



Title

“CEO Overconfidence and Australian Real Estate Investment Trusts:
Trading Activity and Performance”

Submitted by

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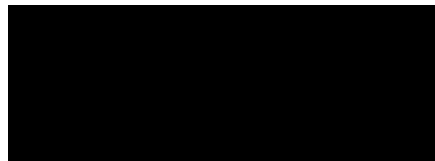
Declaration

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I declare that this thesis is my own work, except where due acknowledgment is made. It has not been submitted as a thesis or dissertation at any other institution for the award of a degree, diploma or other qualification.

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All possible care has been taken in the preparation of the information in this thesis; however, any liability for the accuracy and sufficiency of the information is expressly disclaimed.



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Signature

Date: 13/07/2020

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Abbreviations and acronyms

A\$	Australian Dollar
A-REITs	Australian Real Estate Investment Trusts
ASX	Australian Securities Exchange
CEO	Chief Executive Officer
CSR	Corporate Social Responsibility
EMH	Efficient Market Hypothesis
ESG	Environment, Social and Governance
ETF	Exchange Traded Fund
FFO	Funds from Operations
GDP	Gross Domestic Product
GFC	Global Financial Crisis
J-REIT	Japanese Real Estate Investment Trusts
LPTs	Listed Property Trusts
Market Cap	Market Capitalization
NPV	Net Present Value
REITs	Real Estate Investment Trusts
UK	United Kingdom
US	United States of America
US\$	USD

Abstract

Behavioural finance has been the focal point of discussion and attention in the last three decades, thus having a crucial role in explaining the reasons behind irrational investing. As a result, it has revealed that all stakeholders, including investors, analysts and managers are prone to irrational investment behaviour, regardless of one's experience and the level of education. Overconfidence is one of the most prominent factors that can lead investors to make irrational decisions in the financial markets, including the Australian Real Estate Investment Trust (A-REIT) market. The A-REIT market is one of the most successful REIT markets in the world. As publicly quoted companies, A-REITs may be exposed to the implications of corporate overconfidence and its influence on the investment decision-making process. This research contributes to the behavioural finance literature by investigating the degree of managerial overconfidence amongst A-REITs, as well as providing a comprehensive insight into the behavioural biases in A-REITs, with an emphasis towards the need to avoid illusions that can harm corporate or individual wealth. Whilst a similar study was conducted in the United States REIT (US-REIT) market (Eichholtz & Yönder, 2015), the scope of the research was confined to US-REITs and no other study has reported its effects in any other global REIT markets such as the A-REIT market; this being the primary contribution of the research. Using various information and secondary data, covering 92 CEOs across 46 A-REITs, the findings showed that overconfident CEOs were neither overinvesting in property nor they were selling fewer properties than their non-confident counterparts. The results also indicated that CEOs' overconfidence did not have a significant impact on A-REITs' investments, a finding that somewhat contradicts past overconfidence studies. These findings, alongside the Australian management literature and ESG scores, suggest that corporate governance may have played a major role in mitigating corporate overconfidence.

Chapter 1: Introduction

1.1 Introduction

This chapter begins by introducing Australian Real Estate Investment Trusts (A-REITs), behavioural finance, overconfidence and corporate governance. It then reviews the background of the study, discusses the limited research conducted, and explores the significance of the research. Lastly, the structure of the thesis is provided.

1.2 Background

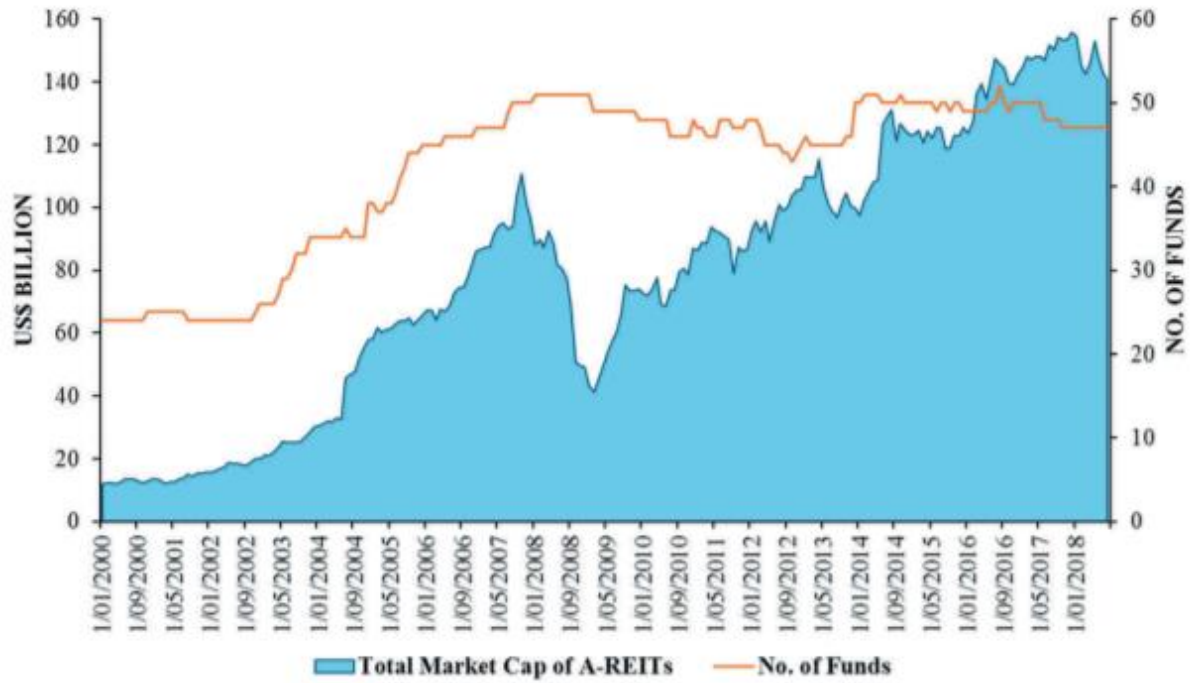
1.2.1 Real Estate Investment Trusts

A-REITs are among the most successful property investment vehicles in the world, with 46 REITs and a market capitalization (i.e.: market cap) of US\$99.82 billion in 2019 (EPRA, 2019a). This accounts for 32% of total Asia-Pacific REITs' market cap and 6% of total global REITs' market cap (EPRA, 2019a). A-REITs were previously known as LPTs (Listed Property Trusts) before they were renamed in 2008, as the REIT nomenclature is a more adapted terminology globally.

A-REITs' growth was slow during the initial establishment period, but it has experienced an accelerated growth since their market cap increased significantly since the 1990s (Capozza & Seguin, 1999; Lee et al., 2007, 2008; Lee, 2018; Newell & Peng, 2009). The authors explained that this growth is caused by a significant increase in investors' appetite towards A-REITs, especially amongst institutional investors. Newell and Peng (2009) stated that A-REITs became attractive to investors after they had an impressive track-record and a substantial increase in their commercial property assets. Furthermore, the Australian property market (which includes A-REITs) has an outstanding reputation in transparency as JLL reports, in the last decade, have shown that Australia is one of the most transparent markets in the world, with the most recent report classifying Australia as the second most transparent market in the world

after the United Kingdom (UK) (JLL, 2018) Figure 1 shows the increase in A-REITs’ market cap over the period 2000-2018.

Figure 1: Market Cap of A-REITs: 2000– 2018



Source: Lin, Cho, and Lee (2019)

The significance of A-REITs has been increasing in the last four decades and they have become one of the most attractive investment vehicles to investors seeking exposure in high-quality commercial property assets. They have multiple benefits that are of great interest to investors; these include their tax-efficient format, the wide variety of sectors they operate in, competitive total return performance, relatively low risk and the advantages associated through diversification (Lee, 2018; Newell & Peng, 2009)

1.2.2 Behavioural Finance and Overconfidence

Behavioural finance is the study into the influence of psychology on investors’ behaviour in the financial market. Its main hypothesis proposes that investors are not always fully rational and are affected by their own biases (Shiller, 2003). Behavioural finance offers psychology-

based theories to interpret and explain the anomalies in the financial market, which stand with strong contradiction to the traditional financial theories, especially the Efficient Market Hypothesis (EMH).

The EMH assumes that share prices reflect all information and that there is no way to achieve excess return consistently, either by technical or fundamental analysis. Despite its importance in the world of finance, it has been strongly criticized by the emerging field of behavioural finance and its proponents. Robert Shiller, a leading proponent of behavioural finance, explained that if anomalies in the EMH regarding stock volatility were to remain unexplained, then this should call into question its foundations (Shiller, 2003). The author stressed that the EMH ignored many market anomalies, such as the day of the week effect, January effect and the excess volatility. However, the emerging field of behavioural finance is now addressing these anomalies, a matter which made behavioural finance an important research topic (Shiller, 2003).

Behavioural finance studies the reasons behind irrational investing and examines the way people behave in the financial market. It takes into consideration that some agents in the economy and the financial market, like investors, investment analysts and policymakers, can sometimes behave irrationally, or less than fully rational (Baker & Nofsinger, 2002). In light of this, behavioural finance research revealed that every investor, retail and institutional alike, can make irrational decisions. Behavioural finance grew significantly in the last three decades, mainly because investors tend not to behave in a manner which is consistent with the traditional economics and finance theories, especially the EMH. Traditional finance holds that investors are not affected by their emotions and have no confusion concerning how information is presented to them.

Overconfidence is considered one of the strongest findings in the field of behavioural finance as well as in the psychology of judgement (De Bondt & Thaler, 2005). It is one of the most important biases and is investigated extensively in behavioural finance studies. It is an overestimation of one's ability, underestimation of risk and exaggeration of the ability to control events. Overconfidence is one of the most dangerous behavioural biases in the financial market and it can be caused by self-serving bias and illusory superiority (Benos, 1998). Psychological factors and emotions, especially overconfidence, can affect people's investment decisions, and may seriously harm their wealth (Baker & Nofsinger, 2002). Moreover, investors' overconfidence will make them trade more frequently because they tend to underestimate the risk of their investments (Hirshleifer & Luo, 2001).

1.2.3 Corporate Governance

Since this research is investigating CEOs' behaviour and A-REITs' investments, corporate governance should be addressed, as the problems of overinvestment and underinvestment could also arise because of the conflict of interests between the stakeholders of the company, including managers, shareholders and debt holders. This conflict is widely known as the principal-agent problem, and this problem itself is part of the bigger topic of corporate governance (Cariola et al., 2005; Jensen, 1986).

Corporate Governance is defined by the ASX Corporate Governance Council as the "framework of rules, relationships, systems and processes within and by which authority is exercised and controlled in corporations" (ASX, 2007). It defines the relationship between key stakeholders, management, shareholders and the board of directors. Each country has its own corporate governance principles and recommendations that companies must abide with. These principles and recommendations aim to meet the expectations of investors and achieve a good governance outcome (ASX, 2007).

In Australia, the principles and recommendations are not mandatory because the ASX Corporate Governance Council recognizes that every firm may have different culture, size, and history, along with other various differentiated factors. However, Australian firms must disclose against any recommendation they choose not to follow.

It is widely recognized that the agency problem, which is caused by the separated ownership and control in the company, could be solved by the implementation of strong corporate governance. The agency relationship is a contract in which an agent is responsible for performing a service on behalf of the principal (Jensen & Meckling, 1976). Previous studies have expressed the importance of the corporate governance role in the investment decision-making process, and its contribution in mitigating the problems of overinvestment and underinvestment (Cariola, La Rocca, & La Rocca, 2005; Jensen, 1986).

1.3 Limitations of Studies in the A-REIT Market

A significant number of finance studies have discussed the impact of overconfidence on the individual non-corporate investors level such as the study of Sakalaki, Richardson, and Bastounis (2005) that pointed out the investment decisions' essential implications of overconfidence, aside from a number of studies that found a significant impact of overconfidence on financial market activities (Glaser & Weber, 2007; Odean, 1998; Statman & Scheid, 2008) and market participation (Xia, Wang, & Li, 2014). To illustrate, overconfidence significantly influences investors' trading activity and volume, as many studies found that overconfidence leads to a significant increase in investors' trading volume (Barber & Odean, 2000, 2002; Gervais & Odean, 2001)

Be that as it may, overconfidence research which is conducted on the corporate and real estate (in particular amongst REITs) level is very limited. The US market is the only place where overconfidence researchers conducted their studies – these include the study of

Eichholtz and Yönder (2015) that investigated CEO overconfidence and US-REITs' trading activity and performance, the study of Yung, Li, and Sun (2015) that explored the financial policies undertaken by US-REITs' overconfident CEOs, and the study of Tan (2017) that examined overconfident CEOs' capital structure strategy within US-REITs, and their reasons behind issuing more debt than equity.

Overconfidence studies have played a vital role in enhancing the understanding of the financial market players' behaviour. Although a lot of research has been devoted to this area, REITs' markets received just a little attention, especially A-REITs. The property industry is a significant part of the Australian economy and a dedicated study of the factors that is affecting its investments is critical (Lee, 2008, 2009, 2017; Akimov, 2020). Not only A-REITs' managers should be concerned about their companies' investments, but also investors and financial market participants. Particularly, CEOs and investors' wealth, to certain extent, depend on the performance of A-REITs. Most importantly, A-REITs' performance and investments play a significant role in contributing to the Australian Economy.

The contribution of the property industry has been significantly increasing in the last few years. According to the Property Council of Australia, the property industry made a great contribution to the Australian GDP in 2015 (13% or \$A202.9 billion) and offers a high number of 1.4 million jobs to the Australians, more than mining and manufacturing jobs combined (Property Council, n.d.). This contribution has increased as EPRA Total Markets table shows that at the time Australian GDP was US\$1.4 trillion, the Australian commercial property market in 2019 was worth US\$612.50 billion, which includes A-REITs' market cap of US\$99.82 billion (EPRA, 2019b, 2020). Although many studies have been conducted about overconfidence in different industries, securities and countries, more behavioural and financial research concentration should be devoted to the A-REIT market because of its role and significance to the economy.

1.4 Research Aims

Understanding overconfidence, a very dangerous bias in the financial market, can help investors and investment managers avoid emotion-driven speculations that may lead to severe financial losses. All investors are vulnerable to behavioural biases, in which investors are influenced by emotions that can lead them to make irrational investment decisions (Ritter, 2003). Many factors play a role in causing and determining overconfidence, both on an individual or corporate level.

This research will provide an in-depth understanding of overconfidence when investing in REITs. This will prove useful for local or international investors, analysts, managers and shareholders who are interested to know how overconfidence can affect the trading activity and performance of financial securities, especially A-REITs. The anticipated goal of the research is to make investors and professionals more aware of their investment decision-making process by trying to avoid potential self-deception biases. It also aims to encourage investors to research more about the companies' board of directors and their market's corporate governance practices that can greatly impact corporate investment strategies.

1.5 Methodology

This is a quantitative study of CEOs' overconfidence in the A-REIT market. It uses secondary data compiled from various sources, which are Refinitiv DataStream, Eikon (Thomson Reuters), MorningStar and A-REIT annual reports. A total of 46 A-REITs is included in the study, both currently trading companies and delisted ones. EVIEWS were used to analyse the collected data. This study reviews past studies' methods to find a comparable method and model.

This research looks at CEOs' share trading activity (of their own company' shares) in the financial market and investigates the relationship between CEOs' own share trading as an indicator of their overconfidence and property investments decision-making undertaken during

their tenure as CEOs of the A-REIT companies. Further details about the sampling strategy and methodology used in this research will be provided in the methodology chapter.

1.6 Research Questions

The central question of this research is about the impact of CEOs' overconfidence, if any, on A-REITs' investments. More specifically, this research aims to examine the following two research questions:

RQ1: What is the impact of CEOs' overconfidence on the property acquisition activity?

RQ2: What is the impact of CEOs' overconfidence on the property disposition activity?

1.7 Research Significance

CEOs' overconfidence has not been investigated in the A-REIT market. Similar studies have been conducted in the US-REIT market, where CEO' overconfidence and US-REITs' trading activity and performance were examined, besides CEOs' financial policies and capital structure strategy (Eichholtz & Yönder, 2015; Tan, 2017; Yung, Li, & Sun, 2015). However, CEOs' overconfidence has not been explored in any other country.

Although many studies have been conducted about irrational investing on the individual non-corporate level, just a few have been done on the managerial level. Also, the A-REIT market is one of the largest and influential REIT markets in the world, a matter which necessitates investigating their property investment activities and how they can be influenced by the managerial overconfidence.

Further, the A-REIT market is very important for its role in the stability of the Australian economy, tangible value, source of income and providing job opportunities. As stated before, the A-REIT market alone was significant, being 7% (US\$99.82 billion) of the Australian GDP in 2019 (EPRA, 2019b, 2020).

In 2019, the US-REITs' market cap was US\$1.16 trillion (EPRA, 2019b), while the total market cap of public companies in the US stock market was around US\$ 41.15 trillion (Trading Hours, 2020). This sees the size of the US-REIT market being only 3% the size of the total stock market. On the other hand, A-REITs' market cap was US\$99.82 billion (EPRA, 2019b), while the total market cap of public companies in the Australian stock market was around US\$ 1.14 trillion (Trading Hours, 2020). Comparatively, the size of the A-REIT market is approximately 9% the size of the total Australian stock market, therefore having higher percentage than the one in the US.

1.8 Research Objectives

The objectives of this study are:

- 1) To examine the impact CEOs' overconfidence on the property acquisition activity of A-REITs.
- 2) To examine the impact of CEOs' overconfidence on the property disposition activity of A-REITs.

Table 1 outlines the research questions and objectives:

Table 1: Questions and Objectives

Research Questions	Objectives
RQ1: What is the impact of CEOs' overconfidence on the property acquisition activity?	To examine the impact CEOs' overconfidence on the property acquisition activity of A-REITs.
RQ2: What is the impact of CEOs' overconfidence on the property disposition activity?	The aim of this research question is to examine the impact of CEOs' overconfidence on the property disposition activity of A-REITs.

Table 1 shows how the two research questions contribute to achieving the main objective of this research, which is to assess A-REITs' managerial overconfidence and find out if

CEOs' overconfidence can result in their companies having an overconfident investment behaviour.

1.9 Research in the A-REIT Market

Overconfidence has been extensively studied and has rich literature in the business, finance and psychology fields. A matter which brings the question: Why research of overconfidence in listed real estate companies should be conducted although it has been studied in other stock market sectors? There are many differences between the broad stock market and the A-REIT market. Thus what can be applied in the stock market does not necessarily apply to investment vehicles like REITs (Bao & Li, 2016).

The impact of corporate governance on REITs' investments is one important example (Bao & Li, 2016). The authors explained that the agency problem is less likely to be present in the REIT market. This is consistent with Yung, Li, and Sun (2015) who stressed that the CEOs' behavioural biases can be related to variation in the capital structure, which if consistently evaluated, can help mitigate overconfidence and overinvestment problems (Billett & Qian, 2008; Jensen, 1986).

Nonetheless, corporate governance research findings in the A-REIT market have differed from what is found in the US-REIT market (Newell & Lee, 2012). The authors have found contradicting results when comparing corporate governance impact on the Australian and US-REIT markets. Corporate governance had a substantial impact on A-REITs' performance while no significant relationship was found with US-REITs' performance (Newell & Lee, 2012). Since corporate governance has a vital role in mitigating overconfidence, overinvestment and underinvestment (Cariola et al., 2005), more research should be devoted to A-REITs and overconfidence under these special settings.

Market participants in different countries have distinct social and cultural characteristics. For this reason, the level of overconfidence may vary from one country to another, hence the

same matter for the trading and investment behaviour of investors (Griffin, Nardari, & Stulz, 2007).

Taking these matters into consideration, this research aims to fill the gap and address the limitations of behavioural studies in the Australian real estate market, by studying the overconfidence of corporate and managerial decision-makers of A-REITs. If the findings differ from past studies, this provide some explanation to the variation in the overconfidence level.

1.10 Thesis Structure

This chapter has introduced behavioural finance, overconfidence, real estate and corporate governance, and introduced the gap in the real estate and behavioural finance literature. Besides, it expressed the research significance, aims and the need to understand overconfidence on the real estate corporate level in Australia.

Chapter 2 reviews the literature of behavioural finance, overconfidence, corporate governance, property and REITs in Australia and the world. After that, it proceeds to show how the conceptual framework has been developed.

Chapter 3 presents the data and explains the methodology used to answer the research question. It also describes the data sampling strategy, how the data have been collected and how they are analysed.

Chapter 4 discusses the results found after the data analysis and compares them to behavioural finance, real estate and corporate governance literature.

In chapter 5, a conclusion of the report will be provided, and the limitations will be highlighted. This final chapter discusses the research significance of the study and states its implications for directions of possible future research.

Chapter 2: Literature Review

2.1 Introduction

In this chapter, a review of REIT markets' literature is provided. It discusses property and REITs in the world and Australia. A-REITs' significance, role in investments, characteristics and related matters will be extensively reviewed. Further, a discussion of the behavioural finance theory and overconfidence is also provided.

Besides, a review of overconfidence on the corporate level is presented along with the individual level, and the limited literature that combines behavioural finance issues with the REIT market is covered. Furthermore, the role of corporate governance is discussed along with its effects on corporate investments' behaviour.

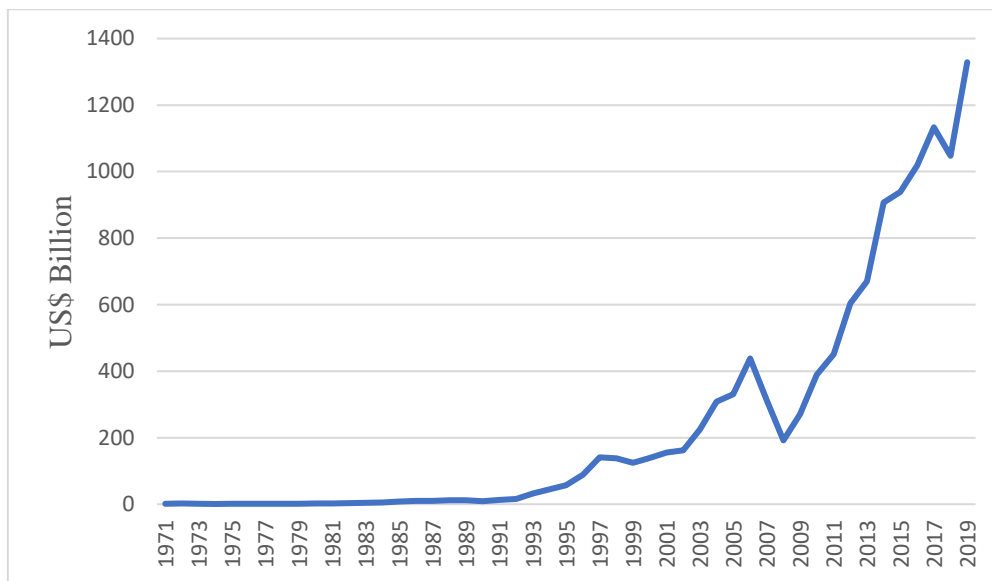
2.2 Review of Property and Real Estate Investment Trusts

2.2.1 Real Estate Investment Trusts Establishment and Growth

In the 1960s, REITs were created by the US Congress. REITs are companies that own, operate or finance income-producing properties. Investors can have access to property investment through REITs. By 2019, REITs have existed in 37 countries and territories (EPRA, 2019a). The US-REIT market became one of the most considerable indirect property investment vehicles in the world, resulting in a significant rise in its investment over the last 40 years.

As of 2019, there are 195 US-REITs with a market cap of USD\$1.1 trillion (EPRA, 2019b), while only 34 US-REITs (with a market cap of US\$1.5 billion) were trading in 1971 (NAREIT, 2020). Figure 2 shows the growth of US-REITs in the last four decades.

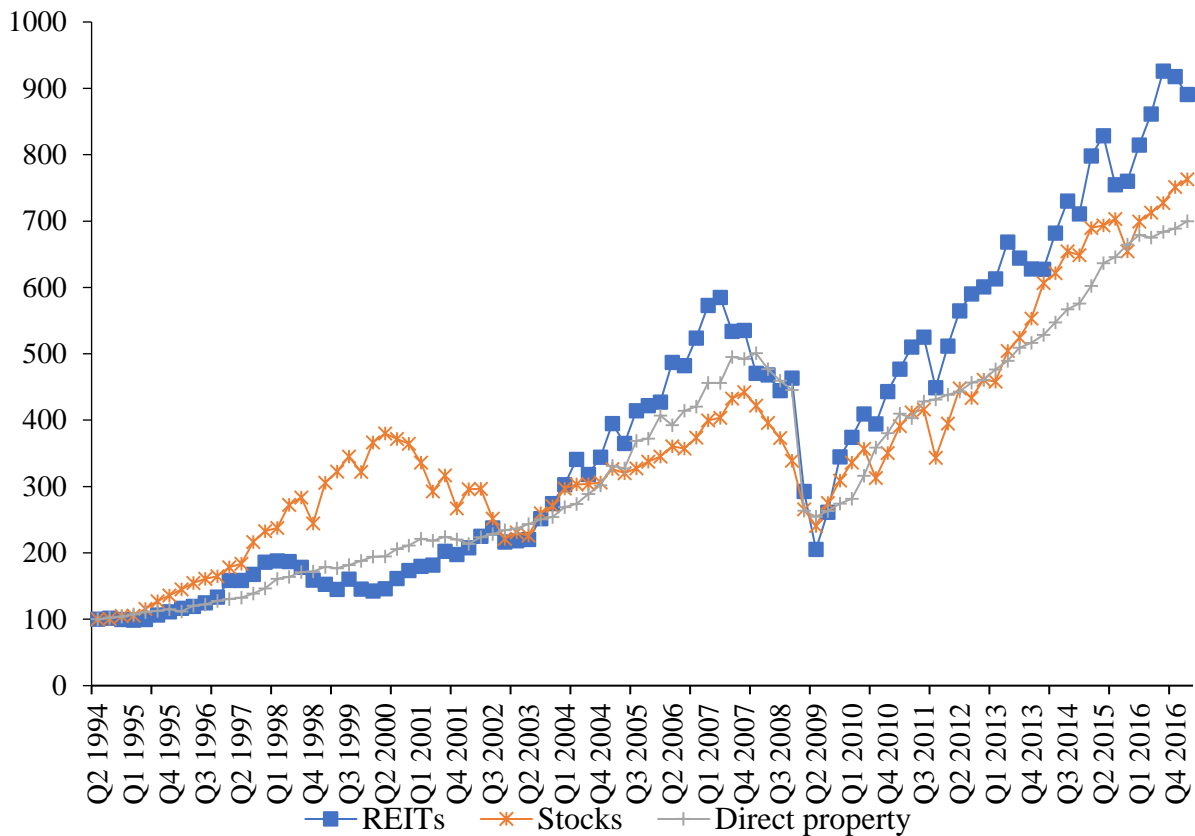
Figure 2: Market Cap of US-REITS: 1971-2019 (in US\$ Billion)



Source: Constructed from NAREIT (2020)

During the Global Financial Crisis (GFC), the US-REIT market was strongly challenged by the lack of liquidity in the financial markets and a significant increase in borrowing costs, a matter that led to a drop in property investment activities (Marzuki & Newell, 2017). However, the post GFC period has witnessed a quick recovery for the US commercial property – these include REITs, stocks and direct property. Figure 3 shows the strong rebound of the US property market transactions.

Figure 3: Total return index of US major asset classes: 1984-2016



Source: Marzuki and Newell (2017)

2.2.2 Direct Property, Indirect Property and REIT

The way of investing in property differs among direct and indirect property. Direct property investment involves buying residential, commercial and other property assets, or just purchasing a stake in them. In doing so, the investor has direct ownership in these types of properties. On the other hand, indirect investment in property does not involve the purchase of the property itself. An investor can indirectly invest in property by buying shares of listed property companies (such as REITs), purchasing shares or ownership percentage of non-listed property firms, or investing in exchange-traded funds (ETFs).

Residential and commercial property are the two basic categories of property, with high domination in residential property by individuals and small to medium investors (Lee, Lee,

Lee, & Liao, 2017), while commercial property is usually dominated by large institutional investors (Lin, Lee, & Newell, 2019). However, retail investors have been participating more in the commercial property market with the development of new property investment vehicles, such as REITs. This allows retail investors some ownership percentage in property without necessarily purchasing the whole property, which can be relatively expensive to most individuals. This kind of investment makes indirect vehicles more attractive and affordable, taking into consideration that such kind of investments does not require an active management skill, in contrast to direct investment, which requires a lot of capital and strong management skills.

There are two types of indirect property investments. These investments can be publicly traded on a stock exchange or privately held. The major difference between these two kinds of vehicles is that the publicly traded one is more liquid because of reachability of investors, meaning more trading frequency of its securities, while the privately held ones are usually dealt with high net-worth investors and institutions (Clayton & MacKinnon, 2000). Moreover, publicly traded securities are usually more informationally efficient (Hardin, Liano, & Huang, 2005), unlike private property where prices are not reported very frequently. Therefore, listed property is regarded as being more transparent and liquid than its private property counterpart.

REITs are financial securities and investment vehicles that give investors access to property assets. They are very beneficial to the investors that want to diversify their portfolio without having to contribute to out of reach, expensive and big investments like large-scale commercial properties, with the high potential for a consistent income stream.

Investing in REITs neither requires a huge amount of money for investment nor it costs much for the transaction of owning a property. REIT's main business activity is acquiring,

disposing, and managing investment properties which can be in the sectors of offices, industrial, or retail.

A-REITs are attractive to both institutional and individual investors because of their good track record and significant assets (Newell & Peng, 2009). The success of A-REITs has also attracted considerable research to many of their aspects, especially their performance, risk, and diversification. The recovery of A-REITs from the GFC made them continue to play a significant role as an investment vehicle in Australia (Lee, 2018; Newell & Peng, 2009).

The unlisted property trusts have witnessed a huge decline along with the downturn of the commercial property market during the GFC. This matter drove investors to seek an investment vehicle in property which can offer them a rental income and high liquidity (Lee, 2018). A-REITs have gained popularity because not only it offered these features, but also diversification opportunities and competitive total return performance.

2.2.3 A-REITs, Transparency and Numerous Features

A-REITs have attracted the attention of domestic and international investors, and have been considered as one of the main asset classes by many superannuation funds in Australia (Newell, Lee, & Kupke, 2015a; 2015b). The Australian property market, which includes A-REIT companies, has gained higher level of transparency in Australia as the demand increased for high-quality information. High transparency has been a key attraction for institutional investors, particularly international institutional investors (Zhang, Lee, Chan, 2019).

The 2018 JLL global real estate index has ranked the Australian property market as the most transparent market in the Asia Pacific and the second most transparent market in the world (JLL, 2018). Table 2 shows some of the world's most transparent property markets in 2018.

Table 2: World's Most Transparent Property Markets in 2018

Category	Global Rank	Market	Score
Highly Transparent	1	United Kingdom	1.24
	2	Australia	1.32
	3	United States	1.37
	4	France	1.44
	5	Canada	1.45
	6	Netherlands	1.51
	7	New Zealand	1.59
	8	Germany	1.88
	9	Ireland	1.93
	10	Sweden	1.93
	11	Finland	1.95

Source: JLL (2018)

The major growth of A-REITs occurred in the 1990s, when individual and institutional investors were seeking an efficient and effective investment vehicle with rental and liquidity focussed format, after unlisted property trusts failed and a downturn of commercial property occurred (Stringer, 2001). The investment features of A-REITs appealed institutional investors, which increased their popularity as an effective investment vehicle. Besides, many A-REITs adopted more aggressive growth strategies since the 1990s like investing in emerging property sectors, international property exposure, and increased level of gearing (Newell, 2006).

Table 3 highlights the market cap, number of REITs and percentage of global REIT index of top 10 REITs in the world.

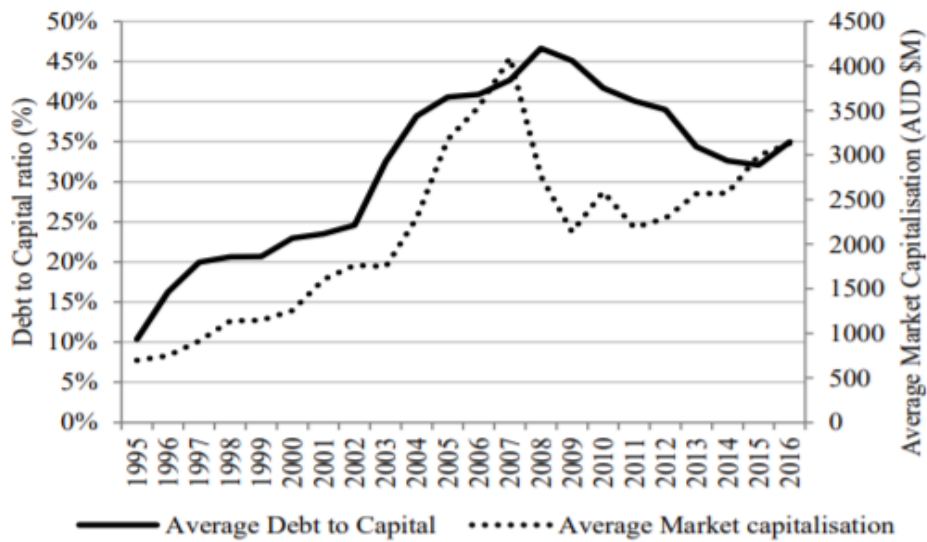
Table 3: Top 10 REITs Markets in 2019

Country	Number of REITs	Sector Mkt Cap (\$US billion)	% of Global REIT Index
US	192	1,163.18	64.98%
Japan	66	128.43	8.23%
Australia	46	99.82	5.91%
UK	55	76.24	4.79%
Singapore	35	61.64	2.26%
Canada	46	61.16	3.23%
France	29	57.72	1.77%
Hong Kong	9	37.45	2.25%
Netherland	5	26.75	1.83%
Spain	72	26.74	0.67%

Source: EPRA (2019b, 2019a)

Further, the increased level of financial leverage, mergers and acquisitions, and incorporating the development of property through stapled securities, has transformed the Australian real estate industry (Lee, 2018; Newell, 2006). Figure 4 shows the variation in the leverage ratio for the period 1995-2016.

Figure 4: A-REITs Financial Leverage Ratio: 1995-2016



Source: Wong and Reddy (2018)

The largest five A-REITs are Goodman Group, Scentre Group, Dexus Property Group, Mirvac and Stockland. Table 4 shows these companies’ market cap in 2019:

Table 4: Market Cap of Top 5 A-REITs in 2019

A-REITs	Market Cap (A\$ bn)
Goodman Group	\$27.26
Scentre Group	\$20.41
Dexus Property Group	\$14.23
Mirvac	\$12.24
Stockland	\$9.94

Source: Compiled from DataStream

REITs should pay at least a certain percentage of its profits as dividends to their shareholders annually, and the percentage differs in each country. Table 5 shows the payout ratio across the countries.

Table 5: Distribution Requirements of REITs

Country	Operative income	Capital gains Operative income	Timing
United States of America	At least 90% of its taxable ordinary income	Not required to distribute	Annually
Australia	Typical distribution of 100% of trust's income as defined in the trust's constitution	To the extent included in the trust's income, any capital gains realized on disposal of property, including interests held in other sub-trusts or other entities	Annually or semi-annually, 90% of tax-property rental profits 100% of PIDs from other REITs
Singapore	At least 90% of tax transparent income	Not required	-- Annually or -- Semi-annually or -- Quarterly
UK	90% of tax-property rental profits 100% of PIDs from other REITs	Not included in the distribution obligation	Within 12 months of the end of the year
Hong Kong	90% of the audited annual net income after tax	Specified in the trust deed	Annually
Spain	-- 80% as a general rule (i.e. profits obtained from rental income and ancillary activities) -- 100% of profits stemming from dividends distributed by qualifying entities	-- 50% of profits derived from the transfer of qualifying property and holdings where the holding period has been met -- The remaining 50% must be reinvested in	-- In a maximum of six months from the financial year-end -- Dividends must be paid to the SOCIMI's investors within one month

Country	Operative income	Capital gains Operative income	Timing
		qualifying assets in three years	
Canada	All income of the MFT for a taxation year is paid or payable to unitholders in the year so that MFT does not incur tax	All capital gains are paid out and retain their character as such in the hands of unitholders, provided a designation is made by the MFT	All income must be paid or recognised as a payable in the taxation year of the MFT. If it is payable, then the amount can be paid out later
Japan	Greater than 90% of distributable profits' under the Special Taxation Measures Law	Same as ordinary income	In relation to the same taxable period
Netherland	100% of taxable profit	Capital gains/losses can be allocated to a tax-free reserve	Within eight months after the end of its financial year

Source: EPRA (2019a)

Tax treatment is not the same in all REITs' markets. In Australia, while there is no rule for minimum distributions to unitholders for tax transparency eligibility, in most cases, A-REITs distribute almost all of their taxable income as dividends on an annual or semi-annual basis (EPRA, 2019a; Lee, 2018). Table 6 shows the tax treatment in the A-REIT market.

Table 6: Tax Treatment in the A-REIT Market

Current Income	Capital Gains	Withholding Tax
Not taxable in the hands of the trustee provided the unitholders are presently entitled to the trust's income at the end of the income year, otherwise trustee taxed at the highest marginal rate.	-Tax treatment of capital gains similar to that of ordinary income. -50% CGT discount may be available for Australian resident unit holder; however, the 50% discount will not apply to non-resident unitholders on capital gains accrued after May 08, 2012.	N/A

Source: EPRA (2019a)

2.2.4 Performance of A-REITs

Lee (2018) investigated the performance of A-REITs against other financial securities and found that A-REITs outperformed the bond market, shares market, and direct property in Australia over one year period from December 2015 to September 2016, as the annualized return of A-REITs was higher than the other securities.

Although the return was even higher over a three-year performance measure (18.2% per annum), A-REITs underperformed the share market and direct property market over the 10-year and 15-year period because of the GFC (Lee, 2018). However, it was clear that there were improved returns after the crisis period, which shows a strong recovery and continuation to lead the property market in the world. This is collaborated with their transparency rating (JLL, 2018), contribution to the economy and GDP (EPRA, 2019b) and market cap growth.

A-REITs were impacted by the GFC in 2008, as the major loss of the defensive characteristics of the traditional “low risk” of A-REITs happened as a response to its increased volatility (Lee & Lee, 2012). Besides, the aggressive growth strategies that were taken during that time such as international property exposure and high debt levels were argued to have a

negative impact on the performance of A-REITs (Lee, 2018). However, important changes have been implemented by A-REITs in the post-crisis period by recapitalizing and focusing more on Australian prime commercial properties while reducing the levels of debt, as the high levels of debt were a very important factor in impacting A-REITs performance (Newell & Peng, 2009). This has made A-REITs recover from the GFC and enhance their returns (Lee, 2018).

2.2.5 Diversification: Correlation with Financial Securities

The correlation between financial securities and US-REITs has been found to be dynamic. Over the short-run, the diversification potentials of REITs appeared to be time-dependent (Brueggeman & Fisher, 2011). A correlation coefficient of 0.69 between equity REITs and shares and 0.41 between bonds and REITs have been found by the authors for the period 1978-92. The authors also found that there is a decline in the correlation coefficients between US-REITs and common stocks, which was also reported (Ghosh, Miles, & Sirmans, 1996; Lin, Lee, & Newell, 2019) throughout of 1985-96; the authors found that the monthly correlation coefficient to decline from 0.77 for 1985-7 to 0.38 for 1991-3. Such declines have also been reported by Clayton and Mackinnon (2001), Conover, Friday, and Sirmans (2002) and Westerheide (2006). These declines have been caused by the increasing level of information about REITs due to an increase in the number of analysts following the real estate industry (Khoo, Hartzell, & Hoesli, 1993). However, correlation coefficients' increase has been reported by some studies, specifically from 1999 to December 2005 (Case, Yang, & Yildirim, 2012). This increase was due to the inclusion of REIT in indices like the S&P 500 from the beginning of October 2001 (Feng, Ghosh, & Sirmans, 2006).

Dynamic correlation between stock returns and REITs has been confirmed over 1972-2008 (Case et al., 2012). Correlations were explained by different microeconomic variables such as inflation, unemployment rate and credit spreads (Fei, Ding, & Deng, 2010).

Marzuki & Newell (2017) recently studied the correlation between US property, REITs and other asset classes over the period 1994-2016. Table.7 shows these correlations.

Table 7: Correlation between US Property and Other Asset Classes over the period 1994-2016

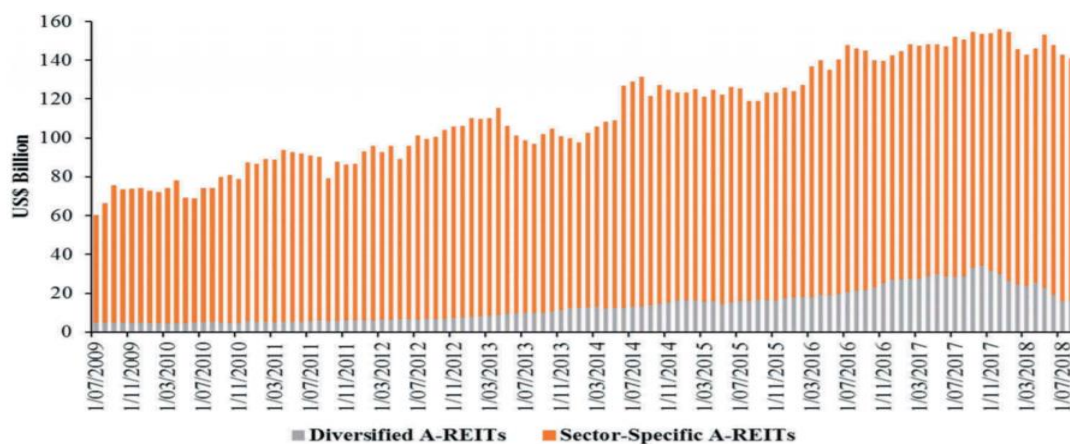
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
REITs [1]	1.00											
Office [2]	0.95*	1.00										
Retail [3]	0.96*	0.86*	1.00									
Industrial [4]	0.90*	0.87*	0.89*	1.00								
Apartment [5]	0.91*	0.88*	0.85*	0.79*	1.00							
Direct property [6]	0.48*	0.44*	0.49*	0.50*	0.49*	1.00						
Office [7]	0.48*	0.48*	0.48*	0.50*	0.49*	0.92*	1.00					
Retail [8]	0.24*	0.18*	0.25*	0.28*	0.23*	0.73*	0.51*	1.00				
Industrial [9]	0.43*	0.41*	0.42*	0.43*	0.45*	0.88*	0.77*	0.52*	1.00			
Apartment [10]	0.48*	0.45*	0.52*	0.51*	0.52*	0.89*	0.80*	0.49*	0.81*	1.00		
Stocks [11]	0.56*	0.59*	0.50*	0.58*	0.46*	0.35*	0.35*	0.23*	0.33*	0.28*	1.00	
Bonds [12]	0.02	0.10	-0.01	0.04	0.01	0.08	0.12	-0.01	0.09	0.08	0.06	1.00

significant correlation ($P < 5\%$)

Source: Marzuki and Newell (2017)

In Australia, the correlation of A-REITs was found to be negative ($r=-0.14$) with bonds, positive ($r=0.65$) with shares and weak ($r=0.35$) with direct property (Lee, 2018). This is a further indication that A-REITs play a vital role in diversification for Australian and international investors. However, a recent study conducted by Lin, Cho, and Lee (2019) has shown that there is a difference between the sector-specific A-REITs and diversified A-REITs, in terms of their role in a mixed-asset portfolio. The authors' investigation period is 2000-2019 and they found that the sector-specific A-REITs had a more strategic and value-added role than diversified A-REITs in a portfolio. This is because sector-specific A-REITs have increased portfolio returns, superior risk-adjust returns, and enhanced diversification benefits compared to diversified A-REITs. Figure 5 shows that the market cap growth of sector-specific A-REITs is much greater than the diversified A-REITs.

Figure 5: Market Cap Growth of Diversified and Sector-Specific A-REITs



Source: Lin et al. (2019)

Further, a study conducted in Japan has shown that Japanese Real Estate Investment Trusts (J-REITs) also offers many diversification benefits to the investors, which make them having a major role in contributing to a mixed-asset portfolio (Lin, Lee & Newell, 2019). The authors have found that residential J-REITs have a positive correlation with stocks ($r=0.60$), while having a negative correlation with bonds ($r=-0.08$). However, it is worth noting that the

negative correlation with bonds were found to be insignificant (Lin et al., 2019). The authors studied these correlations over the period 2006-2018. However, different subsectors of J-REITs had different correlations with stocks. The following table shows the correlation between J-REITs' subsectors and stocks.

Table 8: Correlation of J-REITs Subsectors with Stocks

Sub-sectors of J-REITs	Correlation with Stocks
Industrial J-REITs	r= 0.41
Retail J-REITs	r=0.52
Specialty J-REITs	r=0.54
Office J-REITs	r=0.55
Residential J-REITs	0.60

Source: Lin et al. (2019)

Table 8 shows that residential J-REITs underperformed all office, industrial, retail and specialty J-REITs. Besides, the following table shows the correlation between J-REITs' subsectors and bonds.

Table 9: Correlation between J-REITs Subsectors and Bonds

Subsectors of J-REITs	Correlation with Bonds
Industrial J-REITs	r= -0.04
Retail J-REITs	r= -0.06
Specialty J-REITs	r= -0.10
Office J-REITs	r= -0.06
Residential J-REITs	r= -0.08
Diversified	r= -0.09

Source: Lin et al. (2019)

Lin, Lee, and Newell (2020) studied the average annual return between REITs (industrial and logistics REITs) and the other sub-sectors of REITs. The authors also compared the REITs' average annual return to stocks and bonds. The comparison was in four countries, which are Japan, Australia, Singapore and the US. It is found that the industrial and logistics REITs had a superior average annual return over other sub-sectors of REITs, stocks and bonds (Lin et al., 2020). This shows that the industrial and logistics REITs greatly contributes to a mixed-asset portfolio, as they offer significant diversification benefits. The diversification benefits are also corroborated with the correlation findings of Lin et al. (2020) across the 4 countries. Table 10 shows these correlations.

Table 10: Correlations Across 4 countries

	Stocks	Bonds	Office	Retail	I&L	Residential	Specialty
<i>Panel A: United States</i>							
Stocks	1.00						
Bonds	0.12	1.00					
Office	0.66*	0.00*	1.00				
Retail	0.51*	0.06*	0.84*	1.00			
I&L	0.66*	-0.01*	0.84*	0.74*	1.00		
Residential	0.40*	-0.06*	0.80*	0.72*	0.71*	1.00	
Specialty	0.61*	0.09*	0.89*	0.84*	0.83*	0.83*	1.00
<i>Panel B: Japan</i>							
Stocks	1.00						
Bonds	0.01	1.00					
Office	0.39*	0.07	1.00				
Retail	0.43*	0.15	0.83*	1.00			
I&L	0.38*	0.16	0.76*	0.83*	1.00		
Residential	0.42*	0.07	0.79*	0.81*	0.85*	1.00	
Specialty	0.46*	0.17	0.59*	0.62*	0.69*	0.63*	1.00
<i>Panel C: Australia</i>							
Stocks	1.00						
Bonds	-0.03	1.00					
Office	0.67*	-0.02	1.00				
Retail	0.53*	0.02	0.68*	1.00			
I&L	0.62*	-0.11	0.68*	0.63*	1.00		
Specialty	0.20*	0.02	0.31*	0.19	0.29*	-	1.00
<i>Panel D: Singapore</i>							
Stocks	1.00						
Bonds	-0.21*	1.00					
Office	0.74*	-0.30*	1.00				
Retail	0.65*	-0.28*	0.84*	1.00			
I&L	0.62*	-0.33*	0.74*	0.82*	1.00		
Residential	0.59*	-0.25	0.65*	0.61*	0.57*	1.00	
Specialty	0.75*	-0.27	0.75*	0.73*	0.72*	0.64*	1.00

Note(s): *Significant correlation ($p < 5\%$)

Source: Lin et al. (2020)

2.2.6 REIT, Economy and Volatility of the Markets

As stressed in Chapter 1, A-REITs contribution to the GDP is vital. The A-REIT market is very important due to its role in the stability of the Australian economy, as this market alone was a significant 7% (US\$99.82 billion) component of the Australian GDP in 2019 (EPRA, 2019b, 2020).

Lee, Stevenson and Lee (2018) identified strong linkages between the low-frequency volatilities of top 11 REITs' markets in the world and the macroeconomic series. The macroeconomic variables tested in the authors' study are GDP, short term interest rates, exchange rates, M2 money supply and consumer price index (CPI). They found out that the impact of macroeconomic variables is clearly shown when computing quarterly volatility from the low-frequency component. Also, they discovered that property stocks' reaction to macroeconomic risk is different from the reaction of other stock market sectors.

Lee (2009) studied the volatility of the A-REIT market. The author found that A-REITs' stocks strongly affect A-REITs' futures, which indicates that any news from the A-REITs' spot market will have a strong influence on A-REITs' futures (Lee, 2009). To illustrate, there are two markets for A-REITs, which are the cash market and the futures market. The cash market, also called spot market, is where financial instruments are traded and delivered immediately, whereas the exchange of an underlying asset happens at a future date in the futures market. Most importantly, A-REITs' investors should watch closely both spot and futures A-REITs' markets as news generated from the spot market will have a great impact on the volatility of the futures market, and vice versa (Lee, 2009). The authors also discovered a difference in the sensitivity of REIT futures towards news, in which REITs are more sensitive to negative news than positive ones.

Lee, Kuo, Lee, and Lee (2016) also examined the price discovery and volatility transmission between the cash market and futures market of A-REITs. They found that in the context of information transmission processes and price discovery, the cash market dominated the futures one prior to the GFC, which contradicted previous stock index studies which state that futures markets leads cash markets (Chan, Lin, & Hsu, 2004). This means that the information flowed to the A-REITs' cash market more than it did to the A-REITs' futures market. However, the information flow has changed during the GFC, as information flowed bilaterally into both markets. After the GFC, the A-REITs' futures market followed the A-REITs' spot market but less closely (Lee et al., 2016). The authors explained that this is due to the significant increase in A-REITs' futures market activity, when many informed spectators entered the market and improved its price discovery.

2.2.7 Risk and Return of A-REIT

The relationship between the risk and return of A-REITs has been investigated before to examine the importance of downside beta when explaining A-REITs' returns (Lee, Robinson, & Reed, 2008a). The authors strongly criticized the CAPM, explaining that the CAPM is bound by strict assumptions. One of these assumptions is that the return distributions should be normally distributed, while REIT's distributions are skewed with large tails more often than not (Myer & Webb, 1993; Young & Graff, 1995). Another assumption is that investors do not like or do not prefer both downside and upside volatilities, which is not true as deviations above the mean must be viewed and accounted as gains (Lee et al., 2008b).

It is found that investors do not ask for more compensation if assets have upside potential, but only ask for a premium for assets that have downside risk (Lee et al., 2008). So, the authors' study, on all A-REITs for the period 1993-2005, confirmed that downside beta outperforms traditional beta in explaining variations in A-REITs' returns. This is consistent with past studies which confirmed that return distributions significantly impact the relationship between beta

and downside beta, hence explaining the reasons behind downside beta's better performance than traditional beta (Galagedera, 2007; Nantell & Price, 1982).

Lee, Reed and Robinson (2007) assessed A-REITs' momentum strategies and their profitability for the period 1990-2005. The authors found that the momentum trading strategy in A-REITs is profitable. Different time horizons were examined if similar patterns in momentum returns were generated, and the analysis has confirmed that all the patterns were similar. Hence, the long strategy has generated huge momentum returns, and it is worth noting that the returns of A-REITs were higher the returns of U.S REITs (Lee et al, 2007). This implies that A-REITs' investors can generate abnormal returns if they adapt a momentum trading strategy, especially a long strategy (Lee et al., 2007).

Momentum returns were also studied in different markets states (Hung & Glascock, 2008). The authors found that momentum returns are higher in a favourable market conditions, and that the dividend/price ratio of the winners is higher than the losers. Further, it was found that there is a positive correlation between momentum return and the dividend/price ratio's difference between winners and losers (Hung & Glascock, 2008). Besides, winners had higher returns, which are probably caused by the higher dividend/price ratios (Hung & Glascock, 2008). Further, the authors found that there has been a significant growth in REITs' dividend/price after the structural change (new REIT era). In addition, Lee et al. (2014) also found the calendar seasonality evidence that supports the notion of behavioural biases are stronger when assets are more difficult to value.

2.2.8 A-REIT and Risk Sensitivity

As discussed in the previous section, downside beta has helped explain the variations in returns of A-REITs better than the traditional beta. However, to better understand these variations, the relationship between risk sensitivity and A-REITs should be addressed. For this

purpose, Lee et al. (2008) have examined the systematic downside risk's determinants in the A-REIT market. The authors also investigated the relation of the variations in the market risk and downside systematic risk with the financial conditions and management structure of A-REITs. Since earlier studies have only investigated the relationship between systematic risk and financial determinants (Allen, Madura, & Springer, 2000; Conover & Friday, 1998), Lee et al. (2008) focused more on the relationship between downside systematic risk and financial determinants, and found that they can be individually identified and there is a strong link between downside risk, management structure and financial determinants, especially financial leverage. In contrast to downside systematic risk, only a little evidence supported the relationship between systematic risk and A-REITs' financial determinants and management structure (Lee et al., 2008). Lee (2009) also found that downside beta provide a positive premium, an intuitively appealing return-risk relation, is required by direct property investors for compensating higher downside losses.

2.2.9 Corporate Social Responsibility, A-REIT and REIT Investments and Performance

Corporate Social Responsibility (CSR) is a business model, which is self-regulated in companies, that helps corporations to be socially responsible and accountable to the public, shareholders and stakeholders. Practising CSR can lead companies to take serious considerations, when operating their business, towards the environment and the economy, which results in a positive contribution to society (Garriga & Melé, 2004). This is not only beneficial to the society, but also valuable for the firm as such good actions being taken can boost morale and strengthen the bond between employees and their companies (Garriga & Melé, 2004).

CSR has been acknowledged by business studies and literature as a vital duty. Arlow & Cannon (1982) stated that is very important to study the relationship between CSR and the decision-making process in the companies, as well as their financial performance. Much of

business research has been devoted to this area which opened arguments about the real relationship between companies' responsibilities and performance - is it really beneficial to the company to be socially responsible while others are making more money when not following the CSR model? While some argued it may or may not be the case (Ullmann, 1985), others insisted that the costs of being socially responsible are minimal and may be of great benefit to the firms as their productivity will be better as well as their relationship and bond with their employees (Moskowitz, 1972; Parket & Eilbirt, 1975).

In Australia, CSR has been gaining significance and importance in the market, as Australian companies, A-REITs and property investors are prioritising corporate governance, environmental and social issues when making investment decisions (Newell & Lee, 2012). The relationship between the CSR factors and A-REITs' financial performance has been particularly assessed by Newel and Lee (2012), to check if such factors are adding value to property listed companies. They have studied the role of some financial factors such as book-to-market value, size, gearing and beta, along with CSR factors. They found that the financial factors are more influential than the CSR dimensions of environment, social and corporate governance. However, considering CSR factors alone, they have found that corporate governance to be more influential on the pricing of A-REITs than the social and environmental factors. Such findings imply that further research should be devoted to this matter on the REITs' international market level.

A-REITs are renowned to have strong commitment and leadership in CSR (Newell, 2008; Newell & Lee, 2012), as they articulate substantial CSR strategies and performance in the CSR reports they produce, both at an individual and portfolio level. They have been found to have a very efficient usage of energy and water, which made them classified as highly rated green-star properties (Newell & Lee, 2012). Table 11 shows some examples of A-REITs' CSR strategies.

Table 11: A-REITs' CSR Strategies

A-REIT	CSR Strategies	CSR Targets/Initiatives
Stockland	Stockland's CSR strategy is designed around creating value and aims to "deliver economic value in a way that also creates value for society by addressing its needs and challenges" and by attempting to balance the triple bottom line for its current and future stakeholders (Stockland 2017, para. 3)."	(i) Providing affordable housing options for first home buyers (ii) To continue towards their 2025 target of a 60 per cent reduction in carbon emissions. (iii) The development of an Environmental Management System to identify environmental risks and opportunities, along with the appointment of an external auditor to conduct a Fraud Risk Review as part of the broader governance strategy.
Dexus Property Group	Dexus' CSR strategy is to invest "responsibly to deliver sustained value to stakeholders" by embracing resilience, liveability and connectivity (Dexus 2017, para. 1). Dexus' sustainability approach is designed around key objectives and incorporates the management of ESG issues across their portfolio.	(i) Philanthropic activities such as the opportunity for employees to take a one day paid volunteering leave and the appointment of 23 Community Managers to facilitate community engagement. (ii) To provide 1,000,000 square metres (sqm) of office real estate with at least a 5-Star NABERS Energy rating and 4-Star NABERS Water rating by 2020. (iii) The reduction of energy consumption by 10 per cent by 2020.
GPT Group	GPT's CSR strategy embraces the concept of sustainability and recognizes the needs of both current and future generations. Group (2017, para 9), asserts that while generating economic value, they must also consider their ESG impact, and that "[t]he voice of stakeholder communities and the needs of today's and future generations are at the heart of our decision making.	(i) The development of a biodiversity measurement tool, which produces practical measures for on-site biodiversity. (ii) To achieve a weighted average NABERS Energy rating of at least 4.5 stars. (iii) The reduction of energy intensity by 40 per cent and emissions intensity by 57 per cent, and an increase in recycling rates from 29 per cent to 41 per cent since 2005.

Source: Westermann, Niblock and Kortt (2019)

When comparing the REITs' markets between the US and Australia, Newell and Lee (2012) found that despite both markets' requirement to pay most of its net earnings, corporate governance has a significant impact on A-REITs performance while no significant relationship with the performance of US-REITs, although the case is different for other US sectors (Bauer, Eichholtz, & Kok, 2010; Hartzell, Sun, & Titman, 2006; Khoo, Hartzell, & Hoesli, 1993). Newell and Lee (2012) explained that finding corporate governance significantly impacting A-REITs, while having no effects on US-REITs, reflects the GFC's impact on A-REITs and the ASX's high disclosure requirements. Nonetheless, the significance of corporate governance on the performance of A-REITs is consistent with the governance relationship that Bauer et al., (2010) found with the other US sectors.

Billett and Qian (2008) emphasized that overconfidence has serious implications for corporate governance. The authors stressed that if CEO overconfidence is detected, the source of overconfidence should be investigated, in order to take the proper actions that can stop the development of this bias. Such actions can be related to, for example, CEOs' incentives (Billett & Qian, 2008).

2.2.10 Risk and Real Estate Investors' Behaviour

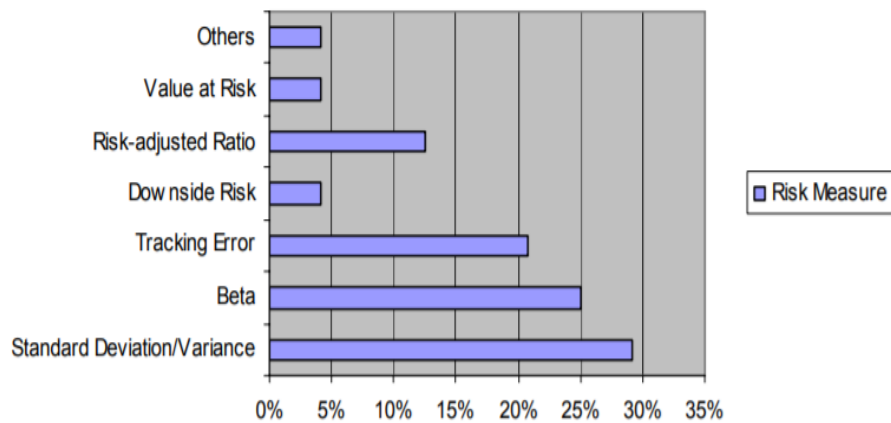
Many studies examined the systematic risk and its role in investors' decision-making process. However, it has only been studied in the property industry from the late 1990s onward, starting with the studies that examined the downside risk and its implications when building a property investment portfolio (Foo & Eng, 2000; Sivitanides, 1998), along with studies that have been conducted in the Australian context (Allen et al., 2000; Lee, et al., 2008a,b; Lee et al., 2008).

Portfolio management studies confirmed that there is a gap between risk-related theories and practices (Louargand, 1992; Eliane Worzala, Sirmans, & Zeitz, 2000). In other words,

financial analysts or portfolio managers do not always follow the theory, which indicates the presence of a conflict between theory and practice (Lee, Reed, & Robinson, 2008a). Further, some studies found surprising results after examining property investors perception towards risk (Evans, 2008; Worzala, Sirmans, & Zeitz 2008). The authors' findings contradicted the renowned direct relationship between risk and return, as they discovered that property investors are not risk-tolerant towards higher returns, because they did not believe that higher risk can be justified by higher returns. However, these results are not applicable for all finance professionals and investors, as Asian and European investors recognized the vital role real estate plays in portfolio diversification. This has been found from the analysis of two surveys sent to investors in Asia and Europe (Newell & Worzala, 1995; Worzala & Newell, 1997).

In addition, Lee et al. (2008) conducted a qualitative study about downside risk and investors' behaviour, by examining the perceptions of property fund managers (of both listed and unlisted companies) and investors towards downside risk. The authors sent a questionnaire to the Australian property fund managers to obtain their opinions. It is found that although risk management is relevant and seriously considered by these fund managers, they do not have any specific risk measure (Lee et al., 2008). However, they do manage and minimize their risk by measures such as stress analysis, scenario analysis, value at risk (VAR) and standard deviation. The following figure shows the managers' response:

Figure 6: Risk Measures Used by Property Fund managers



Source: Lee et al. (2008)

The surveys' analysis of Lee et al. (2008) indicated that only downside risk is considered by property managers and investors, as their responses implied that they do not worry if their companies exceed the expected performance rate, a matter which is predictable and consistent with previous studies. However, this study has further implications about managers and investors behaviour and perception towards downside risk. Although property fund managers acknowledge downside risk's impact on their investments, they do not accept any analytical and empirical analysis that theoretically confirms downside risk, as they only consider the economic meaning of this risk (Lee et al., 2008).

2.3 Review of Behavioural Finance

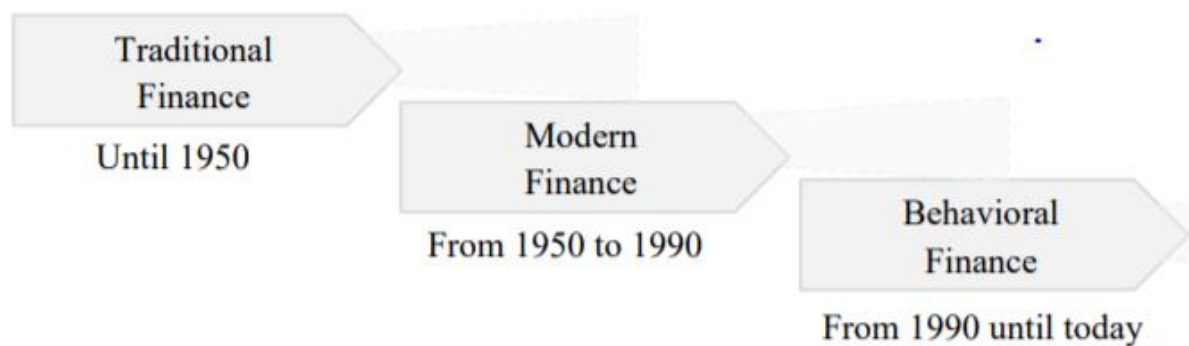
The academic discussion began to shift away from concentrating on dividends, earnings, time series and prices towards analysing psychological factors role in the stock market (Shiller, 2003). During the 1990s, a revolution was occurring in psychology and, at the same time, behavioural finance was progressing along with it; it brought forth the idea that emotions have a big role in the investment decision-making process (Hirshleifer, 2015).

The new field of behavioural finance has first emerged in the 1990s and attracted the attention of many scholars, newspapers, academic journals and business publications (Ricciardi

& Simon, 2000). The main aim of behavioural finance is to explain the reasons behind investment choices, which involves emotional processes that affect the decision-making process. It is described by Ricciardi and Simon (2000) as a way to “explain the what, why, and how of finance and investing, from a human perspective”.

Academic finance has developed remarkably. The evolution has started from the Efficient Market Theory, that assumes that it is impossible to beat the market consistently on a risk-adjusted basis (Eugene, 1998; Fama & Malkiel, 1970; Ricciardi & Simon, 2000; Shiller, 2003). Behavioural finance, which stands in a strong contradiction to the EMH, has incredibly grown and explored the psychological biases and their impact on investors’ financial decisions. Most importantly, behavioural finance has helped investors to make better investment decisions (Hirshleifer, 2015). The author stated that behavioural finance has achieved helping investors by focusing on their cognitive biases on the individual level.

Figure 7: From Traditional Finance to Behavioural Finance



Source: Pimenta and Fama (2014)

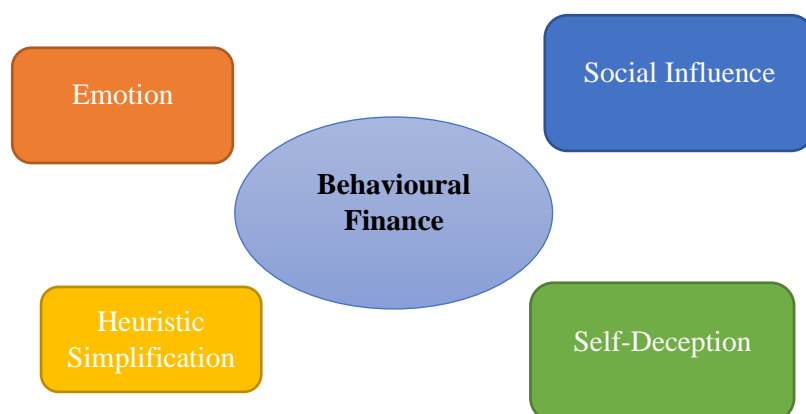
The emerging field of behavioural finance has challenged the EMH, which assumes that the prices of financial securities reflect genuine information, and that stock markets are efficient and work well all the time (Shiller, 2003). The author stated that behavioural finance approaches finance from a broader perspective than traditional finance, where behavioural finance incorporates some other fields like sociology and psychology. Furthermore, the

literature is rich with behavioural finance studies which describe the emerging field as the “psychology of finance”, and researchers are still attempting to find a proper balance of many disciplines; Behavioural finance, standard finance, sociology and psychology. The integration of many different disciplines and schools is what makes behavioural finance a unique field (Ricciardi & Simon, 2000).

2.3.1 Behavioural Finance, Moods and Emotions

Behavioural finance proponents, researchers and analysts focused on the role of emotions and moods in shaping the financial and investment behaviour of investors (Duxbury, 2015). Different moods and emotions have different effects on investors’ behaviour and their decision-making process in various and special scenarios. For example, an investor that is in a good mood tends to be more optimistic and risk-taking (Kuhnen & Knutson, 2011). On the other hand, when investors are in fear they begin to be risk-averse and pessimistic (Lerner & Keltner, 2001). Surprisingly, anger can make investors more risk-tolerant and optimistic according to psychology studies (Lerner & Keltner, 2001).

Figure 8: Behavioural Finance, Moods and Emotions



Behavioural finance proponents have identified major behavioural traits that may have a huge influence on investors, which lead them to be irrational. Behavioural biases that investors

can have are overconfidence, herding, prospect theory, heuristics, and misperceiving randomness (Ritter, 2003)

Heuristics are a method the brain uses to solve problems in a simple way, utilising shortcuts in a very short or limited time. Such flexibility may be needed to produce solutions that are considered good enough to solve a complicated problem with complex data. In a fast-paced business, such a process is being significantly prevalent. According to Malmendier, Tate, and Yan (2011), investors' experience can have significant effects on the decisions they make, and subsequently making them heuristic after influencing their investment analysis strategy. Investors can even unconsciously develop certain investing habits which can lead them to make mistakes (Hirshleifer, 2015). Although being heuristics can be beneficial in many life aspects, using them in the financial markets can have serious consequences.

Consensus heuristic, in which an investor may believe that if the majority of investors have a certain opinion, then this opinion is definitely right. This has been proven in behavioural finance and psychology studies (Andersson, Hedesström, & Gärling, 2014). Therefore, such a belief can lead investors to become herd. As stated in the previous chapter, behavioural finance has shown that even finance professionals can make irrational investment decisions, and therefore be heuristics, which is consistent with Hirshleifer (2015), who stressed that even finance professionals can be using heuristics. However, Hirshleifer (2015) stated that everyone can make better and more accurate investment decisions if they become aware of their heuristics.

Prospect theory is one of the most important theories in the behavioural finance discipline. It argues that investors prefer guaranteed profit, even if they have a chance of getting more profit with more risk. It stands in contradiction to the EMH, as this traditional hypothesis suggests that investors are indifferent in the way they reach the final state of wealth from which

they receive their utility (Duxbury, 2015). On the other hand, prospect theory insists that it is important to know how investors reached the final state of wealth even if the final point is the same (Jordan, Miller, & Dolvin, 2015). Furthermore, the authors state that investors' main concern is the change in their wealth not the levels of wealth. Such a suggestion can be supported by many biases like mental accounting, loss aversion and anchoring.

Thaler (1999) defines mental accounting as “the set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities”. Investors tend to follow an irrational way when dealing with their money, as they separate it into different mental buckets, then treating the buckets' risk tolerance and values in a different way (Jordan et al., 2015). So, falling in the trap of mental accounting will lead investors to behave irrationally, as they will have an incomprehensive view of the assets they own and the outcomes they anticipate and desire. For example, people may save and keep some money aside for future use and plans such as a vacation, purchase of property or cars, while at the same time having some liabilities like a debt to a friend and a bank, or a debt resulting from credit cards usage. People then think that separating both issues is something that makes sense while in fact, it doesn't make sense at all, since the interest charges that may arise as a result of the way that the debt is being repaid may reduce their fortunes and net worth. The same thing can happen in corporations when decision-makers are allocating funds.

Loss aversion, which is described by Thaler (1999) as myopic, refers to investors who are trying to avoid losses in an investment, even if they can gain from it. Investors then will be focusing to avoid potential losses than focusing on making a profit. This problem will become greater if someone experiences more and more losses. Previous research has shown that people experience a stronger feeling of pain when losing than they enjoy gaining. As stated, loss aversion is myopic according to Thaler (1999) because although investors that are investing on the long term have similar horizons, they do care about the gains and losses in the short term.

Anchoring, a dangerous behavioural bias, is prolific in the financial market. It occurs when investors set up a particular reference point for their investments (Jordan et al., 2015). Once they set up this reference point (usually the purchasing price of a stock or any other asset), they will start to have feelings that change according to the price movement. If the price moves as they desire, they will feel rewarded, otherwise they will feel punished (Duxbury, 2015). However, this is not the main problem. The problem is that investors start caring too much about this reference point, a matter which makes them ignore or forget about their level of wealth. As a result, investors will not adjust their analysis or anchor properly, a matter that will make them stay in the investment irrationally (Sinha, 2015). This is usually associated with keeping, for example, a stock for too long and refusing to take the profit, as investors believe this stock will keep on moving as desired and generate a greater profit. However, investors should take a closer look at their portfolios and evaluate their stocks or investments based on its covariance with the overall portfolio, rather than just evaluating stock return according to its purchasing price.

2.3.2 Bubbles and Investors' Behaviour

A lot of bubbles have occurred both recently and a long time ago. Those bubbles have strongly shaken the market and led to financial crises. The most recent one is the GFC, which was caused by irrational expectations of investors, after they kept on buying more houses following their gains between 2000 and 2006, a matter that led to the 2008 crisis. Clayton (1997) stated that housing booms are caused by investors' behaviour, where they tend to ignore or neglect fundamentals and have too many illogical expectations.

When Shiller (2003) was discussing the shift from EMH to behavioural finance, he talked about the Tulipmania bubble that happened in the 1630s. This bubble happened after the tulip became very popular and many people kept on buying this flower. As a result, the tulip price increased, and a lot of people became rich. Wise people began to see that what is happening

will not last forever. Rich people stopped purchasing these tulips for putting it in their gardens and started selling them. After that, the bubble burst, the price dropped and never rose again. Shiller (2003) compared such phenomena to the feedback theory, where investors get successful because of price surge, which attracts market attention. Further, numerous studies have been done on housing price bubbles and market fundamentals (Al-Masum & Lee, 2019; Bangura & Lee, 2019; Phillips, Shi, & Yu, 2015; Shi, Chen, & Wang, 2016; Stevenson, 2008). Lee, Stevenson, and Lee (2014) and Lee et al. (2016) also found that market efficiency is strongly affected by investors behaviours. These suggest that it is essential to understand investors' behaviour for a variety of investment decision making processes.

2.3.3 Overconfidence

Overconfidence is one of the most important cognitive biases that may lead investors to take wrong investment decisions (Ritter, 2003). Ritter stated that investors tend to invest more in the company they work for.

Overconfidence, as defined by Ackert and Deaves (2009) is “the tendency for people to overestimate their knowledge, abilities, and the precision of their information, or to be overly sanguine of the future and their ability to control it”. So, it is clear that overconfidence has many sides or characteristics such as illusion of control, miscalibration and better-than-average effect. Moreover, optimism is often used interchangeably with overconfidence in the behavioural finance literature.

Illusion of control is one of the most obvious forms of overconfidence. Overconfident investors usually overestimate their ability and think that every event or potential outcome is under their control. Langer (1975) stated that the illusion of control is there when an individual subjectively expects a probability of personal success improperly higher than the objective probability.

2.3.4 Forms of Overconfidence

There are many forms of overconfidence that have been extensively studied in the fields of psychology and behavioural finance. They have been examined on both individual and corporate level. Their relevant research includes many areas or settings that are in the finance and investment disciplines as well as finance-irrelevant knowledge domains. The three main forms of overconfidence are overestimation, over-placement and over precision.

Overestimation: the major factors that drive overestimation are wishful thinking and optimistic forecasts (Sharot, 2011). For example, some investors are always optimistic and believe that the value of the property in the housing market will only rise. Such a way of thinking strongly represents overconfidence.

This case doesn't only happen in the property market but in any asset class in the financial market. Previous research documented some findings about investors' overestimation of anticipated performance (Moore, Kurtzberg, Fox, & Bazerman, 1999). Even outside the finance discipline, people overestimate their abilities, level of control, performance and their chances of success. For instance, Clayson (2005) found that students' belief in their performance on the exams they take are overestimated. Another example is doctors diagnosis on their patients, as Christensen-Szalanski and Bushyhead (1981) stated that physicians diagnosis' accuracy is overestimated. Accordingly, investors will overestimate the likelihood of an investment to have a desired outcome in the future.

Over-placement: it is a well-established bias which makes individuals exaggerate their judgement, and makes them very confident that they are better than others. Over-placement is acknowledged to be present globally (Beer & Hughes, 2010; Sharot, 2011).

2.3.5 Gender Differences

Studies that investigate the difference between men and women trading activity was conducted by Barber and Odean (2001) and Bauer, Cosemans, and Eichholtz (2009). The authors found that men trade more than women in both stocks and options' markets, while men tended to perform weaker and have lower returns as a result. Bauer et al., (2009) also stated that psychological research shows that men are more overconfident than women. Bauer et al. (2009) conducted further analysis and investigated the trading activity of only single-only men and women, and they found that single men trade more than single women by 67%, and the return is therefore reduced by 1.44 percentage points more than women (per year).

Lewellen, Lease, and Schlarbaum (1977) found that men tend to spend more time and resources on stocks and financial securities analysis than women, as well as depend less on their brokers. The authors also found that men believe they have a good ability to predict returns and expect higher returns than women do, after they analysed brokerage records and survey answers between 1964 and 1970. In view of that, overconfidence is more present in men than women.

2.3.6 Volume of Trading

Further evidence was found in regards to the relationship between overconfidence and the volume of trading (Barber & Odean, 2002). They found that when investors changed their brokerage accounts to online trading, after it was just telephone-based trading, they have performed worse than before, even with the lower trading cost associated with online trading. This is because of the high trading frequency which is most probably caused by overconfidence (Barber & Odean, 2002).

Overconfidence makes people or investors believe they always make correct decisions. This matter can result from investors' belief that their view and judgement are better than what they

really are (Benos, 1998). This is consistent with Gervais and Odean (2001), as the authors explained that overconfident investors are less good than they believe they are. The authors also found out that aggressive investing is associated with lower expected profits.

Although investors can gain more knowledge and education about the financial market, the way they perceive themselves will not change; they will only be able to change the way they see the market (Menkhoff & Nikiforow, 2009). Therefore, overconfidence is not inherent to the market, but to the person himself, and even education can't remove this bias.

Aggressive trading leads to an increase in trading volume with lower expected profits (Gervais & Odean, 2001). This means that the expected profit of a successful investor may be even lower than the unsuccessful one. So, investors may not as good as they think they are. Barber and Odean (2000) investigated the relationship between individual performance and overconfidence. The authors showed that investors who trade more frequently have lower returns than those who trade less, net of trading costs.

Overconfident investors may have access to private information which makes them react to it. They may also contribute their success to their skills, while blaming factors that are out of their control when they fail. This problem is known as self-attribution (Chuang & Lee, 2006). According to the prospect theory, people will sell their winning investments while keeping their losing ones to avoid regret. In light of this, investors consider both past and future performance when selling shares, but only consider future performance when buying them (Kahneman & Tversky, 2013).

2.3.7 Overconfidence and Investments

Overconfidence has attracted many researchers after it proved to have serious implications for the decision-making process and investment performance. Decisions made during trading (Glaser & Weber, 2007), saving (Sakalaki et al., 2005), participating in the financial market

(Xia et al., 2014) and many more have all been investigated extensively, in addition to securities performance (Barber & Odean, 2000; Daniel, Hirshleifer, & Subrahmanyam, 1998; Eichholtz & Yönder, 2015; Janus, Jinjarak, & Uruyos, 2013).

From what is discussed earlier in this chapter, and since overconfidence has a major role at the time of making investment decisions, this trait can lead to many extreme scenarios in the financial market. Important examples of these scenarios are bubbles (Scheinkman & Xiong, 2003; Shiller, 2003), volatility (Barber & Odean, 2000; Odean, 1998; Shiller, 2003) and excessive trading (Statman, Thorley, & Vorkink, 2006).

The quality of information available to investors, stakeholders and the board of directors might be affected by the CEOs (Adams & Ferreira, 2007), thus affecting the investment decisions of the company. The behavioural biases of the CEOs, especially overconfidence, also impact their information provision incentives (Malmendier & Tate, 2005).

Table 12: Past Overconfidence Studies

Topic	Author	Findings	Data
Investment Decisions	Malmendier & Tate (2005, 2008)	Significant relationship between investments and internal financing (cash).	-Financial records of the companies. -Profiles of CEOs
Performance	Libby Rennekamp (2012)	Shares of companies with overconfident CEOs tend to perform weakly	-Financial records of the companies. -Profiles of CEOs
Capital Structure	(Malmendier et al., 2011).	Overconfident CEOs rely on debt more than equity	-Financial records of the companies. -Profiles of CEOs
Innovation and Investments	Hirshleifer, Low and Teoh (2012)	Overconfident CEOs tend to invest more in innovations and patents. Overconfident CEOs achieve great innovation success.	-Financial records of the companies. -Profiles of CEOs -Measurements of innovation
Overpricing	Scheinkman and Xiong (2003)	-Overconfidence leads investors to buy overvalued stocks. -Overconfidence makes optimistic investors believe that they can sell their overvalued assets to more optimistic people.	Market data

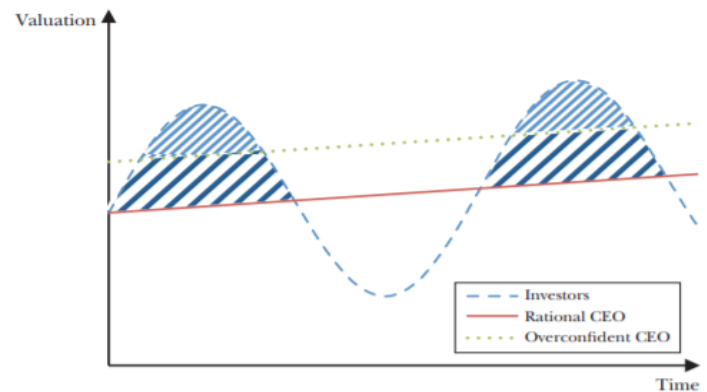
Topic	Author	Findings	Data
Characteristics	Gervais and Odean (2001) Grinblatt and Keloharju (2009)	Gender, age, individual or institutional, and investment experience are characteristics that affects the degree of overconfidence.	The trading records of traders and investors.
Trading activity	Statman et al., (2006)	Past success and returns lead to overconfidence and more active trading	Stock market indices.

Source: Bao & Li (2016)

2.3.8 Overconfidence and Cashflow

Many studies investigated the reasons behind investors and managers' irrational investment behaviour. In corporations, one main factor that causes CEOs' overconfidence is cashflow, or availability of cash, especially in equity dependent firms (Malmendier & Tate, 2005). Malmendier and Tate (2005) argued that there is a tension between the markets and CEOs' beliefs about the value of the firm, a matter which significantly links the levels of investment and cashflows. CEOs may overestimate the return of potential new projects if they have sufficient funds and are not constrained by the mechanisms of corporate governance, pushing them to invest more. However, if they do not have enough internal cash, they will not issue new shares to collect the necessary funds, as they believe that such action will cause the stock to be undervalued in the market (Malmendier & Tate, 2005).

Figure 9: Differences in Firm Valuation



Source: Malmendier and Tate (2015)

2.3.9 Behavioural Finance and Overconfidence on the Corporate Level

Most of the studies investigated overconfidence on the individual investors level, but there are just a little research on the managerial level. Malmendier and Tate (2005) studied the overconfidence on the managerial level. The authors proved that the availability of cash flow makes overconfident CEOs invest more. Also, Malmendier & Tate (2008) investigated the relationship between managerial overconfidence and mergers and acquisition. The authors found out that decisions made by overconfident CEOs for a merger were value-destroying.

Overconfident people put weight on their experience (Ritter, 2003). This is consistent with Billett and Qian (2008) who found that if CEOs were engaged in a successful merger, their confidence will get stronger. This will make them engage in more acquisitions, but the following acquisitions are not found to be profitable.

Overconfidence is one of the most important cognitive biases that may lead investors to make wrong investment decisions (Ritter, 2003). The author stated that investors tend to invest more in the company that they work for.

REIT's managers sell their winning properties while holding to their losing one since acquisition (Crane & Hartzell, 2010). This is in line with the prospect theory, which says that

people tend to avoid regret by selling their winning investments, while keeping their losing ones.

2.4 Review of Corporate Governance, Overinvestment and Underinvestment

Problems of overinvestment and underinvestment could rise due to the conflict of interests between the stakeholders of the company. This conflict has a huge influence on the investment policies, corporate governance and capital structure of the firm. Overinvestment and underinvestment could be caused by a conflict of interest between investors and managers (Cariola et al., 2005), in which managers may misuse their power during the decision-making process.

This may damage the interest of the shareholders and debt holders, as managers may excessively invest in risky and unprofitable projects (Jensen & Meckling, 1976). The authors stressed that the total value of the firm will drop given that CEOs consider their roles as more important of that of shareholders, a matter which rises the conflict and subsequently produces opportunistic behaviour.

There are many forms of overinvestment. It could be related to the financial resources that a company has (Jensen, 1986). Instead of using free cash-flow to distribute dividends, the author stated that managers are using it for opportunistic purposes and investment in nonprofitable projects. Such behaviour could create an expansion beyond the optimal level and lead to the empire-building phenomenon. In this case, the firm size will increase but not its value.

This issue contradicts with the interest of the shareholders. Excessively increasing the firm size could only be for the benefit of the managers (Degryse & De Jong, 2001). So, managers seek to invest more in projects even if the projects have negative net present value (NPV).

Another form of overinvestment can be related to the overconfidence of CEOs. Even if managers have good intentions and are trying their best to serve the best interest of the company and shareholders (by maximising the value for them), they may overestimate their managerial abilities and do the same mistake through investing in projects that appear to have a negative NPV (Stein, 2003).

As emphasized in the previous sections, managers may unintentionally exaggerate their own skills, thus they will not evaluate the risk and uncertainties associated with the new investments carefully (Malmendier & Tate, 2005). Although the overinvestment problem is very common, it can be mitigated and reduced when a company applies a regular and consistent evaluation of its capital (Jensen, 1986). To illustrate, if funds allocation is regularly evaluated to see where money should be used, such as using it in new projects, debt recourse etc., then the conflict between the managers and shareholders will effectively be dealt with.

Following this method will limit the managers' discretion in using the resources of the company and the agency, hence they will properly allocate the free-cash flow. As debt recourse has been just used as an example, this action can limit the in-efficient usage of cash-flow, as reimbursing the loan along with its interest happen before any new project can be funded (Cariola et al., 2005).

On the other hand, the underinvestment problem is related to the agency relationship and conflict of interest between the debtholders and shareholders (Cariola et al., 2005), considering that managers may work to serve the best interest of shareholders over the interest of debtholders.

Managers can refuse to invest in projects that have positive net present value because of the relationships of high debt (Myers, 1977), as financial leverage may decrease the firm value. Under those circumstances, Myers (1977) found the shareholders will not accept to finance

investment projects that may also be associated with risky debt, as most of the benefits will then go in favour of the debtholders. As a result, the manager will decide not to proceed with an investment project, even if it is expected to be profitable.

Although many studies have been done in the US about corporate governance, not much has been done in the Australian market despite being an interesting, big and developed market. As mentioned before, compliance with all Australian corporate governance regulations is not required.

However, if companies choose not to comply due to some reasons like size, culture, and history, they should disclose and explain why a certain rule has not been followed. The case is different for the US, where all corporate governance regulations should be followed by the firms. Thirty recommendations were first released in 2003 by the ASX Corporate Governance Council, before the 2 new versions in 2007 and 2013. These recommendations are based on eight principles which are:

- “Principle 1: Lay solid foundations for management and oversight
- Principle 2: Structure the board to add value
- Principle 3: Promote ethical and responsible decision-making
- Principle 4: Safeguard integrity in financial reporting
- Principle 5: Make timely and balanced disclosure
- Principle 6: Respect the rights of shareholders
- Principle 7: Recognise and manage risk
- Principle 8: Remunerate fairly and responsibly”

As of 2007, an audit company must be established for ASX500 companies. This is an obligation which is listed under rule 12.7. Similarly, ASX300 companies are also required to establish an audit company and remuneration committee. The ASX has the authority to warn

(in writing) the companies that do not follow the corporate governance rules, and even delist the company if the regulations are not followed. Since complying with all the rules are voluntarily and not mandatory, the quality of corporate governance across the companies will significantly vary.

2.5 Development of Conceptual Framework and Hypotheses

After reviewing the literature, it is found that the level and impact of CEOs' overconfidence on corporate investment activity amongst A-REITs have not been investigated before. The problem of irrational investing has been investigated a lot on an individual level, but very few studies have been made on the corporate and managerial level. CEOs' overconfidence in the REIT market has been addressed. However, the studies that investigated CEOs' overconfidence are limited only to the US-REIT market.

Eichholtz and Yönder (2015) investigated the trading activity and performance of REITs in the US. The authors found out that there are more investments in REITs in the presence of overconfidence. The authors also stated that private information is not what drives overconfident managers to buy more of their company shares, because their shares performed weakly after the purchase. The results have shown that overconfident CEOs invest more in properties than non-overconfident CEOs when enough cash is available, and they documented weak investment performance as their decisions led to low NPV projects (Eichholtz & Yönder, 2015).

Although this may be true in the US, it is not necessarily true in any other country. With this in mind and after reviewing Australian studies, it is crucial to see if overconfidence can play a significant role in impacting A-REITs' investment activities, and if such activities are affected and constrained by other factors such as corporate governance.

2.5.1 Hypotheses:

This research tests the following hypotheses:

Hypothesis 1

H01: There is a positive association between CEOs' overconfidence and property acquisition activity.

Hypothesis 2

H02: There is a negative association between CEOs' overconfidence and property disposition activity.

Chapter 3: Methodology

3.1 Introduction

The behavioural finance literature, as discussed in the previous chapter, suggests that anyone is vulnerable to irrational behaviour which can affect the decision-making process, including CEOs of listed companies. Therefore, this study examines the relationship between corporate and property investment decisions made by CEOs of REITs in Australia. Data collection and analysis methods are described in this chapter, and the research design of the study is explained.

3.2 Data Collection

To assess the relationship between CEOs' own share trading as an indicator of their overconfidence, and property investments decision-making undertaken during their tenure as CEOs of the A-REIT companies, the quantitative methodology has been applied in this study. Data sources, measures and sampling strategy are explained in this section.

3.2.1 Data sources:

The data were collected from Eikon, DataStream, MorningStar and A-REITs' annual reports. To get started, the names of CEOs were collected from MorningStar and annual reports. To see CEOs' shares ownership, their shareholdings data were collected from Eikon. For property investments' data, the total number of properties and the dollar value of properties purchased and sold were also collected from Eikon. Most of the financial variables were collected from DataStream. However, where the data were missing for some years, MorningStar was used to collect the full complete data.

3.2.2 Measures and Sampling Strategy:

The data cover 92 CEOs across 46 A-REITs between 2000 and 2019. Both currently trading and delisted companies were included to avoid survivorship bias. However, there are partially and totally unavailable data for some A-REITs which resulted in their exclusion of the study.

Further, some currently trading companies have also been excluded because they were either listed in 2018 or 2019, as the one-year period as a CEO is not enough to examine CEO's behaviour and does not align with the research objectives and methodology, which follow previous studies (Eichholtz & Yönder, 2015; Malmendier & Tate, 2005). The period of 2000-2019 has been chosen as it allows for CEOs' behaviour investigation before, during and after the GFC.

Table 13 shows the companies that have been excluded from the study and the reason for exclusion.

Table 13: Companies Excluded from the Study

Company	Listing/Delisting Date	Reason of Exclusion
Australian Industrial REIT (ANI)	Delisted Date: 03/12/2015	CEO shares data are not available on Eikon.
Brookfield Australian Opportunities Fund (BAO)	Delisted Date: 30/10/2012	CEO shares data are not available on Eikon.
Brookfield Prime Property Fund (BPA)	Delisted Date: 04/07/2017	CEO shares data are not available on Eikon.
Centro Retail Group (CER)	Suspended Date: 17/08/2005	CEO shares data are not available on Eikon.
Centuria Urban REIT (CUA)	Delisted Date: 03/07/2017	CEO shares data are not available on Eikon.
Challenger Wine Trust (CWT)	Delisted Date: 14/02/2011	CEO shares data are not available on Eikon.
Charter Hall Office REIT (CQO)	Delisted Date: 01/05/2012	Financial data, including property investments data, are not available on Eikon
Commonwealth Property Office Fund (CPA)	Delisted Date: 23/04/2014	Financial data, including property investments data, are not available on Eikon

Company	Listing/Delisting Date	Reason of Exclusion
Compass Hotel Group (CXH)	Delisted Date: 30/08/2011	CEO shares data are not available on Eikon.
Coonawarra Australia Property Trust (CNR)	Delisted Date: 30/08/2013	CEO shares data are not available on Eikon.
EDT Retail Trust (EDT)	Delisted Date: 06/09/2011	CEO shares data are not available on Eikon.
Esplanade Property Fund (EPF)	Delisted Date: 19/02/2009	CEO shares data are not available on Eikon.
Galileo Japan Trust (GJT)	Delisted Date: 01/11/2016	CEO shares data are not available on Eikon.
Generation Healthcare REIT (GHC)	Delisted Date: 18/07/2017	CEO shares data are not available on Eikon.
GPT Metro Office Fund (GMF)	Delisted Date: 02/11/2016	CEO shares data are not available on Eikon.
ING Industrial Fund (IIF)	Delisted Date: 31/03/2011	CEO shares data are not available on Eikon.
Intoll Group (ITO)	Delisted Date: 17/12/2010	CEO shares data are not available on Eikon.
Living and Leisure Australia Group (LLA)	Delisted Date: 19/04/2012	CEO shares data are not available on Eikon.
Mirvac Industrial Trust (MIX)	Delisted Date: 09/12/2014	CEO shares data are not available on Eikon.
Multiplex European Property Fund (MUE)	Delisted Date: 18/09/2015	CEO shares data are not available on Eikon.
Novion Property Group (NVN)	Delisted Date: 15/06/2015	CEO shares' data are not available on Eikon.
Prime Retirement and Aged Care Property Trust (PTN)	Delisted Date: 30/08/2012	CEO shares data are not available on Eikon.
Rabinov Property Trust (RBV)	Delisted Date: 08/08/2011	CEO shares data are not available on Eikon.

Company	Listing/Delisting Date	Reason of Exclusion
Record Realty (RRT)	Delisted Date: 01/09/2009	CEO shares data are not available on Eikon.
Rubicon America Trust (RAT)	Delisted Date: 23/12/2009	Financial data, including property investments data, are not available on Eikon
Rubicon Europe Trust Group (REU)	Delisted Date: 23/12/2009	Financial data, including property investments data, are not available on Eikon
Tishman Speyer Office Fund (TSO)	Delisted Date: 29/06/2012	Financial data, including property investments data, are not available on Eikon
Westfield America Trust (WFA)	Delisted Date: 12/08/2004	CEO shares data are not available on Eikon.
Westpac Office Trust (WOT)	Delisted Date: 05/08/2010	CEO shares data are not available on Eikon.
APN European Retail Property Group (AEZ)	Delisted Date: 04/09/2012	CEO shares data are not available on Eikon.
Australand Property Group (ALZ)	Delisted Date: 03/11/2014	CEO shares data are not available on Eikon.
Propertylink Group (PLG)	Listed Date: 29/04/2019	Period: less than two years
Unibail-Rodamco-Westfield (URW)	Listed Date: 31/05/2018	Period: less than two years
Vitalharvest Freehold Trust (VTH)	Listed Date: 01/08/2018	Period: less than two years

3.3 Research Method and Strategy

A researcher can decide to use a quantitative or qualitative method to find an answer to a particular question which is still not addressed in the existing literature. Every research question is different and distinct, a matter which requires a different approach for finding its

answer. Also, each method requires certain skills and resources that need to be available at the time of conducting research. Nonetheless, every study requires the usage of the appropriate method to reach the proper results.

There are huge differences between qualitative and quantitative research. Qualitative methods do not involve any numerical data, but only words or language. It helps to provide rich data and in-depth information and pictures. This helps explain the way and reason behind things happening. There many sources and techniques used to collect qualitative data. The most common ones are interviews, focus groups, observations and secondary data.

The data collected from the mentioned sources can be analysed using a variety of methods, which mostly involve coding and structuring data into themes. This can be done with the help of well-developed computer application and software such as NVivo. Quantitative research, on the other hand, is concerned with numerical data which are analysed using statistical methods. The most important sources of quantitative data are surveys, observations and secondary data.

Table 14 outlines some differences between quantitative and qualitative methods:

Table 14: Differences Between Quantitative and Qualitative Research Strategies

Research Aspect	Quantitative	Qualitative
Common Purpose	Test hypotheses or specific research questions	Discover ideas, used in Exploratory Research with general research objectives
Approach	Measure and test	Observe and interpret
Data Collection Approach	Structured Response Categories Provided	Unstructured, Free-Form

Research Aspect	Quantitative	Qualitative
Research Independence	Researcher is an uninvolved observer: results are objective	Researcher is intimately involved: results are subjective
Samples	Large samples to produce generalizable results	Small Samples – often in natural settings
Most often Used	Descriptive and casual research designs	Exploratory Research designs

Source: Yeong (2011)

This study has chosen the quantitative method because of the limitation of qualitative one given the nature of the topic addressed. In case the qualitative method was followed, the most appropriate technique that would have been used is conducting interviews with the CEOs. In general, doing an interview is a very useful method, as it allows a researcher to have in-depth data and/or information about the investigated issue.

Doing an interview also makes the researcher discover the opinion of the interviewees, as well as find out the reasons behind their actions and way of thinking. However, having an interview to investigate CEOs' investment behaviour would have not been appropriate because of the following reasons:

1. The overconfidence bias is very dangerous in the financial market, and it will be perceived by the CEOs as a bad thing to have (which it actually is), a matter that would push them to answer the questions in a way that shows that they are not overconfident. Overconfidence is a bias that might not be controlled by the one who has it, and many individuals do not even notice they are behaving irrationally.

2. The interviewee must be aware of the research details and objectives. So, any question that will be asked would be perceived as biased (which may actually be) to prove or show CEOs and corporate overconfidence, even if the questions asked are not directly related to this bias.

3. Conducting interviews is time-consuming and is not a good option considering the limited time of the Master of Research program, as setting up interviews with more than 50 CEOs from different companies, then transcribing, analysing and reporting the results are beyond this research timeframe and resources.

4. Conducting interviews with many CEOs are very costly.

Not only qualitative techniques were considered, but also quantitative techniques like a survey. However, despite being an easy data collection tool, cost-effective, and time-efficient, it has not been considered as the survey's reliability will be questioned given the nature of the study. The following issues have been considered and surveys have been excluded from the study as a result:

- CEOs may not be encouraged to give accurate answers
- CEOs may not put themselves in unfavourable situations and manners, would not provide some answers or may decide not to fill up the survey.
- Rates of response: In case the rate is low, it will create bias and therefore leads to an unreliable data collection technique.

3.4 Overconfidence and Investment Examination; Research Method and Strategy

After reviewing the existing overconfidence literature, this study conducts a quantitative approach. Past studies about corporate financing policies, real estate and behavioural finance have been reviewed to find a comparable method and model. In order to find out whether CEOs are overconfident or not, the relationship between their corporate property investments and

personal shares' investment, corporate cash, debt and operational performance should be investigated.

3.4.1 CEO Shares and Property Investments

CEOs are already exposed to company-specific risk as their personal wealth depends on the company they work for, such as their compensation, wages and pension plan. Having this in mind, if CEOs keep buying shares of their companies, it is a clear indication that CEOs are very confident of their firms' success, performance and fortunes (Eichholtz & Yönder, 2015). It is worth remembering that they have the opportunity of diversifying their market portfolio, by investing in other companies from different industries.

CEOs' phenomenon of buying more shares of their own company's stock was documented before (Billett & Qian, 2008; Malmendier & Tate, 2005, 2008). The authors classified CEOs as overconfident when they buy more shares than they sell. Managers' failure to avoid more exposure to their companies' risk, which they already are vulnerable to, indicates their overestimation of their companies' returns in the future.

Billet and Qian stated that CEOs' past success has a huge influence on their future decisions and found that they are overconfident, in a study they conducted to explore CEOs' behaviour and decision-making process during mergers and acquisitions. They have also found that successful acquisitions, where a CEO was involved, made him or her engage more in similar projects, but these new acquisition projects were not profitable anymore.

To explain some phenomena in the financial world, many researchers focused on overconfidence to help clarify why such phenomena took place (Billett & Qian, 2008; Daniel, Hirshleifer, & Subrahmanyam, 1998; Eichholtz & Yönder, 2015; Fischhoff, Slovic, & Lichtenstein, 1977; Gervais & Odean, 2001; Hilary & Menzly, 2006; Hirshleifer & Luo, 2001; Malmendier & Tate, 2015). Moreover, self-attribution was used to explain investors' behaviour

and overconfidence (Daniel et al., 1998). Even analysts' behaviour was examined by Hilary and Menzly (2006), and they found that self-attribution bias is leading investment analysts to be overconfident after experiencing short-term success. In light of this, Billett and Qian (2008) stated that directors can be among the highest influencers on their companies and their assets' prices.

It is expected that firms' investments to increase when CEOs are overconfident (Eichholtz & Yönder, 2015). On the other hand, the authors stressed that A-REITs' property sales are expected to decrease if CEOs are overconfident. Glaser and Weber (2007) have investigated the corporate investment activity and they have separated buying and selling activities. In view of that, this research follows their method and investigates both property acquisition and disposition activities separately.

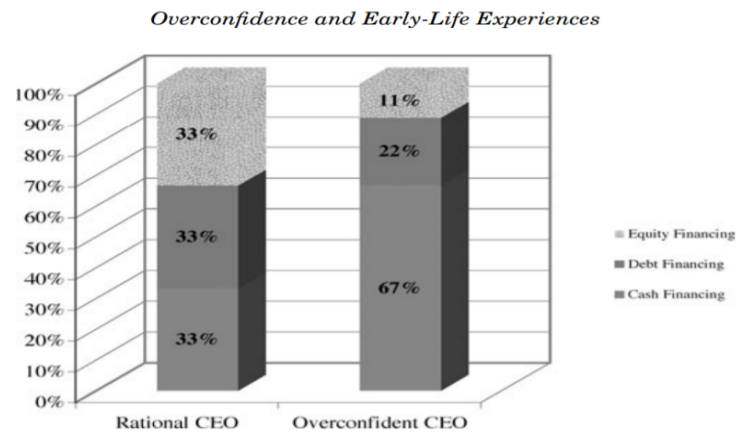
Taking into consideration the previous literature that indicates CEOs' personal and corporate excessive trading activity, this study investigates the relationship between CEOs' personal share trading and their corporate property acquisition and disposition activities. Further, CEOs were only considered and included in this study if they were in their managerial position for at least two years, following (Eichholtz & Yönder, 2015). If CEOs buy more shares while also investing excessively in properties, this indicates a corporate overconfidence behaviour. The same matter applies for the property sales, which means a decrease in properties sales reflects CEOs' overconfidence impact on A-REITs' strategies and behaviour.

3.4.2 Investment Activity and Cash Availability

If CEOs are overconfident, they will only invest more if they have too much internal funds at their disposal, which implies that investments are highly sensitive to cash availability and other financing options that CEOs consider cheap (Malmendier & Tate, 2015). The authors state that rational CEOs, or non-overconfident CEOs, avoid this mistake and make investment

decisions regardless of the financing options available, as long as investments are value-maximizing.

Figure 10: Overconfidence and Early-Life Experiences



Source: Malmendier and Tate (2011)

Eichholtz and Yönder (2015) found that US-REITs’ CEOs invest more in real estate when they have enough cash and sell fewer properties than non-overconfident CEOs when a company has more cash. They explained that overconfident CEOs are very certain of the decisions they are making and believe that such decisions will have a positive outcome, a matter that will make them sell the properties at a later stage when the properties reach a desired value higher than the current price in the market.

As a result, overconfidence had a negative effect on the sales of property. In view of that, Eichholtz and Yönder (2015) suggested that such activities could be caused by the empire-building behaviour where overconfident CEOs invested more to create a greater portfolio size than other companies’ CEOs.

Malmendier & Tate (2005) focused on the characteristics of companies’ management and decision-makers instead of the characteristics on the firm-level. They found that when there are sufficient cash and firms are not disciplined by the corporate governance guidelines, CEOs tend to overinvest. Therefore, they will not issue new shares because of the tension between

the market beliefs and theirs. To clarify, CEOs are concerned the market may undervalue the stock of the company if new equity is issued. In view of that, Malmeinder and Tate (2005) stated that the availability of cash-flow gives the CEOs the chance to make new investments as per their desires. On the other hand, rational CEOs do not only focus on cash availability, and are willing to invest for what is best for the firm (Malmendier & Tate, 2005). Moreover, if there are cash constraints, the authors propose that CEOs' overinvestment can then be mitigated when managers consider financing costs.

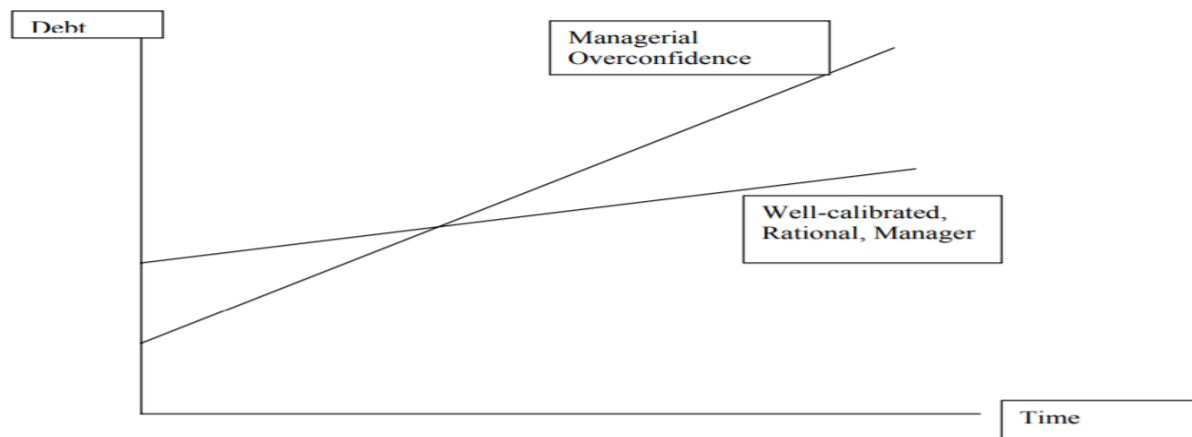
This study investigates the relationship between cash and property acquisition and disposition activities activities. So, the dependent variable (Property Acquisition) will be regressed against CEOs' shares trading of their own companies, cash and other dependent variables that will be stated in the following sections.

3.4.3 Investment Activity and Financial Leverage

Debt is one major financing option that companies consider for new investment projects. To understand the capital structure and its impact on the value of the firm, many researchers examined the structure's development and utilization (Fairchild, 2005; Jensen & Meckling, 1976), where they studied how such development can solve agency problems, including a problem based on managerial irrationality. Therefore, more research has been devoted to study how behavioural biases may impact finance decisions made by managers and corporations.

Overconfidence is widely recognized as a behavioural trait that plays a significant role in managers' finance decisions. It encourages managers to rely heavily on debt (Shefrin, 2001). Overconfident CEOs tends to choose higher levels of debt financing and issue new debt more often (Hackbarth, 2008).

Figure 11: Managerial Overconfidence and Life-cycle Debt



Source: Fairchild (2007)

As mentioned before, much of research has been done on overconfidence (Eichholtz & Yönder, 2015; Fairchild, 2005; Malmendier & Tate, 2005, 2015; Moore & Schatz, 2017), as well as financing decisions determinants (Malmendier et al., 2011; Myers, 1977; Myers & Majiuf, 1984). However, new research has been conducted about financing decisions' determinants especially after the emergence of behavioural finance which contradicts traditional theories (Lemmon, Roberts, & Zender, 2008).

Malmendier et al. (2011) found few significant determinants of financing decisions made by overconfident managers. While such managers tend to use cash instead of costly external financing, they prefer to issue debt instead of equity if they need more funds for a project when they seek external capital.

This study investigates the relationship between property investments and debt. Accordingly, debt ratio will be included in the regression model.

3.4.4 Model and Data Analysis

Raw data have to be processed and become information, in the forms of statistics and tables, so that it can be objectively meaningful to a reader (Thornhill, Saunders, & Lewis, 2009). The

data were screened before processing it, and missing data were checked and treated. The missing data were therefore collected from other sources to make it ready for processing. The sources of data were Eikon, DataStream, MorningStar and annual reports. Accordingly, the data were ready for processing after being verified.

After analysing the data using EVIEWS, this research looks at the statistical significance and correlation coefficient between the dependant variable and independent variables. As discussed previously in this chapter, the relationship between CEOs' shares and property investments, cash and property investments as well as corporate debt and property investments are investigated.

Two equations are used to separately analyse the acquisition and disposition activities of properties, and to see the relationship of CEO' shares, corporate cash and debt with these activities. The results of the study will be presented in the findings chapter.

To make the model of this study comparable to research that has already been done on overconfidence, previous research papers are carefully reviewed to develop a model for properly reach logical results that provide a good understanding of corporate overconfidence in A-REIT companies. The models of this study have been developed based on previous literature on overconfidence.

However, different country means different data sources, and not all types of data and variables of the previous studies, that can be easily obtained for US-REITs, can be available and/or accessible for A-REITs. The following section explains the method and models of the most similar study to this research, and describe how the models of this study have been constructed, taking into consideration the master's program duration and resources as well as available data and/or access to A-REITs' data.

3.4.5 Method of Past US-REITs' Overconfidence Study

In their investigation of US-REITs CEOs' behaviour and overconfidence, Eichholtz & Yönder (2015) used both acquisition and disposition activities as dependant variables (in separate equations), and also used, in another model, real estate investment growth as a proxy of corporate investment activity.

Such data was obtained from SNL Financial (a data source that is not available for me at this stage). They have also incorporated cash (cash-stock) instead of free cashflow, as the free cash flow is not available for investments because of the 90% payout rule in the US, which is high like A-REITs' payout ratio.

3.4.6 Regression Analysis

As discussed in the previous sections, this research aimed to develop a model or models that can study CEOs' overconfidence by reviewing the behavioural finance and real estate literature. Accordingly, the following models have been developed:

First model: Property purchase (the dependent variable) is regressed against 5 independent variables which are CEOs' Shares Investments, Cash, Funds from Operations, Market Value and Debt Ratio.

• **Model 1:**

$$Y_p = \beta_0 + \beta_1 O_1 + \beta_2 C_1 + \beta_3 F_1 + \beta_4 M_1 + \beta_5 D_1$$

Y_p: Property Acquisition

O₁: CEOs shares investments

C₁: Cash

F₁: Funds from Operations

M₁: Market Value

D1: Debt to total assets (Debt ratio)

Second Model: Property Sales (the dependent variable) is regressed against 5 independent variables which are Shares Investments, Cash, Funds from Operations, Total Assets and Debt Ratio.

• **Model 2:**

$$Y_s = \beta_0 + \beta_1 O_1 + \beta_2 C_1 + \beta_3 F_1 + \beta_4 T_1 + \beta_5 D_1$$

Where Y_s is the sales of property, and T_1 is the Total Assets.

Therefore, the hypotheses that are developed are:

Hypothesis 1

Ho1: There is a positive association between CEOs' overconfidence and property acquisition activity.

Hypothesis 2

Ho2: There is a negative association between CEOs' overconfidence and property disposition activity.

3.5 Methods, Research Questions and Hypotheses

As stressed in this chapter, this research reviews existing property, behavioural finance, overconfidence and corporate governance studies to develop a methodology that can help answer the research questions. Table 15 recapitulate the methods used in this study.

Table 15: Questions, Hypotheses and Methods

Research Questions	Hypotheses	Methods
RQ1: What is the impact of CEOs' overconfidence on the property acquisition activity?	Ho1: There is a positive association between CEOs' overconfidence and property investments.	-Property acquisition activity (dependant variable) is regressed against CEOs' own shares trading of their A-REITs' stock (Independent variable), following (Billett & Qian, 2008; Eichholtz & Yönder, 2015; Malmendier & Tate, 2005).
RQ2: What is the impact of CEOs' overconfidence on the property disposition activity?	Ho2: There is a negative association between CEOs' overconfidence and property disposition activity.	-Property disposition activity (dependant variable) is regressed against CEOs' own shares trading of their A-REIT's stock (Independent variable), following (Billett & Qian, 2008; Eichholtz & Yönder, 2015; Malmendier & Tate, 2005).

The CEOs whom are considered in this study are the ones who have at least two years appearance as A-REITs' CEOs. This is because a period that is less than two years is not considered sufficient enough to examine CEOs' behaviour (Eichholtz & Yönder, 2015). If CEOs are buying more shares of their companies', this means that they are very confident of their companies' performance.

As stressed before, CEOs have the opportunity to diversify their portfolio through investing in many other assets. So, if CEOs are buying more shares of their companies' throughout their years as CEOs, while their wealth is also already exposed to their firms' specific risk (such as

their compensation, wages and pension plan), then this indicates that they are overconfident (Eichholtz & Yönder, 2015).

Accordingly, CEOs' shares trading is separately explored to see how many CEOs are overconfident.

3.6 Conclusion

If time is available, this study could have attempted to follow both quantitative and qualitative methodologies, through conducting interviews with the CEOs along with using the secondary data. It would have opened an extra scope to identify additional reasons or factors behind investment decisions they have made, or explored special circumstances that could be missed from just using the quantitative data.

However, the one-year research period of the Master of Research program does not allow conducting many interviews (given they all accept or are available to hold one). Furthermore, the exclusion of many delisted companies, because of data unavailability, may affect the results and therefore impact the level of overconfidence that could be detected.

Chapter 4: Findings and Discussion

4.1 Introduction

The data cover 46 A-REITs and 92 CEOs. The data are analysed following the literature discussed in the methodology chapter. This chapter presents the outcome of the analysis, discusses the findings and compares the results with previous management and finance studies.

4.2 Overconfidence Findings:

CEOs' shareholding is used as an indicator of overconfidence of a CEO. As discussed by Eichholtz and Yönder (2015), if CEOs buy shares of their A-REITs, this significantly increases their exposure to their companies' specific risk, because they are already exposed to this risk as all their wages, compensation and pension plan is related to their companies' performance. So, buying their companies' shares indicates that CEOs are overconfident of their companies' return, performance or fortunes under their management (Eichholtz & Yönder, 2015). Also, it is worth noting CEOs having the opportunity to diversify their portfolio by investing in many other stocks or assets other than their companies' shares.

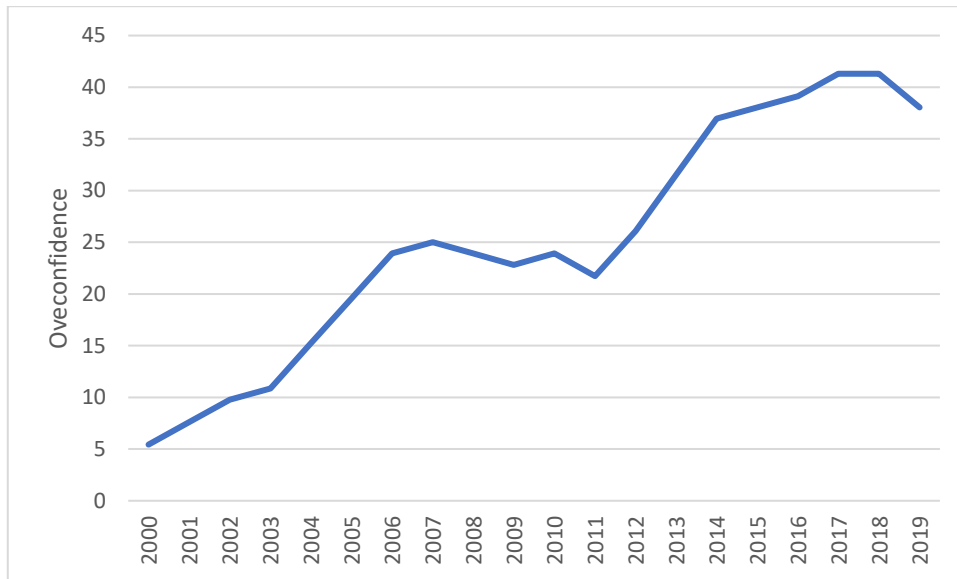
CEOs are classified as overconfident if they buy or are consistently buying shares of their companies, following Eichholtz and Yönder (2015). This study follows Eichholtz and Yönder (2015) by classifying CEOs as overconfident for their tenure period as CEOs (not the whole sample period of 2000-2019) if they are found to buy shares of their companies, as overconfidence is considered as habitual behaviour. As highlighted by Eichholtz and Yönder (2015), they "define a CEO as overconfident if he or she is a net buyer of his or her own company stocks throughout the sample period". A consistent approach has also been applied for other managerial overconfidence studies, where Billet and Qian (2008) investigated CEOs' purchase of stocks prior to mergers and acquisitions and stated that "if the CEO develops her (over)confidence over time, we expect such increased optimism to manifest in her trading of

the company stock". The analysis also follows the Eichholtz and Yönder (2015) by including CEOs that have at least 2 years appearance as A-REITs' CEOs. So, CEOs that only stayed one year in their managerial position are excluded from this study, as the one-year period is not enough to examine CEOs' behaviour (Eichholtz & Yönder, 2015).

It is found that 63 out of 92 CEOs are overconfident (for the period 2000-2019). So, around 68% of A-REITs' CEOs are overconfident during this period. On the other hand, 29 CEOs have not been involved in any of their companies' shares purchase in open market operations. In the US, 34% of US REITs' CEOs were classified as overconfident for those that had at least 2 years appearance in their managerial position (Eichholtz & Yönder, 2015). However, it is worth noting that the authors' study covers a period of just 7 years (2003-2010), while this research covers a greater period (2000-2019).

It is important to mention that most of A-REITs' CEOs tend to sell all their shares after they leave their positions, which implies that they were not investing for the long term. Further, the degree of overconfidence varies over the 20 years period. As displayed in Figure 12, there is evidence of an increase in the overconfidence of A-REITs' CEOs overtime, albeit this is associated with the fact that more A-REITs are being created. Figure 12 shows the increase in CEOs' overconfidence in the last 20 years.

Figure 12: Degree Variation of Overconfidence (in Percentage)



Source: Compiled and Constructed from Eikon

Note: This figure has been constructed by taking the average of CEOs that bought shares during their tenure in the managerial position.

Figure 12 reflects the average of overconfident CEOs that bought shares during their tenure in the managerial position. While this figure has not reflected that overconfident CEOs constitute 68% of the sample, this is because the majority of the CEOs have not stayed in their position for the whole sample period (2000-2019). Also, tenure periods vary among CEOs, which also impacted figure 12 estimations. However, taking the total sample period together into consideration, 68% of CEOs were overconfident.

According to Eichholtz and Yönder (2015), CEOs are classified as overconfident during their whole period in the managerial position if they are buying shares during their tenure. So, even if a CEO does not buy a share during just one particular year, it does not mean he or she is not overconfident. Accordingly, figure 12 reflects CEOs as overconfident during their whole period in their managerial position.

Overall, there is an evidence that the majority of A-REITs' CEOs are overconfident for the period 2000-2019. This raises an issue of how these will affect A-REITs' investment activities. Do A-REITs' CEOs tend to buy more properties? Do they tend to sell less properties?

4.2.1 Models' Results

To see if the results are statistically significant, a researcher looks at the p-value which shows whether the results reached are due to chances or not. If the p-value, which is provided by statistical hypothesis testing, is 5% or lower, then results found can be considered as statistically significant. If the p-value is higher than 5%, then the results are considered found by chance.

Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.8169	0.7467	1.0164
Constant, CEO Shares, Cash, FFO, MV and Debt Ratio			

Table 17: Model 1 Results

Variable	Coefficient	Std. Error	T-STATISTIC	Prob.
C	2.5099	5.5991	0.4482	0.6544
CEO Shares	0.2377	0.1594	1.4913	0.1372
LNCASH	-0.2043	0.0933	-2.1891**	0.0296
LNFUNDS_FROM_OPERATIONS	-0.1349	0.2383	-0.5659	0.5720
LMV	0.9954	0.3057	3.2560***	0.0013
DEBT RATIO	1.7564	1.0819	1.6234	0.1058

Note: the dependent variable is Property Investment (Property Acquisition); ** and *** indicate significance at 5% and 1% respectively. Robust standard errors were employed.

Table 17 shows the regression results from Model 1 analysis by using property acquisition activity of A-REITs as the dependant variable based on the value and volume of the transactions. This analysis is carried out to assess the relationship between A-REITs' property investment activities with that of the CEO's level of confidence.

The results of the regression analysis indicate that there is a positive coefficient between A-REITs' property acquisition activities as the dependent variable and CEOs' shares trading as the independent variable. This shows that A-REIT companies have the tendency to acquire more properties as CEOs accumulate more shares in their own companies. This may be explained by the fact that overconfident CEOs have a more optimistic corporate investment strategy that is reflected through, amongst other things, more aggressive property acquisition activities. However, it is worth noting that this is found not to be statistically significant (p-value = 0.1372). These results are different from what is found in the US, since Eichholtz and Yönder (2015) found a significant evidence that overconfident CEOs increase the property acquisition activities of their REITs. The divergence of the results suggests the importance of international evidence. More specifically, A-REITs and US REITs are trading under distinct settings, including but not limited to, corporate governance. Further discussion about this divergence is required and will be held in the "discussion" section.

Further, the analysis also indicates a negative coefficient (-0.2044) between A-REITs' cash level and property acquisition activity, and this relationship is found to be significant at a 5% level. Specifically, for every 1% increase in the property acquisition volume will result in a 0.2% decrease in cash. This result is also corroborated with the positive estimation by using the debt ratio (1.76) as the explanatory variable, albeit a statistically insignificant result. This relationship is not unpredictable as A-REIT companies are expected to use a combination of existing cash stock and leverage as they seek to expand the size of their investment portfolios,

thus explaining the decrease in the A-REITs' cash level and the increase in liabilities (debt level).

The results also exhibit a positive and statistically significant relationship at 1% significance level between the asset acquisition activity of A-REITs and their market value. As A-REITs' primary business activity is investing in income-producing assets with a long-term holding period, the positive impact on their market value from the acquisition activities has been correctly identified in this analysis.

In addition, the analysis also indicates a negative coefficient (-0.1349) between A-REITs' Funds from Operations (FFO) and property acquisition activity, which indicates that an increase in property investments is associated with a decrease in operational performance. However, it is not found to be statistically significant (p-value=0.5720). Table 16 shows that 81.69% of the variation in property acquisition activity is explained by the changes in the independent variables.

Table 18: Model 2 Summary			
Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.6738	0.5135	1.4638
Constant, CEO Shares, Cash, FFO, TA and Debt Ratio			

Table 19: Model 2 Results

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	6.7518	10.2246	0.6603	0.5099
CEO Shares	-0.3586	0.2703	-1.3264	0.1864
LNCASH	0.5108	0.1509	3.3850***	0.0009
LNFUNDS_FROM_OPERATIONS	0.0226	0.2663	0.0848	0.9325
LNTA	0.0867	0.5586	0.1553	0.8767
DEBT RATIO	-0.5153	1.7917	-0.2876	0.7740

Note: the dependent variable is Property Sales (Property Disposition); *** indicates significance at 1%. Robust standard errors were employed.

Table 19 shows the regression results from model 2 analysis by using property disposition activity of A-REITs as a dependent variable based on the value and volume of transactions. This analysis carried out to assess the relationship between A-REITs' property selling activities with that of CEOs' level of overconfidence.

The results of the regression analysis indicate that there is a negative coefficient between A-REITs' property disposition activities as the dependent variable and CEOs' shares trading as the independent variable. This shows that A-REIT companies have the tendency to sell less properties as CEOs acquire more shares in their companies. However, this relationship is found not to be statistically significant (p-value = 0.1864). Results here are not in line with the findings of Eichholtz and Yönder, (2015). The authors found that overconfident CEOs decrease their REITs' property disposition activity. Their results imply that overconfident CEOs tend to sell less properties (while also buying more) to create a greater size of portfolio than other CEOs, which reflects the empire-building behaviour. On the other hand, there is no statistical evidence in this study that A-REITs' CEOs are doing the same thing. In like manner to model "1" results, since the results are not in line with the results of the US study of Eichholtz and

Yönder, (2015), then this also implies that the special settings of corporate governance may have a significant impact on A-REITs' trading strategies. The "discussion" section will discuss the potential role of corporate governance in A-REITs' managerial decision-making process.

Further, the analysis also indicates a positive coefficient (0.5108) between A-REITs' cash level and property disposition activity, and this relationship is found to be significant at a 5% level (p-value = 0.009). Specifically, for every 1% increase in the property disposition volume will result in a 0.51% increase in cash. This result is also collaborated with the estimation by using the debt ratio (-0.51) as the explanatory variable, albeit a statistically insignificant result. This relationship is not unpredictable as the property sales are going to increase the cash level while also decreasing debt level because of debt repayments, hence reducing the amount of A-REITs' liabilities (debt level). The results also exhibit a weak positive and not statistically significant coefficient between property disposition activity and A-REITs' Total Assets, which indicates that the total assets of A-REITs are not impacted much from property sales. Table 18 shows that 67.38% of the variation in property disposition activity is explained by the changes in the independent variables.

4.2.2 Hypotheses

Based on the results, the following hypotheses are confirmed:

Table 20: Hypotheses and Results

Hypotheses	Results	Accept/Reject
Ho1: There is a positive association between CEOs' overconfidence and property acquisition activity.	Coefficient = 0.2377 p-value = 0.1372	Reject
Ho2: There is a negative association between CEO overconfidence and property disposition activity.	Coefficient = - 0.3586 p-value = 0.1864	Reject

In other words, both hypotheses are rejected, reflecting that overconfident CEOs did not either tend to buy or sell more properties. The results are not consistent with the previous findings in the US. Importantly, a greater discussion of the divergence is required. Specifically, the unique characteristics of A-REITs will be discussed.

4.3 Discussion

This research aimed to examine the relationship between CEOs' own share trading as an indicator of their overconfidence and investment decision-making undertaken during their tenure as CEOs of the A-REIT companies. On this basis, the results have shown that there is a statistically insignificant positive association between A-REITs' property acquisition activities and CEOs' shares investing. These results show that there is no statistical evidence to indicate that overconfident CEOs are likely to invest more and to adopt an aggressive investment strategy. Also, there is no statistical evidence to indicate that overconfident CEOs tend to reduce their property selling activities as they acquire more shares of their companies, as results indicate a statistically insignificant correlation (p value= 0.1864). Most importantly, the results found in this study contradict what is found in the US (Eichholtz & Yönder, 2015). The authors found the overconfident CEOs of US-REITs tended to increase the property acquisition

activities and decrease the disposition activities. The authors also corroborated their findings with US-REITs' cash availability, as their study has found that CEOs tended to invest more if they have sufficient funds.

A 1% increase in US-REITs' cash-stock has led to a 3-4% increase in their property investments (Eichholtz & Yönder, 2015). Nonetheless, the findings of this study indicate that a 1% increase in A-REITs property investments leads to a 0.2% decrease in the cash level. Also, the results indicate that a 1% increase in property disposition activity leads to a 0.51% increase in cash and 0.51% decrease in debt level, albeit the property disposition activity's correlation with debt is insignificant.

Eichholtz & Yönder (2015) have looked deeper into the performance of US-REITs after they detected the corporate overconfidence. The authors found that US-REITs managed by overconfident CEOs had a bad performance. Most importantly, the year following the increase in CEOs' shares ownership, in their own companies, had a worse performance (Eichholtz & Yönder, 2015). The authors stressed that an increase in CEOs' shares may indicate CEOs' overconfidence, but might also imply that they have valuable information about their companies. However, US-REITs did not perform well. Regarding the method of this research, although the model incorporates an operation performance variable (FFO), this study has not conducted further investigations about the performance of A-REITs, as the findings indicated that there is no statistical evidence to indicate corporate overconfidence. Further examination of performance could have utilized many variables, as FFO is not enough to explore companies' performance.

The results are believed to have contradicted the previous US-REITs' research findings for one important reason, which is corporate governance. To illustrate, the literature indicates that CSR and corporate governance findings are different between the US and Australian markets.

Most importantly, corporate governance relationship with US-REITs and A-REITs are not found to be the same. As a matter of fact, Newell and Lee (2012) found that corporate governance had a great impact on A-REITs while having no significant relationship with US-REITs. The authors stressed that corporate governance was a key issue for A-REITs' ongoing success, with an emphasis towards the role of independent directors, the board of directors and the issues that A-REITs' decision-makers must consider, such as disclosure and transparency.

Further, Billett and Qian (2008) emphasized that overconfidence has serious implications for corporate governance. Overinvestment problem, which can be caused by CEOs' overconfidence, can be mitigated when a company consistently evaluate its capital (Jensen, 1986). Hence, this will create limitations which impact CEOs' discretion in using the financial resources of the firm. Since A-REITs are renown to have a strong commitment to CSR and corporate governance practices (Newell & Lee, 2012), these same practices are stressed to have a great impact on overconfidence (Billett & Qian, 2008). This commitment is corroborated, amongst other things, with the evidence of A-REITs' higher transparency than the US and most of the REITs' markets (JLL, 2018).

This study further looks at A-REITs' Environment, Social and Governance (ESG) scores to explore their status and A-REITs' response to CSR and corporate governance practices. The scores have been designed by Thomson Reuters (DataStream), a leading source of intelligent information. The following table shows what each score covers:

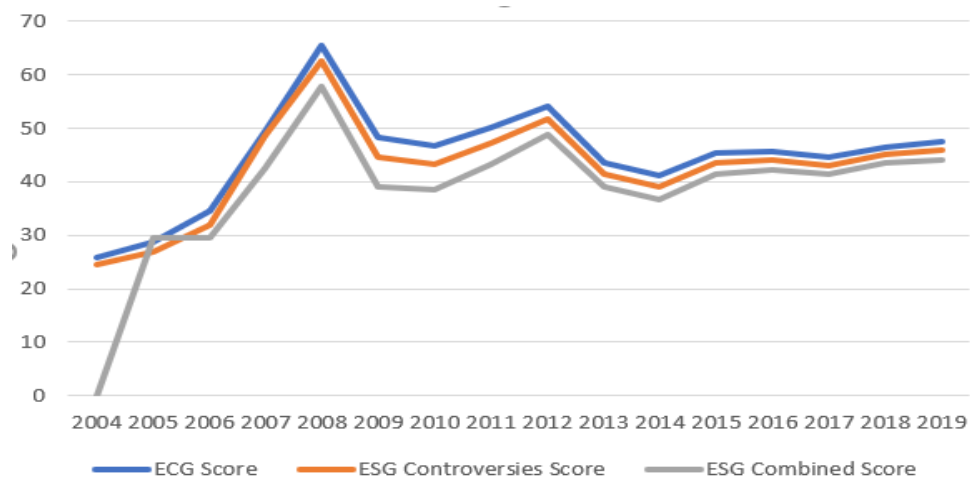
Table 21: ESG Scores and Categories

	Environmental (Categories)	Social (Categories)	Governance (Categories)
ESG Score	- Resource Use - Emissions - Innovation	- Workforce - Human Rights - Community - Product Responsibility	- Management - Shareholders - CSR Strategy
ESG CONTROVERSIES SCORE	Controversies across all 10 categories are aggregated in one category score		
ESG COMBINED SCORE	Combines ESG score and ESG Controversies score		

Source: Refinitiv (2020)

Thomson Reuters follows the percentile rank scoring methodology (Refinitiv, 2020). So, a score between 0 and 100 is produced. Figure 13 shows the significant average increase in A-REITs’ ESG scores between 2004 and 2019.

Figure 13: ESG Scores of A-REITs

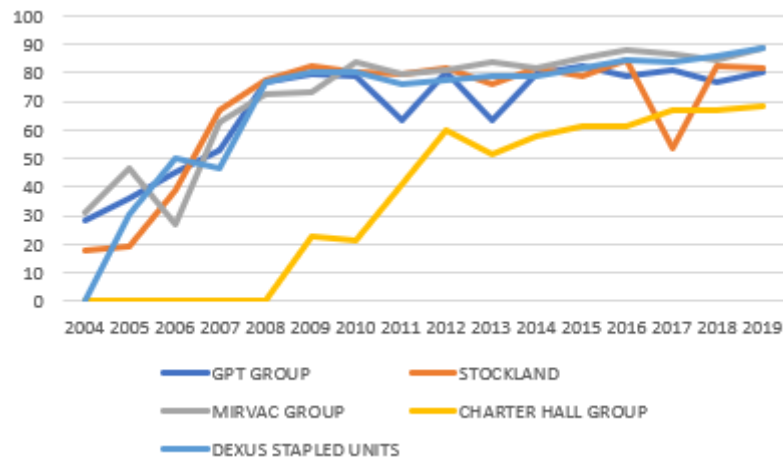


Source: Compiled from DataStream

A-REITs’ ESG scores have been significantly rising in the last two decades. Figure 13 shows the increase in the three scores separately. The rise in the scores indicates that A-REITs

are seriously applying CSR and corporate governance rules and practices. Further, Figure 14 shows the A-REITs that have the top 5 ESG combined scores for the period 2004-2019.

Figure 14: Top 5 ESG combined scores of A-REITs.



Source: Compiled from DataStream

As indicated in the previous chapters, the quality of corporate governance varies between Australian companies, as compliance with corporate governance rules and regulations are not mandatory, and this is reflected in figures 13 and 14. Most importantly, since A-REITs' scores indicate that corporate governance rules are seriously considered, this carries important implications for CEOs' investment behaviour, as Billett and Qian (2008) stressed that corporate governance greatly impacts overconfidence.

4.4 Conclusion

To conclude, and given the discussed facts, it is believed that corporate governance played a major role in impacting the variation in corporate overconfidence level across the Australian and US-REIT markets. However, further research should be devoted to this area as corporate overconfidence, which is already found in the US-REIT market and might be later found in other REIT markets, can then be mitigated. Further, no empirical evidence is provided in this

research to confirm that corporate governance is the factor that mitigated overconfidence, despite ESG scores' strong implication for this bias.

The resources (including data availability) and time constraint of the master's program have not allowed for an extensive review of corporate governance methodologies. Accordingly, the development of a corporate governance-related method, model and hypotheses were not possible.

Chapter 5: Conclusion

5.1 Introduction

This chapter concludes the findings of this study by presenting the investment behaviour of CEOs in the A-REIT market. It then states the importance and significance of the study and outlines the contribution to A-REITs and behavioural finance body of research.

The limitations of this research are discussed, and recommendations for future research will be provided. Most importantly, this chapter ends by discussing the implications and stressing the importance of conducting further investigations in the domain of overconfidence, corporate governance and property.

5.2 Key Results and Findings

This research has one primary aim, which is to explore the corporate overconfidence level of A-REITs CEOs. The findings that were expected to be found were based on the existing studies in the management and finance literature. Based on the overconfidence and real estate literature, the expectation was to find overconfident CEOs making irrational corporate investment decisions. However, based on the corporate governance literature, this research expected the results to be distinct, as previous research on corporate governance in Australia has been also different from other countries.

The findings suggest that there is no evidence to confirm A-REITs' corporate overconfidence. Although the coefficient between CEOs' own share trading and property investments is positive, it is not statistically significant, which implies that the positive relation occurred due to chances. The statistically significant relationship between cash and property acquisition activity is negative, which shows that overconfident CEOs relied on cash to fund their property purchasing projects. Also, the relation between debt and property acquisition activity is found to be positive, albeit a statistically insignificant result. However, this is not

unpredictable as CEOs and A-REITs are expected to utilize both cash and leverage to expand the size of the investment portfolios. The results of Model 2 also show that there is no evidence to indicate that overconfident CEOs tend to sell less property. These findings are different from what is found in the US.

It is possible that the different results between this study and the existing overconfidence studies, especially the one that Eichholtz and Yönder (2015) have done in the US, are due to corporate governance. The management literature shows that there are contradicting results of corporate governance studies found among different countries.

Most importantly, the impact of corporate governance on A-REITs were found to be of great significance (Newell & Lee, 2012), while no relationship was found between corporate governance and REITs in the US (Bauer et al., 2010; Hartzell, Sun, & Titman, 2006; Khoo et al., 1993). Also, Australian investors are changing their approach when they make investment decisions and are prioritising corporate governance, environmental and social issues (Newell & Lee, 2012). In light of this, A-REITs became a reputable leader in CSR and proved their commitment to follow CSR strategies and performance (Newell, 2008), This has taken A-REITs into success especially after the GFC in 2008, as ASX has required a high level of disclosure from publicly listed companies.

Scholars and researchers have emphasised the role and impact of corporate governance on corporate investment behaviour. Corporate overinvestment and underinvestment can be mitigated by applying a strong structure of corporate governance (Christensen, Kent, & Stewart, 2010). Billett & Qian (2008) stressed that the sources of overconfidence should be explored so that proper action and adjustments can be taken in case overconfidence is present and developing, implying that overconfidence has important implications for corporate governance.

5.3 Research Questions: Results and Implications.

The following table recapitulates the objectives of the research questions alongside their methods, results and implications.

Table 22: Methods, Results and Implications

Research Questions	Methods	Results	Implications
RQ1: What is the impact of CEOs' overconfidence on the property acquisition activity?	Property purchase (the dependent variable) is regressed against 5 independent variables which are CEOs' Shares Investments, Cash, Funds from Operations, Market Value and Debt Ratio.	There is no statistical evidence to confirm that there is a positive association between CEOs' overconfidence and property acquisition activity.	This research found no evidence to suggest that overconfident managers will buy more properties during their tenure as CEOs of A-REITs. This holds a strong implication that corporate governance played a major role in impacting A-REITs' investment behaviour. From investors' perspective, the implementation of corporate governance practices and framework, which is reflected in ESG scores and Australian management literature, makes A-REITs more accountable to their shareholders. Further, good corporate governance enables A-REITs to operate more efficiently and improve their access to capital.

Research Questions	Methods	Results	Implications
RQ2: What is the impact of CEOs' overconfidence on the property disposition activity?	Property Sales (the dependent variable) is regressed against 5 independent variables which are Shares Investments, Cash, Funds from Operations, Total Assets and Debt Ratio.	There is no statistical evidence to confirm that there is a negative association between CEOs' overconfidence and property sales.	This research found no evidence to suggest that overconfident CEOs' decrease their A-REITs' property disposition activity during their tenure in the managerial position. Since this not in line with the empire-building behaviour, where overconfident CEOs may tend to impact their REITs' disposition activity by selling less (and buying more) properties for having a bigger size of a portfolio than other REITs regardless of their performance or profitability, then this is an indication for investors that corporate governance practices are being applied for the best interest of A-REITs. So, this suggests that A-REITs are operating efficiently, which can further result in a good outcome (return) for their investors.

5.4 Limitations

This research has some limitations that need to be addressed and can be considered as major implications for future research. The study explored the different methods undertaken by

renowned scholars and researchers in the field of behavioural finance and overconfidence. This present study attempted to follow their methodologies as much as possible to develop models that can detect CEOs and corporate overconfidence.

While the methodology adopted is pretty much comparable to the literature, it lacks some variables that were previously utilized in overconfidence studies and models (Eichholtz & Yönder, 2015; Malmendier & Tate, 2005). Those variables have not been used because of resources unavailability and the type of data that can be accessed at this stage, in addition to the time needed to collect and analyse such data. Where some of these data can be found in the annual reports, it is not possible timewise to search in every company's annual report for a long period of 19 years, which means 19 annual reports for every company.

Another major limitation is the lack of deeper analysis into the relationship between Australian corporate governance application and CEOs' corporate behaviour. This proposes a major question or gap in the overconfidence discipline – are the requirements or practices of Australian corporate governance have an impact on CEOs' overconfidence?

Furthermore, there are many forms of overconfidence, such as over-precision, overestimation and over-placement. Treating the different faces of overconfidence, in the same way, is a mistake (Moore & Schatz, 2017). The authors stressed that the different forms of overconfidence have distinct psychological origins. Accordingly, one form of overconfidence can be affected as conditions vary, while the other form remains uninfluenced. Therefore, finance researchers should consider the different faces of overconfidence and adapt different methodologies from what has been used before, through employing new measures which allow for clear identification of overconfidence existence (Moore & Schatz, 2017).

Unfortunately, the resources and time constraints of the master's program have not allowed addressing these limitations, but the results found have shed light on the need to conduct further research.

5.5 Contribution

This research has investigated a gap that has not been addressed before in the Australian Context. The business, finance and management literature are rich with overconfidence studies and contributions on the individual level, while just a few addressed this behavioural bias on the corporate level. Most of the studies have been done in the US, while just a few have been done in Australia.

The overconfidence of A-REITs' CEOs has not been investigated before. This is quite surprising given the importance of the A-REIT market and the fact that overconfidence plays a vital role in the investment decision-making process. This study has found that the degree of corporate overconfidence in Australia is significantly different from what is found in other countries, especially the US.

5.6 Research Implications

This study has raised new questions that need to be addressed in the future. Previous studies have stressed that overconfidence has serious implications for corporate governance, and that strong corporate governance structure can mitigate the overinvestment problem which also related to overconfidence. Accordingly, the issues that should be addressed in the future are:

- The role or impact of corporate governance on CEOs' behaviour in Australian companies, especially A-REITs.
- New measures that should be employed to account for different forms of overconfidence
- The need to explore CEOs' overconfidence in both emerging and developed REIT markets.

- Factors that can help mitigate overconfidence, which can result in making better investment decisions.

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