private real estate equities: a more refined long-term comparison', *Real Estate Economics*, Vol. 33, No. 1, pp. 147-187.
- Parker D 2012, *Global Real Estate Investment Trusts: People, Process and Management*, Wiley-Blackwell Publication, West Sussex, UK.
- Parker D 2013, *Unlisted property fund decision making: decision maker survey preliminary findings*, proceedings of the 19th Annual Pacific Rim Real Estate Society Conference, 13-16 January 2013, Melbourne, Australia.
- Property Council of Australia 2011, *Australian property investment industry: Autumn 2011*, PCA, Sydney.
- Radanovic D 2010, *Property and Australia's aging population*, Research Paper: 17 August 2010, Colonial First State Global Asset Management, Sydney.
- Rainmaker Group 2012, *Australian Superannuation Industry Information: Asset class Weights Data June 1995 to December 2011*, Rainmaker Group, Sydney.
- Reddy W, Higgins D, Wist M and Garimort J 2013, *Australian industry superannuation funds: investment strategies and portfolio allocations*, proceedings of the 19th Annual Pacific Rim Real Estate Society Conference, 13-16 January 2013, Melbourne, Australia.
- Reddy W 2012, 'Determining the current optimal allocation to property: a survey of Australian fund managers', *Pacific Rim Property Research Journal*, Vol. 18, No. 4, pp. 371-387.
- Sharpe WF, Chen P, Pinto JE and McLeavey DW 2007, 'Asset allocation', in Maginn JL, Tuttle DL, McLeavey DW, and Pinto JE(Eds.), *Managing Investment Portfolios: A Dynamic Process*, John Wiley and Sons, Inc, New York, pp. 231-327.
- Sharpe W 1994, 'The Sharpe ratio', *Journal of Portfolio Management*, Vol. 39, Fall edn, pp. 49-58.
- Sharpe W 1966, 'Mutual fund performance', *Journal of Business*, Vol. 39, No.1, pp. 119-138.
- Seiler MJ, Webb JR and Myer FCN 2001, 'Can private real estate portfolios be rebalanced/diversified using equity REITs shares?', *Journal of Real Estate Portfolio Management*, Vol. 7, No.1, pp. 25-41.
- Waggle D and Moon G 2006, 'Mean-variance analysis with REITs in mixed asset portfolios: the return interval and the time period used for the estimation of inputs', *Managerial Finance*, Vol. 32, No. 12, pp. 955-968.
- Wang P and Kochard L, 2011, *Using a Z-score approach to combine value and momentum in tactical asset allocation*, Working Paper, Georgetown University, Washington DC.
- Worzala EM and Bajtelsmit VL 1997, 'Real estate asset allocation and the decision-making framework used by pension fund managers', *Journal of Real Estate Portfolio Management*, Vol. 3, No.1, pp. 47-56.
- Yunus N, Hansz JA and Kennedy PJ 2012, 'Dynamic interactions between private and public real estate markets: some international evidence', *Journal of Real Estate Finance and Economics*, Vol. 45, pp. 1021-1040.

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# DETERMINING THE CURRENT OPTIMAL ALLOCATION TO PROPERTY: A SURVEY OF AUSTRALIAN FUND MANAGERS

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## ABSTRACT

*This research paper examines the property asset allocation strategies for the A\$1.7 trillion Australian managed funds industry and identifies the important steps and considerations that influence their optimal property allocation view and decision making process. It investigates the use and relevance of strategic and tactical asset allocation strategies for property asset allocation decisions. The results indicate that the allocation of resources to property assets is a complex system of interdependent decisions given its distinctive investment characteristics when compared to alternative asset classes. Apart from definitive/ quantitative inputs in property asset allocation models, Australian fund managers are influenced by many other non-financial considerations. In addition, there are notable differences in techniques for direct property, unlisted property and securitised property asset allocation. The results also demonstrate that there has been a shift in Australian fund manager's property asset allocation views and strategies driven mainly by the fund's need to adapt to the continued uncertain global financial market conditions.*

**Keywords:** property investment, asset allocation strategies, fund management, diversification, portfolio construction and management.

## INTRODUCTION

Property has traditionally been a major part of institutional investment portfolios in Australia. According to Higgins (2007, p15), institutional investment represents 40% of the Australian core property market. This extensive coverage compares to recent asset allocation studies which invariably have concluded that property is significantly underrepresented in the typical investment portfolio. Most institutional allocation to property in Australia is generally restricted to around 10% or lower, having peaked at 12% in the late 1980s (Armytage 2002, p85, Newell 2008, Rowland 2010).

According to PCA (2009, p13, p16), due to the declining stock market values following the 2007 global financial crisis, the allocation to property assets is expected to increase to 10-15% for some superannuation funds. With Australia's aging population and the increased focus on self-funding of individuals retirement, property is expected to continue to be a significant asset class in superannuation fund portfolios.

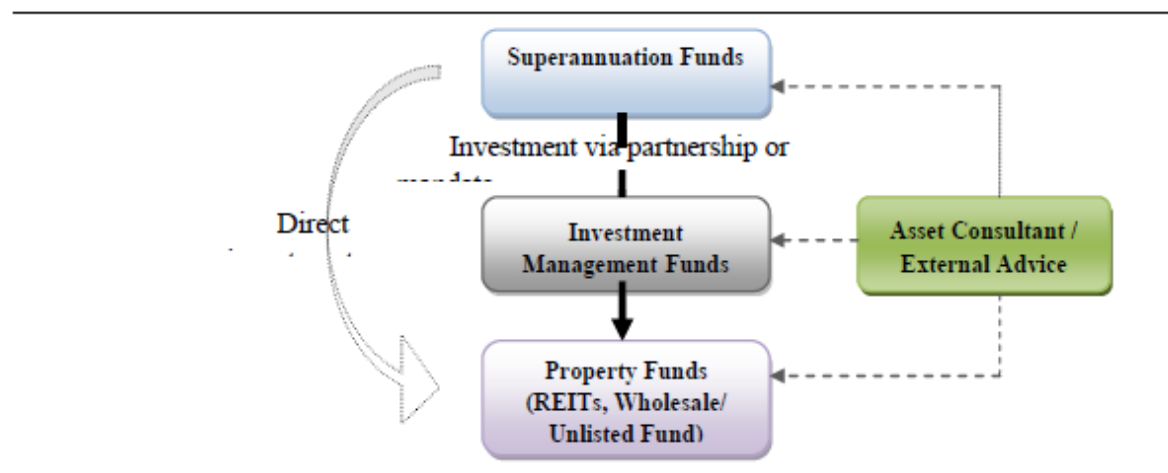
Newell et al (2002) stated that there is a need for more research to enhance the stature of property as an asset class, identifying in particular the role of property in a mixed-asset portfolio as the top priority research topic for stakeholders in Australia. While there are several studies on the level of property allocation in a multi-asset portfolio, research on the actual property asset allocation decision-making process is limited in Australia. Therefore, the primary aim of this research paper is to identify the current strategies and considerations that facilitate the optimal property asset allocation view and investment decisions for Australian managed funds.

Most Australian institutional investors currently hold property investments (both direct and indirect) through property fund vehicles. Rowland and Kish (2000, p104) defined a property fund as an investment vehicle that specialises in acquiring, developing and managing property investments on

behalf of other institutions and investors. These funds include real estate investment trusts (REITs), property syndicates and other pooled investments predominately invested in real estate, for example Challenger Property Securities Fund, DEXUS Property Group and Lend Lease.

Property funds are distinct from other managed funds such as superannuation funds and investment management funds (also known as diversified managed funds) which may only hold an allocation to property in their portfolios. By definition, superannuation and other managed funds that own properties as a minor part of their investment portfolio are not 'property funds' but may be direct and indirect owners of properties. Institutions, such as superannuation funds, may also invest in property assets through their exposure in investment managed funds (via mandate and partnerships). Investment management funds invest in property assets mainly via property securities funds and REITs (Rowland 2010).

Figure 1 illustrates a typical Australian managed fund industry property asset allocation structure. The investment allocation structure is developed from a superannuation fund perspective, the largest fund managers in Australia.



**Superannuation Fund Property Investment Structure**

Source: Author

Figure 1

Each managed fund type has distinct property asset allocation strategies and investment processes. In addition, the managed fund asset allocation and investment strategies can also be based on asset consultant or external advice. Hence, the industry survey undertaken as part of the data collection process for this research targeted a cross-section of industry experts from superannuation funds, investment managed funds, property funds and asset consultants. This approach allowed both fund specific analysis and general or industry evaluation of how Australian fund managers determine optimal property asset allocation strategies and decisions. While there are several studies on the level of property allocation in multi-asset portfolios, this is the first research paper that covers the actual property asset allocation decision-making process of all major groups in the Australian managed funds industry including superannuation funds, investment managed funds, property funds and asset consultants.



## LITERATURE REVIEW

### Investment Theory and Asset Allocation Concepts

Investment theory suggests that investors should diversify their investment portfolio in order to reduce total risk at a given level of return (Alexander et al 2001, Gitman et al 2004). This is easier said than done as institutional investors face a complex set of choices with respect to investment portfolio composition and management. Modern portfolio theory provides a theoretical framework for this process, however in practice, asset allocation decisions must be made in an environment of incomplete information, changing estimates of return and shifting definitions of the acceptable investment risk.

Markowitz (1952) quantitatively explored the notion that diversification is not achieved merely through an increased number of investments, but by investing in a number of assets whose patterns of returns are distinct and different enough from one another to partially or wholly offset each other's returns and thus reduce overall portfolio volatility. Markowitz pioneered the mean-variance approach which has been used to determine the optimal portfolio allocation. An optimal portfolio of assets is selected by combining an efficient frontier with a specification of the investor's preferences for risk and return. Furthermore, according to Darst (2003, pp46-47):

“.....the asset allocation process draws upon and ties into Markowitz's Modern Portfolio Theory by focusing on the effects that including, limiting, or excluding a specific asset class will have on the risk (volatility) and return characteristics of the portfolio as a whole”.

Any investment selection decision is preceded (either implicitly or explicitly) by an asset allocation decision. Asset allocation is therefore an important factor in the investment decision making process. Asset allocation decisions refer to the appropriate asset mix and relative weighting of asset classes in an investment portfolio. Asset allocation also seeks to identify what is the proper division of assets between conventional and alternative investments (Ragsdale and Rao 1994).

In the past asset allocation was described as a pedestrian and ad hoc process. Institutional investors were generally advised to place 60% of their assets in stocks and 40% in bonds. Today, the asset allocation process is a far more rigorous exercise for institutional investors involving the use of complex and sophisticated decision making tools and techniques that have transformed the process. Asset allocation is now seen as a complex system of interdependent decisions that is divided into two broad categories: strategic (longer term) and tactical (short term) allocation. There are now several economic, statistical and financial principles which affect the asset allocation decision. In addition, asset allocation and asset selection decisions are now increasingly being made by investment fund managers and asset consultants (Haus 2004, Lummer and Riepe 1994, Rowland 2010, Wendt 1994).

### Property Asset Allocation Concepts

Typically, institutional investors have used their property allocations to improve portfolio performance by adding an uncorrelated asset class (MacGregor and Nanthakumaran 1992, Morrison 2010). Combined with its comparatively good returns, real estate's low volatility (even after adjusting for the effects of valuation smoothing) emphasise its attractive risk and return characteristics to investors (Bond et al 2007, Dhar and Geotzmann 2005). Although property has always been considered as one of the major asset classes in an investment portfolio, it has a number of disadvantages, mainly illiquidity. Robinson (2002) explains that in the context of property investment, illiquidity is a major deterrent to investment and divestment decisions because of the time required to complete a transaction.

According to Dhar and Geotzmann (2005), the allocation of resources to property provides several challenges for institutional investors as choices about investment vehicles have expanded over the past two decades with the rise of REITs and other unlisted property funds and syndicates. In addition, the decision making process may differ for unlisted property and REITs and based on the size and type of fund, therefore making generalisations across funds inappropriate. Parker's (2010) extensive literature survey of REITs found that, in theory, the investment decision making process is sequential and linear but the nature and extent of the process may differ between investment products.

Several leading researchers (Craft 2001, De Wit 1996, Farragher and Savage 2008, Rowland 2010) have concluded that property asset allocation is typically made in the context of a mean-variance framework. An optimal portfolio of assets is selected by combining an efficient frontier (representing the risk and return characteristics of available portfolios) with a specification of the investor's preferences for risk and return. Dhar and Geotzmann (2005) explain that the application of modern portfolio theory as developed by Markowitz is almost mechanical once all the parameters of the asset return distributions are known. However, in reality, investors are faced with considerable uncertainty about the true underlying return-generated process.

According to French (2001), whilst definitive inputs in a property asset allocation model (historic data or predictive forecasts) are important, fund managers are also influenced by many other non-financial considerations such as behavioural issues. Fund managers use their own judgement, experience and creativity to make a good property allocation investment decision. An earlier study by Worzala and Bajtelsmit (1997) of US pension funds found that the most common investment technique used for real estate allocation was general experience/ intuition.

Some institutions determine future property allocation by anchoring on their current allocation. This may primarily be due to the fact that they see the current allocation as conceptually a safer harbour and it thus becomes a benchmark from which the institution deviates as new information becomes available and the yardstick by which the magnitude of deviation is measured (French 2001). Gallimore and Gray (2002) explored the concept of investor sentiment and argued that investor sentiment for property investment differs from that which applies to the financial markets. Their study of UK property investors found that, while there is extensive use of hard market information, use of personal feel for the state of the market or information based on the views of others is highly significant in a decision-making process.

Institutional Real Estate Inc's (2010) study of US pension funds highlights that the use of asset consultants in real estate investment strategies is commonplace. Asset consultants typically advice US pension funds on portfolio strategy, manager selection and performance monitoring. Likewise, the use of asset consultants in Australian superannuation fund property allocation decisions is also widespread. According to Newell (2008), asset consultant contributions were more evident at the strategic level, as well as in the allocation to direct property versus listed property and at the specific property fund selection level.

Institutions make reference to a series of risk and return evaluation measures when evaluating their property asset allocation decisions. Farragher and Savage's (2008) investigation of the US institutional real estate asset allocation decision making process found that the internal rate of return (IRR) and cash-on-cash rate of return were the most important return measures. Sensitivity analysis, debt coverage ratio and scenario analysis are the most popular quantitative risk assessment techniques. Rowland and Kish (2000) in a study of Australian property fund's investment decision making process identified IRR as the most important return evaluation measure. In evaluating



properties, sensitivity analysis, and to a lesser extent scenario analysis, dominated the methods of defining risk. Earlier Australian institutional investor studies (Boyd et al 1995, IPD 2000, Newell et al 1993) also identified IRR and the initial yield as the most frequently used measures of property return, with sensitivity analysis being the most popular risk analysis technique.

Dhar and Geotzmann (2005) and Rowland (2010) explain that the secular trends in property returns (ranging from periods of credit crunch to the boom in values) made long-term forecasts of risk and return somewhat challenging. Events such as the 2007 global financial crisis have seen investors questioning fund managers' investment models, with a re-think on the optimal allocation level to property assets and the related asset allocation strategies. Newell (2008) found that institutional investors were unsure about the impact of their future exposure for both direct and listed property, with this uncertainty being stronger for A-REITs than direct property. The institutional survey conducted as part of this research investigated these issues, including the theories and concepts related to property asset allocation in an Australian context.

### **Research Design**

After university ethics approval and a pilot study, the survey was mailed to a target sample of 130 institutional fund managers and asset consultants within Australia. The survey data was collected between May – August 2011 through semi-structured questionnaires. For confidentiality reasons all information is reported in an aggregate format. Previous institutional surveys (Newell et al 1993, Rowland and Kish 2000) on the subject similar to the research topic have generally targeted a sample size of 100 participants. The target respondent group included superannuation funds (60), investment management wholesale funds (40), property funds (15) and asset consultants (15).

The respondent selection was based on judgemental (non-random/ non-probability) sampling. The institutions surveyed were identified on the basis that they held or managed significant investments in real estate assets (both direct and indirect). The sample respondent list for superannuation funds was drawn from the Australian Prudential Regulation Authority publication 'Superannuation Fund-Level Profiles and Financial Performances: September 2010'. The list of investment management wholesale funds for the survey was identified from the Australian Trade Commission publication 'Investment Management Industry in Australia: June 2010'. Respondents were shortlisted after consultation with industry experts.

Of the targeted 130 institutions, the survey pack was successfully delivered to 125 respondents. In total, 79 institutions responded to the survey which included 51 completed responses and 28 refusals. The 51 completed responses included superannuation funds (21) (Public Sector Superannuation 9; Industry Superannuation 6; Corporate Superannuation 3; Retail Superannuation 3), investment management wholesale funds (15), property funds (7) (to avoid bias results, responses from property funds have been excluded from some survey analysis) and asset consultants (8). From the 28 institutions that did not agree to be part of the survey, 19 were superannuation funds that mainly out-sourced their property asset allocation functions to asset consultants or external managers. Some funds were also in the process of being merged with other superannuation funds. The asset consultant firms surveyed were those listed as service providers for the targeted superannuation funds.

Overall, the completed response rate for the survey was 41%, refusals 22% and non-response rate 37%. The list of survey respondents/compilers included chief executive officers (8), chief investment officers (18), fund managers (14) and analysts/ consultants (11).



## SURVEY RESULTS AND DISCUSSION

### Property Allocation Level of Funds Surveyed

The funds under management of institutions surveyed (excluding asset consultants) were approximately A\$576 billion, distributed approximately 50% superannuation funds, 39% investment management funds and 11% property funds (PFs). The property exposure for these institutions was approximately A\$115 billion. The total property exposure excluding property funds was A\$53 billion.

Table 1 provides details of the Australian fund manager's property asset allocation levels in relation to their funds under management.

<i>Property Type (% of FUM*)</i>	<i>Superannuation Funds (21)</i>	<i>Investment Management Funds (15)</i>	<i>Average**</i>
<b>Direct Property</b>	<b>4%</b>	<b>2%</b>	<b>3%</b>
<b>Indirect Property</b>			
REITs	3%	4%	4%
Unlisted Property Fund	5%	1%	3%
<b>Total indirect property</b>	<b>8%</b>	<b>5%</b>	<b>7%</b>
CMBS	0%	1%	0%
<b>Total Property Exposure</b>	<b>12%</b>	<b>8%</b>	<b>10%</b>

\*FUM refers to funds under management.

\*\*Total valid sample size was 36 (excluding property funds and asset consultants).

### Property Allocation Level for Fund Surveyed

Source: Author

Table 1

Property formed 12% of the superannuation fund and 8% of the investment management fund's portfolio. The average property asset allocation level for superannuation funds and investment management funds surveyed was 10% (3% direct and 7% indirect). The results are consistent with earlier studies (Armytage 2002, Newell et al 1993, Newell 2008, Rowland 2010) and shows that the allocation to property has remained unchanged (average of 10% or lower) for Australian managed funds in recent decades.

Of the total number of institutions surveyed, 28% expect their property allocation target to move within the 11-15% range within the next 5 years. This expected higher allocation to property is a reflection of funds seeking greater portfolio stability post 2007 global financial crisis. The results are consistent with PCA (2009) who report forecast allocation to property to increase to 10-15% for some Australian managed funds.

The size of the funds under management has a direct impact on the property allocation decisions of fund managers. Table 1 shows that superannuation funds, who tend to have greater funds under their management (50% of total funds of those surveyed) have a higher allocation to property (12%) when compared to Investment Management Funds, holding 39% of the funds under management and having an allocation of 8%.

In terms of the investment strategy, only 16% of the institutions surveyed invested in property assets directly, with the majority investing via property fund vehicles (45%), mandate (24%) and

investment management funds (15%). Respondent comments indicate that there is disparity in how institutions surveyed classify different property assets. Some fund managers surveyed now categorise direct property within the unlisted band together with infrastructure assets. REITs are increasingly banded within the equities asset class. Other respondents argued that the mindset needs to change, stating that fund managers/ investors need to understand the function and dynamics of real estate and to keep REITs out of the general equities classification.

The level of managed fund investment in property assets and the related investment strategies are largely dependent on the property personnel available. The asset allocation team of the managed funds surveyed generally consists of 4 to 12 committee members with property staff representation being 1 to 2. Other representations on the asset allocation committee are from the equities and bonds team. Some fund managers and asset consultants surveyed were at unease with the low level of property personnel presence within the fund asset allocation team. The key concern was that their lack of understanding of local and overseas property products or markets indirectly limits the fund's exposure to property assets.

The average number of property professionals employed to make property allocation decisions for the institutions surveyed is three (excluding PFs). This figure generally includes one senior manager and two analysts each contributing 50% of their time. Funds that do not employ any property professionals outsourced their property allocation and investment management functions to asset consultants or via other partnerships.

Table 2 provides a cross-tabulation of results for number of property professionals employed by fund managers versus their level of property exposure and related property investment strategy.

<i>Property Professional Employed:</i>	<i>0</i>	<i>1 to 3</i>	<i>3+</i>
<b>Superannuation (21)</b>	11	7	3
<b>Investment Management Funds (15)</b>	1	12	2
<b>Percentage of funds surveyed (36 excl. PFs)</b>	<b>33%</b>	<b>53%</b>	<b>14%</b>
<b>Property Exposure \$ Billion</b>			
Average	0.4	1.6	3.2
Lowest	0.1	0.2	0.2
Highest	1.1	4.0	8.0
<b>Property Investment Medium:</b>			
Direct Property	0%	21%	43%
Indirect/ Securitised Property	100%	79%	57%

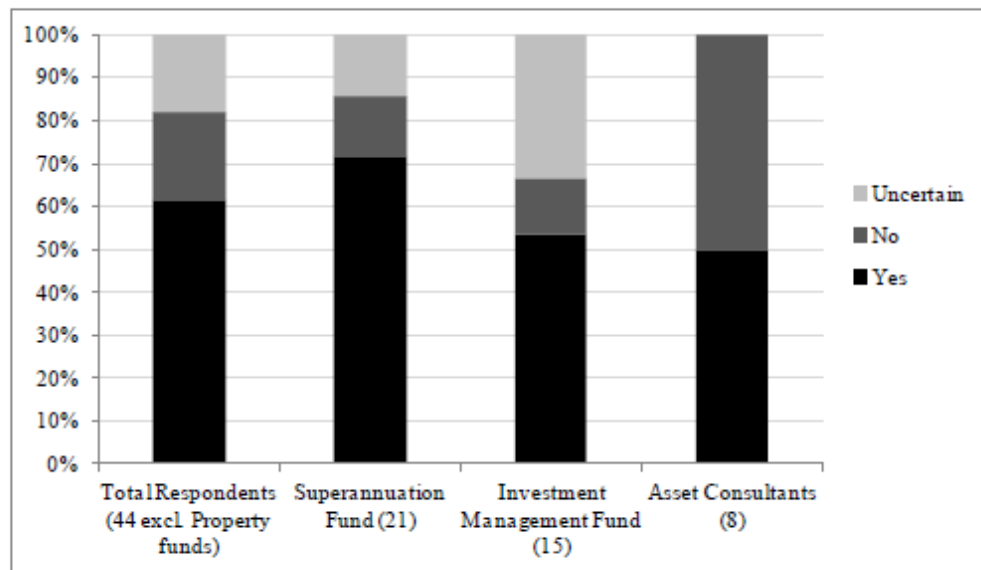
**Cross Tabulation: Number of Property Professionals Employed vs Property Exposure**  
Source: Author  
**Table 2**

Of the 36 managed funds surveyed (excluding PFs), 33% do not employ any property staff, while 53% employed between 1 to 3 and only 14% had more than 3 property personnel. The funds that did not employ any property professionals had a nominal average property investment of A\$0.4 billion. In contrast, funds that employed staff with property backgrounds generally had property investments in the range of A\$1.6 to \$3.2 billion (average). Funds with fewer than 3 property staff

are likely to invest predominantly in the indirect or securitised property sector. Funds with higher number of property personnel (3+) are likely to invest actively in both the direct and indirect property investment sectors. The cross-tabulation results indicate that the number of property personnel employed by an institution has a direct impact or influence on a fund's level of property asset allocation and its property investment strategy. The results indicate that funds with greater levels of property expertise are likely to invest more actively in both direct and securitised property markets. Funds with no property expertise are limited in their property exposure, particularly direct property investments.

#### Is the Current Allocation to Property Optimal?

Figure 2 illustrates the respondents view on whether the current level of allocation to property is optimal for their funds.



#### Respondent's view on whether Current Allocation Level to Property is Optimal

Source: Author

Figure 2

A majority of the institutions surveyed (61%) are comfortable with their current level of property asset allocation. However, approximately 39% of respondents believe that the current allocation level to property is not sufficient or were uncertain.

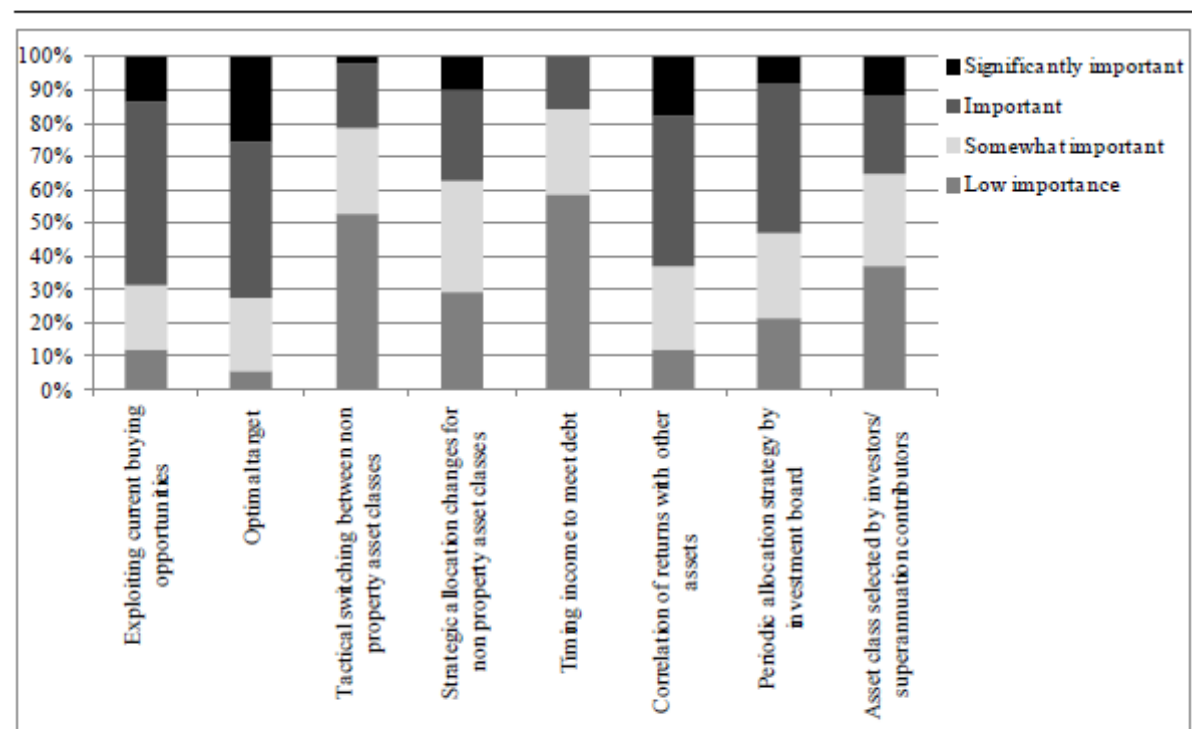
Respondents felt that the allocation level to property for their funds was optimal based on the institution's asset liability modelling, portfolio construction process, risk/return profile, advice received from asset consultants and property's relative attractiveness to alternative assets. In most cases, the institutions have pre-agreed investment constraints and thus manage their property optimisation process within those constraints. Respondent comments highlight liquidity as the predominant constraint to optimal property allocation decisions. Apart from liquidity, other constraints to optimal property allocation include management fees, limitations on modelling, limits on listed/ unlisted split, difficulty in obtaining stock, declining market conditions, funds available to invest, entry restrictions and time and staff.



An interesting factor was that some fund managers surveyed felt that their institution's allocation level to property was optimal based on the assumption that it equates to a neutral market allocation of 10%. This conforms to research conducted in UK (French 2001, Gallimore and Gray 2002) which highlighted that some institutions may determine future property allocation by initially anchoring on their current allocation or information based on the views of others in the market. As direct property is a long-term investment with large capital outlay, the inclusion of property within a portfolio assists with diversification and it will be expensive for organisations to change their investment strategies.

### What Influences Property Allocation Target?

The fund managers were also asked to rank the importance of a set of key factors that are likely to influence how much property their institution holds. The results are illustrated in Figure 3.



**Factors Influencing Property Allocation Target**

Source: Author

**Figure 3**

Overall, the dominant factor likely to influence how much property an institution holds is the *exploiting of current buying opportunities*. Interestingly, tactical switching between asset classes was ranked as a low importance factor. Rowland and Kish (2000) in an earlier study of Australian property fund managers identified tactical switching between asset classes as the most important factor likely to influence the level of property weight in a portfolio. The current results are reflective of the changes in property asset allocation tactics for Australian fund managers amid a competitive and uncertain market.

Funds Managers were also asked if there are written rules that restrict what percentage of their investment portfolio can be allocated to property assets. Of the total 21 superannuation funds surveyed, 13 (or 62%) have specified limits to their property allocation levels. Similarly, 67% of the

investment management funds surveyed and 63% of the asset consultants surveyed are restricted by their (or their client's) investment policy statements when determining optimal allocation to property assets. The responses indicate that for some funds there may not be restrictions placed specifically for property assets, but unlisted investments generally. The written rules governing target allocation to property assets can be amended by the investment committee.

#### Property Allocation Process

The fund managers surveyed were asked to identify and describe their institution's property asset allocation strategies. The responses indicate that Australian managed fund's property asset allocation models are generally run on a 7-10 year (strategic allocation) and 1-3 year (dynamic allocation) time horizon.

Strategic asset allocation (SAA) was identified as the fund's long term property investment strategy or policy. Dynamic strategic asset allocation (DSAA) was defined by fund managers surveyed as a medium term tilt from the fund's long term property allocation strategy mainly to defend against or exploit market extremes. Tactical asset allocation strategy (TAA) is described by respondents as short term opportunistic moves, linked to annual business plans and only relevant to listed property. The decision-making process for these long and short terms strategies is the same, but the timing within which decisions are made or reviewed differs (annually, quarterly or monthly/weekly).

Table 3 provides details of the asset allocation strategies adopted by Australian fund managers for property assets.

<i>Institutions</i>	<i>SAA</i>	<i>DSAA</i>	<i>TAA</i>
<b>Total Respondents (44 excl. Property funds)</b>	<b>57%</b>	<b>22%</b>	<b>21%</b>
Superannuation Fund (21)	54%	26%	20%
Investment Management Fund (15)	63%	17%	21%
Asset Consultants (8)	47%	35%	18%

#### Fund Manager's Property Asset Allocation Strategies

Source: Author

Table 3

Table 3 results illustrate that SAA is the dominant asset allocation strategy used by the fund managers for property; reflective of the nature of the property asset class (illiquid and long-term investments). However, respondent comments indicate that shorter term strategies (DSAA, TAA), although not as prominent as SAA, are now viewed as more effective by fund managers. In particular, dynamic asset allocation strategy has become more prominent for several funds surveyed due to its ability to react to the current market environment more effectively. Respondent comments indicate that post 2007 global financial crisis investors are disbelieving of long term data and therefore the industry is more tactical than in the past. It would appear that those organisations that employ a higher number of property professionals are more open to apply DAA strategies.

Of the total number of 51 institutions, only 15 (or 29%) outsourced their asset allocation models, with 11 being superannuation funds and 4 investment management funds. A significant majority (92%) of the institutions that out-source their property allocation and investment management functions do not provide complete discretion to outside managers or consultants.

### Determining Optimal Allocation to Property Assets

Table 4 provides a summary of the key determinate factors that guide Australian fund manager's property asset allocation decisions.

The institutions surveyed determine an optimal allocation view for property assets based on the fund's asset allocation strategy, external advice and a series of quantitative analysis and qualitative overlay. Funds would generally have a capital markets or investment research team that provide analysis and run optimiser models (both historic and forecast integrated such as efficient frontier) for each investment asset class. The fund's asset allocation committee would review both in-house and external recommendations for determination of the institution's optimal allocation to property assets.

<i>Key Determinate</i>	<i>Drivers/ Inputs</i>
Asset Allocation Committee	Investments choices by plan members
Asset consultant advice	Fund member profile (such as age)
Investment policy statement	Funds available to invest
Product Disclosure Statement /Prospectus	Client investment mandates/ objectives or expectations
Fund investment strategy	Client investment constraints
Quantitative and qualitative analysis	Investment philosophy (active, risk managing)
	Risk tolerance
	Risk/return forecast
	House view on asset classes/ opportunities (correlation with other assets)
	Characteristics of property (assessment of liquidity)
	Liability matching (superannuation)
	Economic trend
	Market view/ peers
	Regulatory compliance – ASIC/ Corporation Act/ Superannuation Act )

### Key Determinate Factors Influencing Fund's Optimal Allocation View for Property

Source: Author

Table 4

For most superannuation funds surveyed, external advice and asset liability modelling were the key determinates of optimal allocation to property assets. Asset consultant's optimal allocation view is customised to their client's investment objectives. Like superannuation funds, the investment management funds surveyed determine their optimal property allocation view based on a series of quantitative analysis and qualitative overlays. However, their analysis is predominantly undertaken in-house. External advice (mainly from asset consultants) is limited to setting up fund's strategic asset allocation targets on 3-5 year intervals.

The institutions surveyed use a number of forecast models (property, capital markets, financial and mathematical) and software to aid their property asset allocation decisions. Larger funds would generally have a team of in-house professionals dedicated to conducting industry research, developing and maintaining databases on various markets and submarkets such as economic, geographic, political, capital markets and property. Such databases would also track the performance of various property markets and sub sectors including key property statistics (rental, occupancy, outgoings and valuation), demand and supply forecasts, transaction volumes, construction or re-development costs, correlation matrix (property vs alternative assets) and other



variables. Smaller funds that did not employ any property professionals or have a small research team base their property asset allocation decisions on analysis conducted by industry consultants.

Table 5 provides a summary of quantitative analysis methods and qualitative overlay used by the institutions surveyed as part of their property asset allocation decision-making process.

<i>Methods</i>	<i>Key Inputs</i>
<b>Quantitative</b>	Portfolio construction process (investment objective/ strategy)
Valuation modelling (cap rate)	Asset consultant advice
Scenario analysis	Investment committee meetings
Efficient frontier based on historical returns	External fund manager meetings
Mean variance optimiser	Software (Cougar; bespoke; Yardi; Estatemaster; Argus)
Covariance	Market understanding (in-house research):
Monte Carlo simulations	<ul style="list-style-type: none"> <li>▪ property market fundamentals</li> <li>▪ property market forecast (expected long term fluctuations in values)</li> <li>▪ top-down and bottom up analysis (property and economic)</li> <li>▪ economic forecast</li> <li>▪ historical data</li> <li>▪ capital markets assumptions</li> </ul>
Risk/return analysis	Factsheet/ data from managers (e.g. returns, leverage etc)
Volatility analysis	Market investment opportunities
Correlation matrix	Investment timeframe
Factor analysis	Funds available to invest
Financial models (cashflow; P&L; DCF)	
Financial ratios (REIT specific)	
Econometric models	
Asset liability modelling	
Portfolio construction models/ portfolio optimiser	
Relative return models vs alternative investments	
<b>Qualitative</b>	
Judgement ("gut-feeling")	
Manager skill and quality	
Asset quality	
General discussions with managers	
Client/ member views (surveys)	
Investor/ shareholder meetings	
Fund manager experience/ understanding	
Industry peer comparison	

#### **Analysis Techniques Influencing Property Asset Allocation Decisions**

Source: Author

**Table 5**

The results show that Australian fund managers use a combination of quantitative and qualitative analysis as part of their property asset allocation decision-making process. The type of quantitative analysis that generally aids Australian fund manager's property asset allocation decisions includes valuation, financial/ investment analysis models and economic analysis. Asset allocation models used are efficient frontier analysis based on historical returns and scenario analysis.

Fund managers surveyed have also placed greater importance on qualitative overlay to any quantitative output before decisions are finalised. The key qualitative overlays identified by the Australian fund managers include judgement ('gut-feeling'), experience and understanding of investing in property assets, feedback from clients or shareholders, fund manager skills, asset

quality assessment and peer comparison. The results are comparable to similar studies conducted overseas (French 2001, Gallimore and Gray 2002, Worzala and Bajtelsmit 1997) that identified general experience/ intuition, judgement and the use of personal feel of the market as key qualitative factors that influence institutional property allocation decisions in the US and UK.

Institutions surveyed were asked to rank internal and external factors that are likely to influence their property asset allocation decision making process. Table 6 illustrates the results by institutions surveyed.

<i>Internal factors influencing property asset allocation decision</i>	<i>Overall (51)</i>	<i>Super'n Fund (21)</i>	<i>Investment Mgmt Fund (15)</i>	<i>Property Specific Fund (7)</i>	<i>Asset Consultant (8)</i>
Advice from internal investment team	5	5	5	4	5
Relative external asset manager skills	4	5	3	2	5
General skills/ intuition of decision-maker	4	4	4	4	4
Intended investment period	4	4	4	4	4
External factors influencing property asset allocation decision					
Recent trends in the property market	4	4	4	4	4
External/ independent advice	4	4	3	3	4
Actions taken by industry peers	3	3	3	2	3
Market sentiment	3	3	3	2	3
Regulatory/ legislative environment	4	4	3	3	4
Economic environment/ outlook	4	4	4	4	4
Financial market conditions	4	4	4	4	4
Market demand and supply factors	4	4	4	4	4

Note: Degree is median score on a scale of 1 to 5 (1 not important; 2 low importance; 3 somewhat important; 4 important; 5 significantly important)

**Internal and External Factors Influencing Property Asset Allocation Decisions:  
Median Rank by Fund Type  
Source: Author  
Table 6**

Responses on a fund specific level were generally parallel, with *advice from internal investment team* rated as the most important internal factor likely to influence the property asset allocation decision making process. The key external factors likely to influence a fund's property asset allocation decision were *market demand and supply*, *economic environment and outlook* (inflation, interest rate and exchange rate), *financial market conditions* and *recent trends in the property market*.

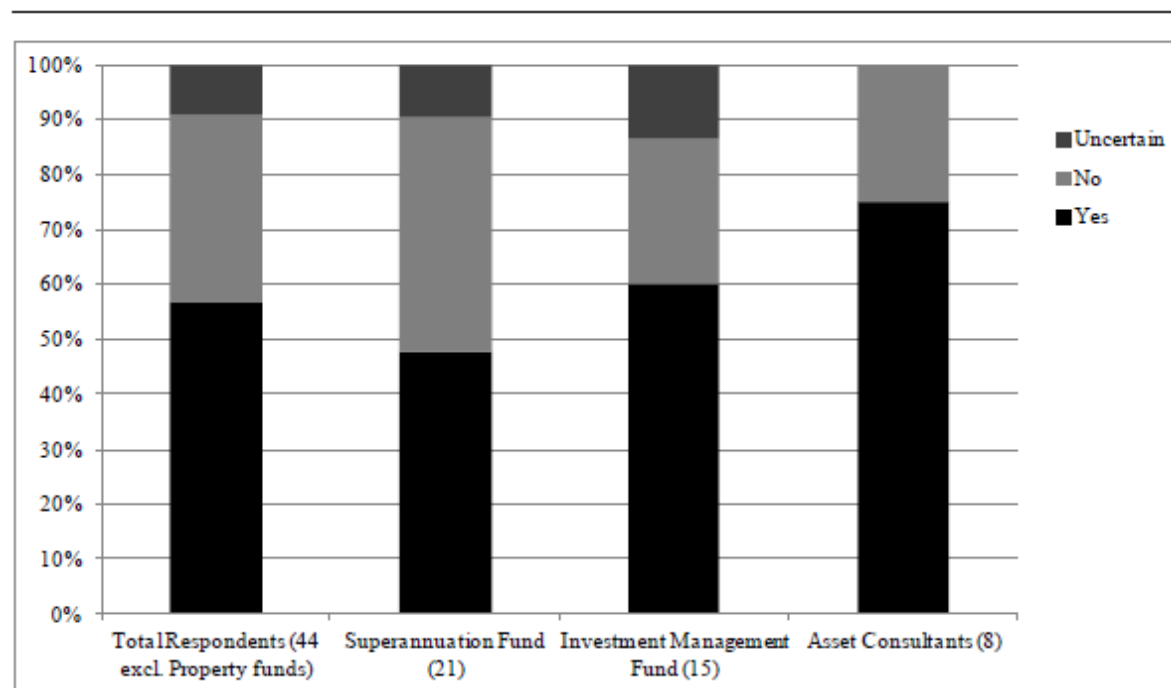
Table 6 shows the correlation of results was high between the superannuation funds and asset consultants with both also ranking *relative external asset manager skills* as significantly important. The factors that are rated as less significant or somewhat important for Australian fund manager's property asset allocation decision making process include *actions taken by industry peers* and *market sentiment*. Respondent comments indicate that whilst action taken by industry peers may be considered by fund managers, it does not drive their own property asset allocation process.



Overall, the results were comparable to similar studies conducted overseas (Dhar and Geotzmann 2005, Gallimore and Gray 2002, Worzala and Bajtelsmit 1997) that highlighted relative skills of external manager, intuition, statistical estimates of risk and return and long-term historical performance as the key factors influencing institutional investor's property allocation decisions. However, these studies also placed greater importance on peer comparison and market sentiment.

#### Optimising Future Property Allocation Level

Despite the current low allocation level, indications are that a majority of the funds are likely to increase their investment in property assets. Figure 4 provides details of whether the institutions surveyed expect any change to their level of property asset allocation in the next 5 years.



#### Do Institutions Expect Change in Property Allocation in the Next 5 Years?

Source: Author

Figure 4

Figure 4 shows the level of responses indicates that approximately 56% of the funds surveyed expect to see changes in their property asset allocation level in the next 5 years. The institutions that have indicated a change in their property asset allocation level were driven by its attractive risk/return outlook. According to the survey respondents, property's mid to low risk asset classification and its strong inflation hedging characteristics are likely to continue to attract investors in future. The key reasoning behind the expected change in property asset allocation level includes:

- i) a move away from listed market – the current trend is to diversify away from REITs with higher allocation to direct property and unlisted property funds due to the stability of income;
- ii) examining international property opportunities or allocating additional property investment offshore due to factors such as the growth in Asian

- markets, higher Australian dollar and lack of opportunities locally. Also potential move towards global REITs from Australian A-REITs; and
- iii) portfolio diversification and stability, with the need to attain a 50/50 split between listed and unlisted assets.

The respondent comments were similar across the managed funds concerning their future property allocation direction. The asset consultants surveyed also expect a minor increase in the level of property allocation for their wholesale clients due mainly to market factors such as the stabilisation of the property fund industry.

Fund managers surveyed also indicated their desire to have more control in how they invest in property assets. Funds are more focused on core assets and owning property directly to reduce risk. Although indications are that Australian managed funds will become more direct participants in property, the investments will mainly be via partnership and mandates. Respondents stated that the preference for direct is due to the control element, ability to control key decisions relating to the assets. The consensus view was that fund managers were only interested in making key decisions. They do not want to be involved in the day-to-day operation of the assets, i.e. they don't want to be asset managers. This will be a slight change from current allocation strategies where managed funds largely allowed external managers to make the key property asset selection, investment and divestment decisions.

## CONCLUSION

The research illustrates that there has been a shift in Australian fund manager's property asset allocation views and strategies driven mainly by the fund's need to adapt to the continued uncertain global financial and investment market conditions. Although strategic asset allocation remains the dominant property allocation strategy, shorter term strategies, in particular dynamic asset allocation structure has become more prominent for several funds due to its ability to react to the current uncertain market environment more effectively.

The techniques and analysis that drive Australian fund manager's property asset allocation decisions are sophisticated and comparable to those utilised by US and UK fund managers. The key quantitative asset allocation analyses include efficient frontier analysis based on historical returns and scenario analysis. Fund managers also placed significant importance on qualitative overlay, mainly judgement ('gut-feeling') and experience.

Fund managers surveyed were generally comfortable with the current level of property allocation based on their institution's asset liability modelling, risk/return profile and advice from asset consultants. It is interesting to note that neutral market view (10%) drives optimal property allocation decisions for some funds. In most cases, fund managers have predetermined investment constraints and thus manage their property optimisation process within those constraints. Liquidity was the predominant constraint to optimal property allocation decisions.

Going forward, allocation to property assets will remain important for Australian fund managers. The effect of declining stock market values due to continued uncertain global financial market conditions is expected to increase the need for funds to focus on stable investment sectors such as property. Australian fund managers are now downgrading indirect /securitised property exposure, with higher weighting to direct property. Fund managers are also seeking greater international property exposure due to factors such as a higher Australian dollar and lack of opportunities locally. This may result in some managed funds adopting a more in-house approach with larger investment teams involving more property expertise to drive their property asset allocation analysis and decisions. Although indications are that Australian managed funds will become more direct



participants in property, the investments will mainly be via partnership and mandates. Overall, the push towards direct property is reflective of the need to achieve greater portfolio stability and the need for funds to have more control over key decisions relating to their assets (strategic and investment level).

## REFERENCES

- Alexander, GJ, Sharpe, WF and Bailey, JV 2001, *Fundamentals of investments*, 3rd edition, Prentice Hall International Inc, New Jersey.
- Australian Prudential Regulation Authority 2011, *Annual superannuation bulletin June 2010*, January edition, APRA, Commonwealth of Australia, Canberra.
- Australian Prudential Regulation Authority 2011, *Superannuation fund-level profiles and financial performance September 2010*, APRA, Commonwealth of Australia, Canberra, viewed on 25 June 2011 < <http://www.apra.gov.au> >.
- Armytage, P 2002, 'What is property? property: challenging conventional thinking', *Australian Property Journal*, May, pp.104-111.
- Austrade 2010, *Investment management industry in Australia*, Australian Trade Commission Financial Services Division, Canberra.
- Bond, SA, Hwang, S, Mitchell, P and Satchell, SS 2007, *Asset allocation in the modern world*, Investment Property Forum, London.
- Boyd, T, MacGillivray, H and Schwartz, AL 1995, 'A survey of real estate capital budgeting practices in Australia', *Journal of Real Estate Literature*, Vol. 3, pp. 193-201.
- Craft, TM 2001, 'The role of private and public real estate in pension plan portfolio allocation choices', *Journal of Real Estate Portfolio Management*, Vol. 7, No. 1, pp. 17-23.
- Darst, DM 2003, *The art of asset allocation: asset allocation principles and investment strategies for any market*, McGraw-Hill, New York.
- De Wit, DPM 1996, 'Real estate portfolio management practices of pension funds and insurance companies in the Netherlands: a survey', *Journal of Real Estate Research*, Vol. 11, No. 2, pp. 131-148.
- Dhar, R and Geotzmann, W 2005, *Institutional perspectives on real estate investing: the role of risk and uncertainty*, Pension Real Estate Association, Hartford, Connecticut.
- Farragher, EJ and Savage, A 2008, 'An investigation of real estate investment decision-making practices', *Journal of Real Estate Practice and Education*, Vol. 11, No. 1, pp. 29-40.
- Flick, U 2006, *An introduction to qualitative research*, 3rd edition, SAGE Publications Inc, London.
- Fowler, FJ 2009, *Survey research methods*, 4th edition, SAGE Publications Inc, Singapore.
- French, N 2001, 'Decision theory and real estate investment: an analysis of the decision-making processes of real estate investment fund managers', *Managerial and Decision Economics*, Vol. 22, pp. 399-410.
- Gallimore, P and Gray A 2002, 'The role of investor sentiment in property investment decisions', *Journal of Property Research*, Vol. 19, No. 2, pp. 111-120.
- Geltner, DM, Miller, NG, Clayton, J and Eichholtz, P 2007, *Commercial real estate analysis and investments*, 2nd edition, Thomson South-Western, Mason, USA.
- Gitman, LJ, Joehnk, MD, Juchau, RH, Wheldon, BJ and Wright, SJ 2004, *Fundamentals of investing*, Australian 2<sup>nd</sup> Edition, Pearson Education Australia, New South Wales.
- Hauss, H 2004, 'The role of institutional property investments in the global asset allocation process', *Australian Property Journal*, August, pp. 198-205.
- Higgins, D 2007, 'Placing commercial property in the Australian capital markets', *RICS Research Paper Series*, Vol. 7, No. 12, London.
- Investment Property Databank 2000, *The assessment and management of risk in the property investment industry*, IPD, London.

- Institutional Real Estate Inc 2010, *The language and culture of the pension real estate investment market*, IREI, San Ramon, USA.
- Lummer, SL and Riepe, MW 1994, 'The role of asset allocation in portfolio management', in Lederman, J and Klein, RA (eds.), *Global asset allocation: techniques for optimizing portfolio management*, John Wiley and Sons Inc, New York, pp.1-6.
- MacGregor, BD and Nanthakumaran, N 1992, 'The allocation to property in the multi-asset portfolio: the evidence and theory reconsidered', *Journal of Property Research*, Vol. 9, No. 1, pp.5-32.
- Markowitz, H 1952, 'Portfolio selection', *The Journal of Finance*, Vol. 7, No. 1, pp. 77-91.
- Morrison, DF 2010, *Investment strategies in the current market*, Morgan Stanley, USA.
- Newell, G 2008, 'The significance of property in superannuation funds', *Australian and New Zealand Property Journal*, Vol. 1, No. 8, pp. 670-677.
- Newell, G, Acheampong, P and Worzala, EM 2002, 'Property research priorities in Australia', *Pacific Rim Property Research Journal*, Vol. 8, No. 2, pp. 127-139.
- Newell, G, Stevenson, K and Rowland, P 1993, 'Institutional investor criteria for property investment', *The Valuer and Land Economics*, Vol. 32, No. 6, pp. 450-454.
- Parker, D 2010, *REIT investment decision making: a multi-step process*, proceedings of the 16th Annual Pacific Rim Real Estate Society Conference, 24-27 January 2010, Wellington, New Zealand.
- Property Council of Australia 2009, *Australian property investment industry: June 2009*, PCA, Sydney.
- Ragsdale, EK and Rao, GR 1994, 'Tactical asset allocation at Kidder Peabody', in Lederman, J and Klein, RA (eds.), *Global Asset Allocation: Techniques for Optimizing Portfolio Management*, John Wiley and Sons Inc, New York, pp.208-225.
- Robinson, J 2002, *Asset allocation in balanced portfolios: a note on the place of property*, proceedings of the 8th Annual Pacific Rim Real Estate Society Conference, 20-22 January 2002, Christchurch, New Zealand.
- Rowland, PJ 2010, *Australian property investment and financing*, Thomson Reuters (Professional Australia) Limited, NSW.
- Rowland, PJ and Kish, J 2000, 'Decision making by property fund managers: a survey', *Australian Property Journal*, May, pp.104-111.
- Wendt, RQ 1994, 'Strategic asset allocation: asset/liability forecasting from A to Z', in Lederman, J and Klein, RA (eds.), *Global Asset Allocation: Techniques for Optimizing Portfolio Management*, John Wiley and Sons Inc, New York, pp.162-194.
- Worzala, EM and Bajtelsmit, VL 1997, 'Real estate asset allocation and the decision-making framework used by pension fund managers', *Journal of Real Estate Portfolio Management*, Vol. 3, No. 1, pp. 47-56.

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