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# The effect of sector diversification on SA REIT Returns

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**University of the Witwatersrand**

Research Report

MSc (Building)

# The effect of sector diversification on SA REIT Returns

**14 November 2019**

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A research report submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science (Building).

Johannesburg, 2019

Declaration

I declare that this research report is my own unassisted work. It is being submitted to the Degree of Master of Science (Building) to the University of the Witwatersrand, Johannesburg. I have not submitted it before for any degree or examination to any other University.



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Date: 14 November 2019

Aim

The aim of this research report is to investigate the effect off sector diversification on SA REIT returns and establish whether fund managers should consider sector diversification or lack thereof when investing in SA REITs.

Abstract

With the introduction of REIT legislature in South Africa in 2013, investors are encouraged to invest in South African REITs as they are now comparable with REITs internationally. This report assesses the effect of sector diversification on South African REIT returns and value. The findings show that there is no statistically significant difference between the return on assets of diversified REITs and specialised REITs, which is in line with Ziobrowski & Ro (2009), however the findings reveal that specialised REITs are better valued by the market than diversified REITs, mirroring the results of Capozza & Seguin (1999) who found that value is reduced by sector diversification and Lang & Stulz (1994) who found that diversified companies trade at a discount to undiversified firms and have the lowest Tobin's Q ratios. We also find that specialised REITs have statistically significant higher gearing than diversified REITs and this does not align with the findings of Lewellen (1971) who is in support of diversification, contending that diversified companies achieve higher leverage (Lewellen, 1971). In terms of risk we find that diversified REITs' Tobin's Q values and return on assets are more volatile than that of specialised REITs, however when we adjust for risk through the coefficient of variation we find that the ROA for diversified REITs has greater dispersion than that of specialised REITs. Specialised REITs also outperform the market over the sample period whilst diversified REITs slightly underperform when compared to the market, although specialised REITs' share price returns are more volatile than those of diversified REITs when not adjusted for risk. We find that specialised REITs were mostly invested in retail property over the sample period, which has contributed to the value and outperformance. We find that the worst performing REITs over the sample period were mostly invested in the office sector. This research report contributes to the body of knowledge in South Africa and will aid analysts making diversification decisions and encourage them to rather maximise value by investing in a number of specialised REITs than investing in diversified REITs.

Dedication

I dedicate this work to my family. My late grandparents Joseph and Susan Monyela who encouraged diligence and hard work. To my parents Esther Monyela and Samuel Legari, who have always prioritised my education. My brother Odirile Legari who is always by my side and the next generation, my nieces and nephews: Lethabo Monyela, Tlholo Monyela Oresiametse Pitse, Bophelo Pitse, Litah Maibelo and Bonolo Mngese – You can do anything you put your mind to!

And finally, a special tribute to my mother: Gathwe kgaka ga ena mebala, mebala e di kgakaneng. Empa wena kgaka o mebala e phatsimang, ebile dikgakana di batla mebala ya gago.

Acknowledgements

I would like to thank Prof. Samuel Azasu for relentlessly advocating for me to enrol for this qualification, my research supervisor, Prof. O. Akinsomi for his supervision, my mother Esther Monyela for setting the bar so high and leading by example, my brother Odirile Legari for his constant support and all my friends who kept encouraging me to complete this degree.

List of Abbreviations

CAPM : Capital asset pricing model ..... 46
JPY : Japanese Yen ..... 24
JSE : Johannesburg Stock Exchange ..... 27
JV : Joint venture ..... 38
NASDAQ :National Association of Securities Dealers ..... 33
NAV : Net asset value ..... 46
NYSE : New York Stock Exchange ..... 33
PLS : Property Loan Stock ..... 27
PUT : Property Unit Trust ..... 27
REIT : Real Estate Investment Trust ..... 5
ROA : Return on assets ..... 5
ROE : Return on equity ..... 34
SA : South Africa ..... 17
UK :United Kingdom ..... 15
US : United States of America ..... 14

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# 1. Chapter 1: Introduction

This chapter sets the research background and provides a discussion to the problem statement, objectives of the research and the consequence of the report. The assumptions made and research limitations are also laid out.

## 1.1 Background to the Problem: Diversification

The early 2000's saw largely concentrated portfolios with investors seeking continued high returns experienced in the previous decades. This led to continued debates around the requirement, benefits and returns associated with portfolio diversification. Portfolio managers embraced diversification as it was seen to be prudent by regulators and investors alike, and consequently became a requirement in most investment mandates leading to commonly diversified portfolios in the recent years (Yeung, et al., 2007).

Portfolio diversification aims to maximise investor return whilst reducing portfolio risk by having a mix of different assets as opposed to investing in a single asset. The success of reduced risk is dependent on how low the correlation between the mix of assets is (Sarnat & Levy, 1970), as investing in a mix of assets that are similar and behave in the same way does not significantly reduce portfolio risk. Modern Portfolio Theory states that investors can optimize expected returns and minimise risk by building diversified portfolios of stocks as a substitute to investing in a single stock (Markowitz, 1952). This suggests that through optimal diversification, maximum expected returns can be reached, and non-market risks can be reduced provided that the mix of assets in the portfolio is not highly correlated. This also proposes that diversified portfolios with uncorrelated assets are expected to be less volatile than single stocks or a portfolio of highly correlated assets.

True to Modern Portfolio Theory, although highly concentrated portfolios of stocks seem to perform well during an economic boom, they also perform poorly in a recession, thus demonstrating the requirement for a more diversified portfolio, which is more stable, robust and less volatile (Yeung, et al., 2012). Yeung suggests that although in times of economic boom, portfolios comprising of highly correlated stocks perform well however,

in times of recession investors should consider a more diversified mix of assets with minimal correlation to maximise returns.

## 1.2 Sector Diversification in REITs

When considering sectoral diversification in REITs, there are various ways do define sector specialised REITs and sector diversified REITs: One way is to define a specialised REIT or a single sector REIT as a REIT comprising of a minimum of 75% of its total assets being invested in the same property sector (Benefield, Anderson, & Zumpano, 2009). When utilising this definition, a sector diversified REIT is therefore defined as a REIT that is invested in more than one sector, with less than 75% of its assets invested in a single sector. A different way to define a specialised REIT is as a REIT that is purely invested in one property sector (Gelter & Kluger, 1996) and thus a diversified REIT as one that is invested in more than one property sector. In this study, the definition of Benefield et al. (2009) will be utilised to define a specialised REIT. For the purpose of this study, a specialised REIT is defined as a REIT that has no less than 75% of its total assets invested in a single property sector and a sector diversified REIT is thus defined as a REIT that is invested in more than one sector, with less than 75% of its assets invested in a single sector. Property sectors comprise of retail, industrial, residential, leisure, commercial and healthcare property (Gyourko & Nelling, 1996).

Researchers have found that REIT diversification strategies are generally in conflict with large institutional real estate investors' strategies such as pension funds and insurance companies. REITs are commonly inclined to invest in a single sector or two closely related property sectors whilst institutional investors tend to invest in a diversified mix of real estate sectors (Louargand, 1992). Less than 10% of US REITs are sector diversified (Association of Real Estate Investment Trusts, 1997-2006) and this then begs the question, does sector diversification in property portfolios result in better returns?

Consistent to the Modern Portfolio Theory, sector diversified REITs have been found to be less volatile than specialised REITs and sector diversified REITs have outperformed sector specialised REITs in the US, although not by a significant margin (Ziobrowski &

Ro, 2009). Gyourko & Nelling (1996) examined REIT diversification properties and systematic risk in the US and found that systematic risk varies between REITs, depending on which property sector the REITs have invested in. Sector diversification of REITs may thus have serious implications for investors and asset managers alike (Gyourko & Nelling, 1996). Also in the US, Benefield et al (2015) examines the effect of sector diversification on US REITs and finds a positive relationship between property sector diversification and return, suggesting that sector diversified REITs will lead to a higher return on assets and return on equity invested as well as trade at a premium to the asset replacement costs. However, Anderson, et al., (2012) found that US sector diversified REITs spend more money on appointing property managers or they admit to not being knowledgeable in all property sectors as investing in various property sectors requires various management skills and most property managers are skilled in only one sector. The benefits of a higher return are thus eroded by the higher allocation to management expertise.

Contrary to the Modern Portfolio Theory, in the United Kingdom it was found that although diversified REITs are less volatile than specialised REITs, specialised REITS outperformed diversified REITs during recession period, being year 2007 to year 2011. This study also revealed that during the recession period, specialised REITs track the market narrower than diversified REITs (Lin, 2013).

Academic debates about diversification have been made, with studies in the US suggesting that sector diversification of REITs results in higher returns, although not by a significant margin (Ziobrowski & Ro, 2009) and others suggesting that diversification can result in diluted returns (Capozza & Seguin, Focus Transparency and Value, 1999). On the one hand diversification may increase the efficiency of operations, unlock higher levels of debt funding, limit the volatility of cash flows and lower overall taxes. On the other hand, diversification may lead to higher agency costs and management costs which sets off against income earned and results in lower returns (Benefield, et al., 2015). In the UK specialised REITs have outperformed diversified REITs during economic downturn (Lin, 2013). With various studies having conflicting results, there seems to be no consensus on the return effect of diversification in REITs.

With history having proven that real estate returns are comparable to stock and bond returns, investors are looking to invest in real estate stocks (Olaleye, 2011) and consistent to Modern Portfolio Theory, investing in diversified REITs is expected to yield better returns than investing is purely specialised REITs and having the investor manually diversify their portfolio themselves. This hypothesis has been widely explored in countries such as the United States of America, Australia, Canada and the United Kingdom however minimal studies conducted in emerging African markets and their listed property stocks. With REITs accounting for over 12% of the Top 100 Companies in South Africa (Kilian, 2017), it is important that investors consider the risk and return consequences of the type of REITs they invest in.

Literature studies on REIT sector diversification have mainly been concluded in developed countries (largely the UK and the US). In South Africa although studies have been concluded on REITs, they have focused on different subjects such as investigating the impact of speculatory gold trading on REITs (Akinsomi, et al., 2016) and the effectiveness of REIT legislature in South Africa (Boshoff & Bredell, 2013), which found that the REIT legislation enables global consistency, favourable tax benefits and clarity. Another study investigated the effect of REITs in a mixed asset portfolio and found that REITs enhance return when they are part of a mixed asset portfolio, although the risk associated with REITs is relatively high (Ntuli & Akinsomi, 2017). There are however limited studies done on the return effects of REIT sector diversification in South Africa.

## 1.3 Problem Statement

Globally, there seems to be no consensus regarding whether the impact of sector diversification on REITs is positive or negative, particularly the impact on returns. In the US academic debates about sector diversification have been made, with some suggesting that sector diversification of REITs results in higher returns, although not by a significant margin (Ziobrowski & Ro, 2009) and others suggesting that diversification can have return reducing effects (Capozza & Seguin, 1999). On the one hand, diversification may increase the efficiency of operations, unlock higher levels of debt funding, limit the volatility of cash flows and lower overall taxes. On the other hand,

diversification may lead to higher agency costs and management costs which reduce income and result in lower returns (Benefield, et al., 2015). The UK academic material on REIT diversification suggests that specialised REITs have outperformed diversified REITs in tough economic times (Lin, 2003), thus contradicting the Modern Portfolio Theory.

REIT legislature was introduced in South Africa in May 2013 and naturally this has opened investment gates into the SA listed property sector as the legislation has made SA property stocks more transparent and more comparable to global REITs. As at December 2017, 43% of SA REITs are specialised and 67% are diversified. It would be important for investors to understand the risk and return consequences associated with investing in sector diversified versus a specialised REIT. With investor focus moving into emerging markets, this would assist investors in better understanding SA REITs and therefore maximising returns.

## 1.4 Research Gap

There has been very limited literature on the effect of sector diversified REITs on return in South Africa or Africa. We are thus unsure of the return effects of South African sector diversified REITs. There is a gap to investigate and conduct studies in South Africa on the effect of sector diversification on REITs.

## 1.5 Research Questions

Main question: Do sector diversified REITs outperform specialised REITs in South Africa in terms of return and value?

Sub questions:

- How do sector diversified REITs perform in comparison to specialised REITs?
- What has been the average return on specialised REITs in comparison to the average return in diversified REITs?
- Are the top 5 best performing REITs specialised REITs or diversified REITs?

- Do diversified REITs trade at a discount or premium to NAV and how does this compare to specialised REITs?

## 1.6 Research Objective

The purpose of this study is to investigate the effects of sector diversification on SA REIT returns and value for REITs that have been trading on the JSE since 1 May 2013. The study will analyse the change in share price, annual reports and interim financial results of SA REITs listed on the JSE and compare returns of sector diversified REITs to those of specialised REITs.

The study also aims to investigate which property sector performed the best over the sample period.

## 1.7 Definition of key terms

For the purpose of this study, Benefield et., al (2009) method of defining a specialised REIT as a REIT comprising of a minimum of 75% of properties in the same sector will be utilised, whilst a diversified REIT will be one that comprises of less than 75% investment in any given sector. The reason for choosing this method is that the Benefield et. al (2009) study investigates whether sector diversified REITs trade at a discount to NAV in comparison to specialised REITs. This is similar to the subject study as it is also comparative in nature and compares the performance of sector diversified REITs against the performance of specialised REITs. This definition also allows REITs that are largely specialised (75% or more in one sector) to be classified as specialised and not diversified, thus avoiding distorted results.

REITs invest in physical properties and/or other REITs. Similar to (Gyourko & Nelling, 1996) the underlying property sectors will be classified as: retail, offices, industrial/warehouses, residential, healthcare and other (leisure and land).

## 1.8 Delineation

The study focuses on SA REITs listed on the Johannesburg Stock exchange between 1 May 2013 and 31 December 2017.

## 1.9 Limitations

REITs were only established in South Africa from 1 May 2013 therefore the sample period is relatively short as data collected spans from May 2013 until December 2017.

## 1.10 Assumptions

We will assume that all information obtained from published annual financial statements is true and accurate.

# 2. Chapter 2: Literature Review

The literature review below will give a summary of previous papers that have focused on diversification of REITs. The review comprises of the history of REITs, a comparison of global REIT structures, sector-based diversification, geographic based diversification, SA REIT literature as well as methodologies used in previous studies. The review seeks to identify gaps in the body of knowledge.

## 2.1 History of REITs

Real Estate Investment Trusts were first brought into legislation in the United States of America on 14 September 1960. The strategy behind REITs was to bring about an instrument like mutual funds allowing investors to invest in a fund of large commercial properties whilst avoiding paying US federal tax through the REIT paying a minimum of 90% of its taxable income in the form of distributions to shareholders. The income is taxed in the form of shareholder dividends in the hands of the shareholder and not in the form of income tax (REIT.com, 2016). Although slow, the REIT regime started growing, with the Netherlands adopting the legislature in 1969, Australia in 1971, Brazil in 1993, Finland in 1993 and Greece in 1999. REITs legislature however only gained traction from the early 2000's with countries such as the United Kingdom (2007), Singapore (2002) and Canada (2007) starting to adopt REIT legislature (PWC, 2017). However, REIT legislature is relatively new to Africa and has only been introduced in Ghana (1994), Nigeria (2007), Kenya (2013), South Africa (2013) and Tanzania (2014). Table 1 sets out the timeline of REITs around the world.

Table 1: Timeline of Introduction of REITs

| **Year** | **Country** |
|---|---|
| 1960 | United States of America |
| 1969 | Netherlands |
| 1971 | Australia |
| 1993 | Brazil |

| | |
|---|---|
| 1994 | Ghana |
| 1997 | Finland |
| 1999 | Greece |
| 2001 | South Korea, Japan |
| 2002 | Singapore |
| 2003 | Bulgaria, France, Hong Kong |
| 2005 | Malaysia |
| 2007 | Canada, Italy, Germany, Italy, Luxembourg, United Kingdom, Nigeria |
| 2009 | Spain |
| 2011 | Mexico |
| 2013 | Ireland, South Africa, Kenya |
| 2014 | Belgium, Hungary, India, Turkey, Tanzania |

Source: (PWC, 2017) (Table compiled by author)

## 2.2 A Comparison of Global REIT legislature

The United States of America REIT regime was enacted in 1960 and became effective in September 1961. A REIT in the US can be in the form of a corporation, trust or an association that is taxed as a corporation. Although REITs in America do not have a specific gearing limit, there are debt to equity limitations that are generally applicable to all corporations. US REITs are required to collect a minimum of 75% of gross revenue from real estate assets and distribute a minimum of 90% of its taxable income to shareholders. Income distributed to investors is taxable in the hands of the investor,

including capital gains tax, and income that has not been distributed is subject to corporate taxation (PWC, 2017).

In Canada, REITs come in the form of open ended and closed ended mutual funds trusts (MFT's). 90% of the REIT value is required to be in the form of real estate and a minimum of 90% of gross revenue is required to be derived from real estate activities such as rent, interest from mortgages, sale of properties, dividends or royalties. A minimum of 75% of gross revenue is required to be derived from rent, interest on mortgages or from sale of properties. Whilst there are no formal requirements to distribute income of REITs to investors in Canada, REITs generally distribute all income, including capital gains to avoid paying tax at the REIT level (PWC, 2017). Taxable income that is not distributed is taxed at a high rate ranging from 40% to 55% and investors are taxed on distributions paid or payable including capital gains distributions.

Although the Australian REIT market does not have many restrictions, most REITs in Australia come in the form of Managed Investment Trusts (MIT) which often come in the form of two or more contractually bond entities that are taxed separately but cannot be separately traded, commonly known as stapled entities. The taxable side of the staple is often involved in non-investment activities and the tax transparent side of the staple usually invests in real estate. REITs are required to invest primarily in income producing property and because undistributed income is taxed at the highest possible tax rate of 49%, 100% of distributable income is usually distributed by the REITs. Distributions are taxed in the hands of the investor, and distributions relating to capital gains are subject to capital gains tax. Disposal of REIT units have capital gains tax implications.

The Netherlands was the first European country to introduce REIT legislature, which is open to public companies, limited liability companies and mutual funds. A gearing restriction of 60% (Borrowings/total asset value) applies and 100% of the REIT investments must contain passive investments including real estate, shares and bonds, furthermore it is a requirement that 100% of the income be distributed. REITs are not subject to corporate tax however distributions are taxed in the hands of the investor.

French legislation requires all REITs to adhere to listing requirements and be in a legal form that is eligible for stock exchange listing. Although there isn't a minimum requirement for investments in real estate, French REITs are required to distribute a minimum of 95% of rental income received, a minimum of 60% of capital gains realised and 100% of dividends received from other French companies. The legislation is however in place for entities whose main activity is deriving rental income from real estate. At the REIT level, there is zero corporate tax levied on income received from rental income, dividends from 95% owned French companies and capital gains realised, however all other income is subject to corporate taxation. All distributions paid out are subject to a 3% dividend tax at the REIT level (PWC, 2017).

UK REITs come in the form of a listed company which either owns and lets real estate or has stakes in real estate businesses. A minimum of 75% of all profits must be derived from rental income and at least 75% of all assets of a UK REIT must comprise of real estate assets. Furthermore, a UK REIT must have a minimum of 3 properties with no one tenant accounting for more than 40% of total rental income. There is a requirement to distribute 90% of profits derived from rental income to investors; however this requirement does not apply to gains derived from the disposal of a property. UK REITs are exempt from taxation of any income derived from real estate assets, including capital gains, however there is a withholding tax of 20% on all distributions made, unless the receiver of the distribution is exempt (e.g.: pension funds and charities). Dividends received from a UK REIT by an investor are subject to tax at the individual's tax rate less the tax already withheld. However, if the dividend relates to capital gains then capital gains tax is levied in the hands of the individual. Should the investor be a company then all dividends, including those of a capital nature, are subject to corporate tax.

Belgium is one of the only few countries where 100% of the REIT revenue is required to be derived from real estate assets or activities. To obtain REIT status in Belgium an entity must be registered as either a public limited company or a limited liability partnership with shares. To ensure diversification, a maximum of 20% of total assets can be invested in one property or project, and no development activities are allowed for

any REIT, thus ensuring that 100% of investments are income producing assets. REITs are further not allowed to extend loans or guarantees to non-subsidiaries and are required to declare a minimum of 80% of revenue as dividends. Whilst rental income and capital gains are exempt from being taxed in the hands of the REIT, non-deductible tax expenses are taxed at the standard corporate income tax rate. REITs are however taxed annually on their net asset value at a tax rate ranging from 0.0925% and 0.01% depending on whether the REIT is public or institutional. Distributions made to investors are subject to a withholding tax such that no tax is levied in the investors' hands. Individuals holding REIT stocks for private purposes are exempt from capital gains, unless they are disposing of their REIT stocks (PWC, 2017).

Asian REITs are relatively new to the market, with Japan having led the Asian countries into REITs through its first REIT listing in 2001, followed by Singapore in 2002 and Hong Kong in 2005. Other counties such as Thailand, Taiwan, Korea and Malaysia soon followed suit with Japan possessing the largest Asian REIT market, accounting for 56% of the market share, followed by Singapore and Hong Kong at 26.6% and 10.5% respectively (Cheok, Sing, & Tsai, 2011). Although Japanese REITs (JREITs) can be in the form of trusts or corporations, all the REITs listed on the Tokyo stock exchange are corporations. JREITs are required to maintain a minimum ratio of real estate assets to total assets of 70%. Furthermore, real estate assets, real estate related assets and general liquid assets must account for at least 95% of each JREIT's managed assets. Additionally, the JREIT must outsource the asset management and property management function and have no employees. To qualify for tax transparency, the JREIT is required to distribute a minimum of 90% of its distributable profits and maintain a minimum asset value of JPY1bn. Distributions to investors are subject to a withholding tax which can be offset against corporate investor's corporate tax rate. Capital gains resulting from transfer of JREIT units are subject to capital gains tax for individuals and corporate tax for companies (PWC, 2017).

REITs in Singapore are in the form of unit trusts, are governed by the Collective Investment Scheme and are required to be listed in order to qualify for REIT tax benefits. The requirement to have REIT assets being income producing is set at a

minimum of 75% with minimal development exposure and zero vacant land. Although there is no formal requirement in Singapore for REITs to distribute income, tax transparency benefits can only be enjoyed if 90% of the net income is distributed by the REIT. Should the REIT qualify for the tax transparency benefit, all distributions will be levied in the hands of the unit holder and not the REIT. Income not distributed to unit holders is subject to tax at the trust level. It is customary for REITs to distribute 100% of income so as not to incur any tax at the trust level. Distributions made to individuals are exempt from tax, including capital gains derived from the ordinary course of business. However, distributions to companies are subject to corporate tax (excluding capital gains which are exempt from tax) (PWC, 2017).

In South Africa, a REIT is defined as a trust or company listed on the JSE. Similar to global REIT structures where such an entity qualifies for tax dispensation if the property assets are valued at more than R300million, the gearing is below 60%, at least 75% of gross income is derived from real estate and a minimum of 75% of distributable profit is distributed to investors (SA REIT Association, 2016). SA REITs are not subject to capital gains tax resulting from the disposal of an asset or shares, and distributions paid to investors are taxable in the hands of the investor at the applicable corporate or personal tax rate regardless of whether the distribution results from rental income or capital gains (Muller, 2015). SA REIT investors are subject to capital gains tax if there are gains when disposing of the REIT stock.

Table 2 sets out the main differences in REIT requirements in major economies across the world, and whilst a lot of the REIT regimes are similar, there are some subtle differences. Some countries are indifferent about whether the management of the REIT is done internally or externally, whilst others such as Japan and Singapore are set on reducing the conflict of interest by having external asset managers. Yet others, such as the Netherlands and Canada, insist on internal asset managers. France alone is flexible on how much of the REIT income is derived from real estate whilst Australia has one of the lowest requirements relating to minimum income derived from real estate, at 50% of total income.

Whilst REIT regimes around the world may differ in terms of gearing limitations, minimum amount of revenue derived from rental income and compulsory dividend pay-out as a % of net income. The requirement to pay out the majority of the taxable income as a dividend is what is believed to differentiate REITs from other listed stocks, giving REITs similar characteristics to bonds, delivering stable and consistent cash flow and a relatively high dividend yield in comparison to coupon payments, (Stevenson, 2013). It is this very requirement to declare most of the income as dividends to shareholders that makes REITs tax transparent, as the dividends paid to shareholders are usually taxed in the hands of the shareholder and thus often exempt from income taxation at the REIT level. This often differentiates REITs from other stocks, as dividends for ordinary stocks are usually paid from net income after tax which may result in tax leakages for tax exempt entities (such as pension funds) who choose to hold property in the form of stocks (Stevenson, 2013).

Table 2. A comparison of REIT requirements in major global markets

| Country | Asset Management | Minimum % of Revenue derived from Rental Income | Gearing Limit | Minimum Distribution as a % of Taxable Income |
|---|---|---|---|---|
| United States | Either | 75% | None | 90% |
| Australia | Either | 50% | None | 100% |
| Netherlands | Internal | 100% | 60% | 100% |
| Canada | Internal | 90% | None | *100% |
| Belgium | Either | 100% | 50% | 80% |
| Singapore | External | 70% | 35% | *90% |
| Japan | External | 75% | None | 90% |
| France | Either | Flexible | None | 85% |
| United Kingdom | Either | 75% | **DSCR 1.25X | 90% |
| South Africa | Either | 75% | 60% | 75% |

Source (Stevenson, 2013) (PWC, 2017)

Compiled by author.

*Not a requirement to distribute, but rather a practice.

**Debt Service Cover Ratio

One of the most significant consequence of the dividend restriction is that leverage is implicitly reduced as interest paid by REITs is not tax deductible as most REITs are tax exempt (Stevenson, 2013). So, although countries such as France, Canada and Japan do not have imposed gearing limitations, implicit gearing limitations structurally exist as a result of REITs being tax exempt. Other companies have an incentive to increase debt as interest payments can be deducted for tax purposes thus reducing the tax liability, this is however not the case for REITs.

## 2.3 South African REITs

Prior to the introduction of REITs in South Africa, property loan stocks (PLSs) and property unit trusts (PUTs) were the only two forms of listed property entities available. Both fund structures were able to invest in direct real estate, however they were not regulated in the same manner and they were taxed differently (Muller, 2015). Both structures were then able to convert into REITs upon the introduction of the REIT legislature, and thus matching the regulation and tax treatment between the two fund structures.

Due to the history of PLSs and PUTs, there are two forms of REITs, mainly company REITs and trust REITs. Company REITs were previously property loan stocks and are governed by the Companies Act and the Takeovers Regulation Panel. Investors of company REITs are shareholders in the company, who can vote on specific issues in general meetings and were involved in voting from the conversion of the previous PLSs into REITs. The directors of the company are elected by the shareholders and are responsible for the company's compliance to the Company's Act and the JSE listing requirements (SA REIT Association, 2016). Company REITs can have an internal or an external asset management team.

Trust REITs are previous property unit trusts that became REITs upon registering with the Registrar of Collective Investment Schemes and complying with JSE listing requirements. Investors hold units to a trust and are protected by a trust deed and trustees who are responsible for the compliance of the trust with the Collective Investment Scheme Control Act. The trust is required to have an external asset management team (SA REIT Association, 2016). Table 3 sets out the differences between company REITs and Trust REITs.

In South Africa, a REIT is defined as an entity listed on the JSE, like global REIT structures where such entities qualify for tax dispensation if they have the following characteristics:

- Their properties are valued more than R300million;
- The gearing is below 60%;
- 75% of their income is derived from rental income;
- They pay out a minimum of 75% of taxable income as distributions (SA REIT Association, 2016).

Table 3: Difference between a Company REIT and a Trust REIT

| REIT Type | Company REIT | Trust REIT |
|---|---|---|
| Investors | Investors are shareholders who are active participants. | Investors are trust unit holders who are protected by a trust deed and the elected trustees. |
| Governing Legislation | Companies Act and Takeovers Regulation Panel. | Collective Investment Schemes Control Act & JSE Listing Requirements |
| REIT Structure | Recorded in Memorandum | Recorded in Trust Deed |

| | | |
|---|---|---|
| Asset Management | Internal or external | External management |

Source: SA REIT Association 2018 (Table compiled by author)

As at November 2017, South Africa had REITs listed on the JSE with a combined value exceeding R422billion (Kilian,2017). In 2017 SA REITs were popular amongst investors, accounting for 12% of the SA Top 100 Companies which is an index comparing the country's top performing companies based on annual growth rate over a 5 year period (Kilian, 2017). Of the 30 REITs listed on the JSE, 17 are diversified and 13 are specialised. When looking at performance, in 2017 SA REITs topped the global dividend yield chart, with an average dividend yield of 6.98%, compared to a US dividend yield of 4.24% and an average dividend yield of 3.53% for the rest of the world (excluding the US and SA), thus attracting both domestic and global investors (Jain, 2017). When comparing the price earnings ratio, SA REITs were trading at a 70% discount to US REITs with an average price earnings ratio of 13.29X, compared to an average price earnings ratio of 44.66X in the US. SA REITs also have the lowest debt to equity ratio at an average of 55.6%, in comparison to 77% for the rest of the world and 116% for the US (Jain, 2017).

With REIT legislature having been introduced in May 2013, the first company to convert into a REIT was Vukile in May 2013, followed by Hyprop, Resilient and Fairvest and then other newly listed companies and previous PUTs and PLSs that converted to REITs. Table 4 lists all the REITs used in this study and details their sector classification, market capitalisation, assets under management, JSE significance and their date of converting to a REIT.

Table 4: List of REITs and details thereof

| Classification | REIT | REIT Conversion Date | Market Cap as at 12.17 | No. of Properties | Assets under Management | JSE Significance | Growth | Retail | Industrial | Offices | Residential | Hospitality | Other | Offshore |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diversified | Emira Property Fund Ltd | 7/1/2013 | 7,035,101 | 111 | 14,564,000 | 0.00005% | -1.75% | 37.00% | 32.00% | 31.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Diversified | Fortress Income Fund Ltd | 7/1/2013 | 21,984,254 | 308 | 69,971,873 | 0.00015% | 6.04% | 23.70% | 66.10% | 8.80% | 0.00% | 0.00% | 1.40% | 0.00% |
| Diversified | Growthpoint Properties Ltd | 7/1/2013 | 81,160,040 | 560 | 131,875,000 | 0.00054% | 2.55% | 21.68% | 45.93% | 31.60% | 0.00% | 0.00% | 0.77% | 15.70% |
| Diversified | Investec Property Fund Ltd | 4/1/2013 | 12,068,107 | 105 | 19,953,000 | 0.00008% | -1.79% | 32.33% | 46.82% | 20.85% | 0.00% | 0.00% | 0.00% | 7.80% |
| Specialised | LibertyTwo Degrees Ltd | 8/23/2016 | 7,585,502 | 11 | 9,105,600 | 0.00005% | -20.48% | 75.00% | 0.00% | 6.00% | 0.00% | 4.00% | 15.00% | 0.00% |
| Specialised | Newpark Reit Ltd | 2/1/2016 | 1,235,852 | 12 | 1,260,000 | 0.00001% | 10.16% | 23.41% | 68.82% | 7.77% | 0.00% | 0.00% | 0.00% | 0.00% |
| Diversified | Orion Real Estate Ltd | 4/1/2015 | 416,261 | 6 | 815,601 | 0.00000% | 54.02% | 22.00% | 16.00% | 48.00% | 1.00% | 13.00% | 0.00% | 0.00% |
| Diversified | Rebosis Property Fund Ltd | 7/24/2013 | 6,346,085 | 49 | 22,646,054 | 0.00004% | -4.38% | 45.00% | 4.00% | 51.00% | 0.00% | 0.00% | 0.00% | 30.00% |
| Diversified | Redefine Properties Ltd | 11/7/2013 | 60,809,153 | 110 | 91,492,611 | 0.00040% | 3.88% | 30.00% | 40.40% | 29.10% | 0.00% | 0.00% | 0.50% | 0.00% |
| Diversified | SA Corporate Real Estate Ltd | 1/1/2014 | 12,172,616 | 88 | 16,989,211 | 0.00008% | 7.66% | 27.00% | 52.00% | 5.00% | 16.00% | 0.00% | 0.00% | 0.00% |
| Diversified | Spear REIT Ltd | 11/11/2016 | 1,657,662 | 31 | 3,227,338 | 0.00001% | 7.32% | 14.00% | 52.00% | 23.00% | 3.00% | 8.00% | 0.00% | 0.00% |
| Diversified | Texton Property Fund Ltd | 1/7/2013 | 2,406,827 | 54 | 5,547,692 | 0.00002% | -8.06% | 15.50% | 31.80% | 52.70% | 0.00% | 0.00% | 0.00% | 23.00% |
| Diversified | Tower Property Fund Ltd | 7/19/2013 | 2,376,848 | 47 | 5,556,744 | 0.00002% | -5.12% | 46.00% | 7.00% | 47.00% | 0.00% | 0.00% | 0.00% | 28.00% |
| Specialised | Delta Property Fund Ltd | 3/1/2014 | 4,662,581 | 108 | 12,145,269 | 0.00003% | -5.67% | 2.40% | 2.70% | 94.90% | 0.00% | 0.00% | 0.00% | 0.00% |
| Specialised | Equites Property Fund Ltd | 6/18/2014 | 8,609,440 | 50 | 7,979,276 | 0.00006% | 29.79% | 0.00% | 81.69% | 5.37% | 0.00% | 0.00% | 0.00% | 0.00% |
| Specialised | Indluplace Properties Ltd | 6/19/2015 | 2,862,016 | 9662 | 4,406,592 | 0.00002% | -8.47% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% |
| Diversified | Accelerate Property Fund Ltd | 12/30/2013 | 5,095,226 | 70 | 11,922,271 | 0.00003% | 0.33% | 49.80% | 13.30% | 26.50% | 0.00% | 0.00% | 0.00% | 10.40% |
| Specialised | Capital Property Fund Ltd | 6/30/2014 | 28,610,156 | 239 | 27,956,864 | 0.00019% | 31.74% | 6.00% | 80.00% | 13.00% | 0.00% | 0.00% | 1.00% | 0.00% |
| Specialised | Fairvest Property Holdings Ltd | 7/1/2013 | 1,636,090 | 39 | 3,062,620 | 0.00001% | 10.44% | 92.00% | 0.00% | 8.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Diversified | Gemgrow Properties Ltd | 7/1/2013 | 4,640,516 | 129 | 4,943,671 | 0.00003% | -2.19% | 14.00% | 49.00% | 37.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Specialised | Hyprop Investments Ltd | 7/1/2013 | 29,142,162 | 22 | 38,249,000 | 0.00019% | 12.80% | 96.00% | 0.00% | 4.00% | 0.00% | 0.00% | 0.00% | 10.00% |
| Diversified | Oasis Crescent Property Fund L | 4/1/2014 | 1,235,852 | 12 | 1,260,000 | 0.00001% | 10.16% | 23.41% | 68.82% | 7.77% | 0.00% | 0.00% | 0.00% | 0.00% |
| Diversified | Octodec Investments Ltd | 9/1/2013 | 5,017,049 | 309 | 13,197,773 | 0.00003% | -0.67% | 30.86% | 16.96% | 29.77% | 22.41% | 0.00% | 0.00% | 0.00% |
| Specialised | Resilient REIT Ltd | 7/1/2013 | 64,236,047 | 41 | 46,540,810 | 0.00043% | 43.51% | 100.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Specialised | Safari Investments RSA Ltd | 4/7/2014 | 2,022,707 | 7 | 2,811,712 | 0.00001% | -7.33% | 99.00% | 0.00% | 0.00% | 0.00% | 0.00% | 1.00% | 15.00% |
| Specialised | Vukile Property Fund Ltd | 5/1/2013 | 16,283,902 | 117 | 21,537,909 | 0.00011% | 1.09% | 91.00% | 3.00% | 4.00% | 1.00% | 0.00% | 1.00% | 9.00% |
| Specialised | Hospitality Property Fund Ltd | 7/1/2013 | 6,654,555 | 53 | 13,124,990 | 0.00004% | -9.33% | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% |
| Specialised | Stor-age Property REIT Ltd | 11/1/2013 | 3,752,051 | 63 | 2,414,648 | 0.00002% | 11.74% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |

## 2.4 Diversification

When investing in listed stocks, an investor usually considers two important factors: risk and return. Whilst an investor seeks to maximise return, high returns are often coupled with high risk of losing the money invested. There are two types of risk: systematic risk and unsystematic risk. Systematic risk refers to general economic, political and social risk that is an integral part of any investment and cannot be eliminated through diversification. Examples of systematic risk include interest rate risk, exchange rate risk, the risk of tax legislation changing and risk of commodity prices changing. Systematic risks affect all companies in the economy although more some than others. Unsystematic risk, however, refers to risk that is company specific and can be reduced through diversification (Biswas, 2018). Modern Portfolio Theory suggests that the more stocks form part of a portfolio, the more unsystematic risk can be reduced or minimised by an investor (Markowitz, 1952). Investors and portfolio managers seek to maximise returns; however, this comes with the risk of reducing returns or even worse, negative returns. To hedge their risk, investors and portfolio managers seek to diversify their portfolios or investments (Biswas, 2018).

Previous studies have investigated the effects of diversification in listed stocks and defined diversification in companies through the number of different business segments companies invest in. These studies found that systematic risk differs significantly between diversified firms and undiversified firms (Servaes, 1996). Earlier studies supporting corporate diversification argued that diversification allows companies to better allocate and distribute scarce resources as diversified firms are generally larger thus creating a larger and more efficient capital base (Weston, 1970). Lewellen (1971) is also supported diversification, contending that diversified companies can also obtain higher leverage as a result of the little correlation in the various business segments they invest in (Lewellen, 1971). Majd and Meyers (1997) reasoned that a diversified company that experiences a loss in one business segment are more tax efficient than an undiversified company (Myers & Majd, 1987).

However, research in the nineties and early two thousands contends that corporate diversification resulted in companies trading at a discount and thus reduced value. One researcher found that diversified companies trade at a discount to undiversified firms and have the lowest Tobin's Q across all companies forming the sample size. However in the very same breath, the same research argued that the diversification discount may partly be as a result of struggling companies diversifying in a quest to improve their return (Lang & Stulz, 1994) thus suggesting that diversification does not contribute to poor returns, but rather that the companies were performing poorly before seeking to diversify (Hyland & Diltz, 2002). Further results of a diversification discount are found by Berger & Ofek (1995) whose results indicated that the move of companies from being diversified to being specialised is correlated with an increase in company returns and shareholder wealth. Denis, et al., (1997) who also examined diversification in corporate stocks supports findings of a diversification discount and reasons that agency costs such as high compensation packages contribute significantly to the diversification discount and companies with directors sitting on several boards observe an even larger diversification discount (Jirapon, et al., 2008). The diversification discount is also proposed to be caused by the inefficient allocation of capital (Ahn & Denis, 2004) and inefficient debt allocation (Ahn, Denis, & Denis, 2006).

There are thus opinions for and against corporate diversification as detailed above. This then begs the question: what are the return effects of diversification on REITs? REITs being focused addresses two topics, the first being efficiency, as focused REITs invest in fewer markets thereby being more focused than diversified REITs and the second being that it encourages investors to decide on how to diversify their portfolios themselves (Chonga et al. 2012). There are two ways in which a REIT can be diversified, geographically and sectoral (Gyourko & Nelling, 1996).

Corporate geographic diversification is also a topic that has been well researched and discussed at length (Holshouser & Baek, 2010) with the result being that unsystematic risk is reduced when companies are geographically diversified as international markets usually have a low correlation to domestic markets (Agmon & Lessard, 1977). Nevertheless, there are contrasting views about whether there is value for investors in

companies with international exposure as investors can invest directly in international stocks (Agmon & Lessard, 1977) and the international diversification usually leads to higher agency costs in the form of managerial compensation (Duru & Reeb, 2002) which may result in the management objectives for the company not be aligned to those of shareholders (Jenson & Meckling, 1976). However, corporate geographic diversification may also be in the favour of shareholders who would like to diversify internationally but have capital constraints and are hesitant due to the high transactional costs associated with directly investing in international stocks (Agmon & Lessard, 1977). Again there are mixed views on how investors treat internationally diversified firms. Some research provide evidence that investors tend to discount internationally diversified companies (Denis, Denis, & Yost, 2002) and yet other research contends that the discount identified by earlier researchers are due to company size, the inappropriate methodology utilised or other influences not related to diversification and that there is a diversification premium associated with internationally diversified companies (Bodner, et al., 2003).

## 2.5 Sector Diversification in REITs

Past research that has focused on REIT sector diversification has done so from a corporate finance perspective (Chonga et al. 2012). Although some research still supports the notion of diversification and has evidence of higher returns in sector diversified REITs, many argue that there are also higher management costs resulting from diversification, offsetting the higher yield and resulting in diversified REIT returns not being significantly different to specialised REIT returns. One such research, as mentioned in the introduction was Ziobrowski & Ro (2009) who conducted a study investigating how sector diversification or lack thereof impacts the value of equity REITs in the USA between 1997 and 2006. The study entailed classifying REITs listed on the NYSE, NASDAQ and American stock exchange into diversified REITs or specialised REITs and analysing the monthly returns and capitalisation rates after considering their gearing levels and adjusting their weighting. In the study, sector diversified REITs are sorted from specialised REITs based on the property type classification of the Center for

Research in Securities Prices (CRSP) / Ziman US Real Estate Data Series. The study found that consistent to portfolio theory, sector diversified REITs are less volatile than single sector REITs. Nothing in the statistical results suggests that specialised REITs outperform sector diversified REITs however the study found that diversified REITs marginally performed better than specialised REITs over the period analysed (Ziobrowski & Ro, 2009) though the difference was not statistically significant.

Benefield et al (2015) examined REIT sector diversification and its impact on REIT performance in the USA over a 10-year period ending in 2006. In this study a specialised REIT is classified as one that is 100% invested in any property type/sector and a diversified REIT as one that is invested in more than one property type/sector. The ROA, ROE, and Tobin's Q, which measure whether a stock is undervalued or overvalued by comparing the market value to the replacement cost of the assets, are used as a measure of performance over the period. The results reveal a positive relationship between diversified REITs and their ROA, ROE, and Tobin's Q, meaning that diversified REITs yielded a higher return and traded at a premium to their asset replacement costs. However, they also found that more managers needed to be appointed or hired for diversified REITs or alternatively the REIT had to admit to insufficient knowledge on the various asset classes as it is uncommon for managers to specialise in all sectors of real estate. Results also proved that diversified REITs traded at higher than predicted prices (Benefield, et al., 2015). To further support this view, there is evidence that diversified REITs generally have a higher expense ratio when compared to specialised REITs (Capozza & Lee, 995) (Capozza & Seguin, 1998) and also evidence of diversified REITs being less liquid than specialised REITs as a result of the lack of transparency evidenced in diversified REITs (Danielson & Harrison, 2007). Further supporting this notion is Capozza and Seguin (1999) who agree with diversification resulting in the hiring of more managers and the cost thereof being offset against the sector diversified REITs' higher yield. The study examines the effect of sector diversification by analysing cash flow and value of US REITs and comparing specialised REITs against diversified REITs. The method entails sampling 75 REITs over 8 years and analysing the discount rates applied to them by assessing the cash

flows and comparing them to their relative property replacement costs. Focus of REITs is determined by using Herlindahl indices for property type, where focused REITs have an index value approaching 1 and diversified REITs have a value closer to 0.25. The study found that when deciding to diversify across sectors, asset managers need to choose between not hiring additional property managers and earning a lower yield as a result of this or appointing additional property managers which results in increased costs. The result was that sector diversified REITs earn better income; however, the higher income is offset by the higher management costs and expenses associated with managing a diversified portfolio. Also, as a result of the income being offset by additional expenses when diversifying, diversification does not have an impact on bottom line return (Capozza & Seguin, Focus Transparency and Value, 1999).

Other research has found diversified REITs to outperform specialised REITs: Benefield, et al. (2009) investigated whether sector diversified REITs trade at a discount or premium to NAV. The method used was to utilise Treynor Index, which measures marginal return per unit of risk, Jensen's Alpha, which measures mean returns on a portfolio in comparison to the predicted mean return using the capital asset pricing model and the Sharpe Ratio, which measures the mean return over and above the risk-free rate. 75 US REITs were analysed, 60 of which are specialised REITs and 15 are diversified REITs for the 10-year period ending 2006 in the USA. The study defined a specialised REIT as a REIT comprising of a minimum of 75% of properties in the same sector and the results were that diversified REITs outperformed specialised REITs by a considerable margin between 1995 and 2000. The specialised REITs were however not equally weighted to the weighting of the diversified REITs and the gearing in the REITs was not considered. (Benefield, Anderson, & Zumpano, 2009). The results of this study contradict the results of Ziobrowski & Ro's (2009) who found that diversified REITs marginally performed better than specialised REITs but not by a significant margin. Yet, there are contrasting views and evidence indicating that diversification does not result in higher returns for REITs and that when adjusting for risk, diversified REITs underperform in comparison to specialised REITs (Chen & Peiser, 1999). Gyourko & Nelling (1996) also support this view and contend that sector diversification has not

resulted in significant return benefits. Also opposing Benefield et al. is the study by Gyourko and Nelling (1996) who investigated whether the market risk of REITs varies across property sector or property geography. The method used is the regression of betas (measuring the correlation to the market) distributed through sector and geography. A sector specialised REIT is defined as one that is purely invested in one property sector and a diversified REIT as one that is invested in more than one property sector. The results were that the beta of REITs varied according to which property sector the REIT focuses on, with retail REITs tracking the market more closely. Furthermore, the research found that diversifying REITs seldom results in improved returns (Gyourko & Nelling, 1996). Gyourko and Nelling (1996) also found no results indicating that geographically diversified REITs) yield higher returns.

European research suggests that specialised REITs can outperform diversified REITs in times of financial downturn. In the UK Lin (2013) examined the risk and return characteristics resulting from specialised REITs during the credit crunch with a hypothesis testing whether specialised REITs outperform diversified REITs during the credit crunch period, being year 2007 to 2011. The Benefield et al. (2009) method of classifying specialised REITs as one consisting of 75% or greater investment in the same sector was used, and thus a diversified REIT is defined as one that is invested in two or more property sectors, with less than 75% of its investment being in any single property sector. The methods used to measure performance are market based by comparing 21 REITs comprising of specialised REITs and sector diversified REITs through incorporating multiple factor Sharpe ratio, the efficient frontier model and portfolio construction. He however found that in line with modern portfolio theory, diversified REITs are less volatile than specialised REITs and that specialised REIT returns are closer to market returns than diversified REITs and consequently share systematic risk with the small cap market index. Furthermore, he found that when a portfolio of specialised REITs is equally weighted to a diversified REIT at similar volatility levels, it results in a higher average return, meaning that diversified REITs were outperformed by specialised REITs during the recession. Additionally, office REITs produced better risk-weighted returns.

Further studies conducted in Europe found European REITs to have little portfolio diversification benefits. A study done on UK REITs assesses portfolio diversification benefits of REITs in a mixed asset portfolio, the benefits of portfolio diversification in REITs and the significance and risk adjusted performance of REITs between 2007 and 2014. The study found that when compared to UK stocks, UK REITs had little portfolio diversification benefits and showed poor risk adjusted returns (Newell & Marzuki, 2016). A similar study was performed on French REITs in 2013 and found that although French REITs also had poor portfolio diversification benefits in comparison to French stocks, they delivered superior risk adjusted returns and had better portfolio diversification benefits when compared with French bonds (Newell, Adair, & Nguyen, 2013).

Asian REITs however seem to perform better in a mixed asset portfolio than European REITs. Newell carried out a similar study in Japan, assessing the portfolio diversification benefits of Japanese REITs in a mixed asset portfolio, risk adjusted performance and significance of Japanese REITs between 2001 and 2011. Inconsistent with French and UK REITs, Japanese REITs demonstrated the best portfolio diversification benefits and risk adjusted returns over the sample period and even better risk adjusted returns post the global financial crisis period (Newell & Peng, 2012). In Thailand a study was performed to assess the progress and development of Thai REITs between 2003 and 2010. The study assesses correlations between REITs and other stocks, assesses the diversification benefits of Thai REITs in a mixed asset portfolio, and examines the risk and return of Thai REITs. The results showed that post the global financial crisis Thai REITs have good diversification benefits as the inclusion thereof in a mixed asset portfolio reduced risk and enhanced portfolio returns. The diversification benefits were however weak prior to the global financial crisis (Pham, 2015). In Singapore a study was conducted to assess portfolio diversification benefits of Singapore REITs in a mixed asset portfolio as well as the risk adjusted performance and significance thereof between 2003 and 2013. Singapore REITs however performed like European REITs, with little diversification benefits, although the risk adjusted results were strong over the period and particularly post the global financial crisis (Newell, Pham, & Ooi, 2015).

In Australia a study was conducted to assess the effectiveness of portfolio diversification and risk reduction strategies for REITs over the period 1995-2002. Australian REITs demonstrated significant sector diversification benefits although geographic diversification benefits were marginally better (Newell & Keng, 2003). Another Australian study compares the risk, return and portfolio diversification benefits of specialised REITs to those of diversified REITs between 2000 and 2008. The study found that specialised REITs demonstrate superior risk adjusted returns in a mixed asset portfolio, with better portfolio diversification benefits and higher portfolio returns than diversified REITs (Lin, Cho, & Lee, 2019).

## 2.6 Geographic Diversification

Geographic diversification in REITs yields results that are completely different from those of sector diversification (Capozza & Seguin, 1998). Some research argues that geographic diversification is overrated, for example Cheng & Roulac (2007) explored this by examining whether diversification through geography is efficient in metropolitan areas in the USA by measuring the reduced risk in a geographically diversified portfolio against the risk of a single geography. The method entailed measuring risk through analysing the variance or returns. They found that when it comes to real estate many geographies would be required to reduce the unsystematic risk by a large margin and that it is more effective to diversify across various sized metropolitan areas instead of just the large metropolitan areas. The effect of geographic diversification is usually over estimated (Cheng & Roulac, 2007). This view is supported by further research by Campbell, et al., (2006) who found evidence of negative returns linked to JV announcements resulting in domestic geographic diversification. The research entailed sampling 185 REIT JV's that would result in geographic diversification both domestically and internationally. Like most research, there is always an alternative view, such as that of Hoesli, et al., (2004) which finds evidence that geographic diversification, including international diversification is effective (Hoesli, Lekander, & Withold, 2004).

When it comes to international diversification, earlier research is at odds about the benefits of international diversification of REITs (Wilson & Zurbrueg, 2003) with

research conducted in the past decade being in support of international diversification. Holshouser and Baek (2010) investigated research on the effect of international diversification and its role in portfolios. 173, sector diversified listed REITs were examined for the years 2003 and 2006. Data pertaining to market capitalisation of these REITs, asset value, equity and liabilities was collected, and Tobin's Q was measured to determine changes in firm value. The results were that investors warmed up to international diversification by REITs from 2003 and this was reflected in favourable valuations of such REITs, however the effect of international diversification was eliminated between 2004 and 2006 when the property market changed. The research aimed to assess investor attitude towards cross border diversification approaches by REITs located in the USA through reviewing research literature. Campbell, et al., (2006) also found that there was no negative return associated with the 11 international joint ventures that he examined, thus further supporting that international REIT diversification does not have negative return results (Campbell, White-Huckins, & Sirmans, 2006).

A study was conducted in the US and the UK to compare the benefits of sector diversification within a region to the benefits of geographic diversification within a single property sector. The study finds that in the US a geographically diversified property portfolio is as effective as a fully diversified portfolio; however in the UK there are little benefits associated with geographic diversification across regions. The research concluded that there is no overall conclusion that can be applied to all regions and all property sectors (Eichholtz, Hoesli, MacGregor, & Nanthakumaran, 1995). In the UK, another study found that there is no evidence that geographic diversification is more effective than sector diversification, except in the Euro sub period (Ehling & Ramos, 2006).

In Australia, REITs have increased their exposure to international real estate properties over time. When assessing the effectiveness of sector and geographic diversification, it was found that both geographic and sector diversification strategies were effective with geographic diversification being the most popular amongst REITs (Newell & Keng, 2003). Furthermore, when assessing international diversification benefits in Australian REITs it was found that it resulted in better performance (Keng, 2004). Another study

conducted in Australia assessed the benefits of geographical international diversification and found that there is no general consensus on the benefits of REIT geographic international diversification (Wilson & Zurbruegg, 2003). There is thus evidence pointing towards the benefits of geographic diversification in Australian REITs, however there are also studies that show evidence of little benefits associated with international diversification of REITs.

In Asia geographic diversification occurs mostly domestically, except for Singaporean REITs, as Asian REITs seldom diversify internationally (Cheok, Sing, & Tsai, 2011). A later study that assessed the international diversification benefits in Asian REITs identified a home bias in Asian REITs and found that concentration of investments by REITs in the home country maximises returns (Gibilaro & Mattarocci, 2014).

## 2.7 South African REIT Research

In October 2012 the South African National Treasury published the REIT tax legislation and on 1 May 2013 the legislation came into effect (Boshoff & Bredell, 2013). The legislation was generally welcomed by the South African property market as it offers a transparent tax structure, better regulation and increases international competitiveness and liquidity (Naidoo, 2014). South African REITs outperformed European and Asian REIT markets within one year of the REIT legislation having been introduced (Ntuli & Akinsomi, 2017) and the introduction of the REIT legislature in South Africa resulted in the South African REIT market being the 8$^{th}$ largest REIT market in the world (Boshoff & Bredell, 2013). However, with the REIT legislation being effective from 6 years ago, the sector is still fairly new and research on the South African market limited due to the age of the REIT market. This section aims to review some of the studies conducted on SA REITs.

There have been a few studies conducted in South Africa on the introduction of REITs and the impact thereof on the market and its stakeholders. In 2013 Boshoff & Bredell investigated the impact of the introduction of REIT legislature on the listed property sector in SA. The research reviewed past studies conducted on REITs and compared

REIT legislature around the world to that introduced in South Africa. The study highlights that the previous PUT and PLS structures were not efficient due to the tax inconsistencies that were prevalent and that the REIT legislature is advantageous to South Africa in that it is globally accepted and understood and thus allowing for international uniformity, tax benefits and transparency. Further findings were that stakeholders generally understood the legislation and the international interest that comes with the introduction of the legislature (Boshoff & Bredell, 2013). Another study assessed opportunities for fund managers that have resulted from the introduction of REIT legislature and found that the legislation was needed in the country to align the SA property sector with global best practices and encourage foreign investment in the sector. Furthermore, investors believe that the introduction of the legislature has resulted in increased liquidity. However, there are also drawbacks as investors had the perception that they will not be able to claim depreciation allowances on immovable property as a result of the introduction of the legislature and this affects profit potential on sale of REITs. Lastly, investors believe that the introduction of the REIT legislature will encourage fund managers to include REITs in their portfolios as a result of the relatively high returns and diversification benefits REITs are perceived to have (Naidoo, 2014).

Regarding SA REITs and diversification, Ntuli and Akinsomi assessed the initial performance of the SA REIT market by evaluating the diversification benefits of SA REITs in a mixed asset portfolio when paired with stocks, bonds, T-bills and other listed property. They found that REITs were South Africa's best performing asset type over the sample period starting 1 May 2013 and ending December 2015. Furthermore, SA REITs demonstrated positive diversification benefits when paired with stocks and proved to be a return enhancer when mixed in a portfolio with bonds and stocks. However, there were poor diversification benefits when REITs were paired with bonds (Ntuli & Akinsomi, 2017). Looking at SA REITs geographic diversification issues, one study assessed the barriers to entry into African markets outside SA, from a SA REIT perspective. The study found that the top barrier to entry is legal risk and title risk when looking to invest in African markets outside SA, emphasising the importance of property

rights to SA REITs, which supersede emphasis on other factors such as return, liquidity, taxation and market size. The study found Nigeria to have the worst barriers to entry relating to property rights and property title and Ghana to be the preferred investment destination for South African REITs. The study suggests that African real estate markets need to improve their property rights legislation in order to attract South African REIT investors (Akinsomi, Pahad, Nape, & Margolis, 2015).

Further research done on SA REITs investigated herding behaviour related to gold speculation during the financial crisis in SA and how that affected herding in SA REITs. The study found evidence that a higher level of gold speculation significantly affected the herding in REITs (Akinsomi, Balcilar, Demirer, & Gupta, 2017). In 2015 a different study investigated the effect of transformation in the form of Broad-Based Black Economic Empowerment (BBBEE) on SA listed and delisted REITs, their risks and return. The study investigated the performance of firms from 2006 to 2012 and utilised CAPM to estimate alpha and beta values as well as the sharp ratio to measure performance. Comparing BBBEE compliant REITs to non-compliant REITs, the study found evidence that BBBEE complaint REITs yield higher returns and are less volatile than non BBBEE complaint REITs (Akinsomi, Kola, Ndlovu, & Motloung, 2015). Although conducted prior to the introduction of REIT legislature, Olaleye (2011) investigated the performance of real estate stocks, general stocks, t-bills and bonds in South Africa between 1999 and 2009. The study found results demonstrating that real estate stocks yielded superior returns and significantly improved the return and diversification attributes in a mixed asset portfolio (Olaleye, 2011).

## 2.8 Conclusion

Diversification and the effect thereof is a complex topic in the real estate industry with some evidence supporting that diversified REITs outperform specialised REITs in the USA (Ziobrowski & Ro, 2009), and that positive relationship exists between property sector diversification and returns (Benefield, et al., 2015), whist other such as Lin (2013) as well as Gyourko and Nelling (1996) argued that diversification does not always result in higher return. REIT diversification benefits and return results also seem to differ

based on geography, the sophistication of the REIT market and the economic timing, with results often changing post the global financial crisis. In Europe, UK and French studies find REITs to have little portfolio diversification benefits in a mixed asset portfolio and especially when paired with stocks (Newell & Marzuki, 2016) (Newell, Adair, & Nguyen, 2013). Furthermore although French REITs demonstrated superior risk adjusted returns, UK REITs demonstrated poor risk adjusted returns. Asian REITs in Thailand and Japan however performed well in a mixed asset portfolio, portraying strong portfolio diversification benefits and enhanced returns, especially post the global financial crisis for Thai REITs. Singapore REITs however showed results similar to European REITs with little portfolio diversification benefits however the risk adjusted results were strong post the global financial crisis (Newell, Adair, & Nguyen, 2013). In Australia sector specialised REITs showed better diversification benefits and superior risk adjusted returns in a mixed asset portfolio than sector diversified REITs (Lin, Cho, & Lee, 2019). Locally, SA REITs demonstrated positive diversification benefits when paired with stocks and proved to be a return enhancer when mixed in a portfolio with bonds and stocks. However, there were poor diversification benefits when REITs were paired with bonds (Ntuli & Akinsomi, 2017).

Furthermore, when looking at diversification of REITs from a geographic perspective, it seems that geographic diversification does not impact returns as much as the sector diversification (Cheng & Roulac, 2007). In the US, REITs that are diversified through regional geography have diversification benefits as good as fully diversified portfolios however very little diversification benefits are found for UK REITs that are diversified through geographic region (Eichholtz, Hoesli, MacGregor, & Nanthakumaran, 1995). In Australia both sector and geographic diversification have been found to be effective, with REITs increasingly going offshore (Newell & Keng, 2003). There is however still studies that have found no consensus regarding the benefits of international geographic diversification of Australian REITs (Wilson & Zurbruegg, 2003). Asian REITs seldom diversify internationally (except Singapore REITs) and the home bias of Asian REITs has been found to maximise returns (Gibilaro & Mattarocci, 2014). Very little research has been done on Geographic REIT diversification in South Africa, however one study

found that international diversification on the African continent is not easy, with property rights and legal title risk being the most significant consideration and Nigeria posing the highest barriers to entry, whilst Ghana is a firm favourite amongst South African investors and REITs (Akinsomi, Pahad, Nape, & Margolis, 2015).

Whilst some research has been conducted in South Africa on the effect of the new SA REIT legislature (Boshoff & Bredell, 2013) and the effect of speculator global market trading in South Africa (Akinsomi, Balcilar, Demirer, & Gupta, 2017) little research has been done on the diversifying effects of SA REIT returns. Most literature on REIT diversification was conducted in the USA and the UK with limited research in emerging markets and South Africa. It is thus unclear whether the findings are universal or relate mainly to developed markets. Also unclear is whether the results would hold same for markets with new REIT legislature as it does for markets with moderate to mature REIT legislature.

There seems to thus be a gap in the area of sector diversification and the effects thereof in South Africa considering the following:

- Contradictory evidence has been found regarding the effects of sector diversification;
- Geographic diversification does not impact returns as much as sector diversification (Cheng & Roulac, 2007);
- Limited research has been conducted in South Africa on REIT diversification.

Further research in diversification of REITs in South Africa would add to the body of knowledge and contribute to decision making of investors when considering investing in SA REITs and maximising returns.

# 3. Chapter 3: Data and Methodology

This section details the methodology utilised in this report including the data collection steps, analysis of data and the discussion of result.

## 3.1 Nature of Study

The research aims to investigate the effect of diversification on SA REIT returns between 31 May 2013 and 30 December 2017. The main hypothesis of the study is as follows:

$H_0$: μ1 – μ2 = 0. The null hypothesis is that the mean of specialised REITs is equal to the mean of diversified REITs.

$H_1$: μ1 ≠ μ2 . The alternate hypothesis is that the mean of specialised REITs is not equal to the mean of diversified REITs.

The philosophy utilised in conducting the research is positivism and the method is quantitative in nature. Numerical data is collected from published annual financial reports as well as from the McGregor database and then populated and processed on excel. The REITs are divided into two categories, being 1. Sector diversified REITs and 2. Specialised REITs. The data is analysed mathematically, and a conclusion drawn. Positivism allows for recognition of trends and identification of relationships amongst various variables as returns being greater/equal is objective and not open to interpretation.

The research is fixed on design and quantitative in nature as REIT returns are analysed. The data is cross sectional and grouped into two portfolios, mainly the diversified and specialised REITs. The study will be empirical, comparing diversified REIT returns to specialised REIT returns.

## 3.2 Data Analysis Procedure

This study focuses on the effect of sector diversification on REIT returns and value. The research seeks to investigate the role of sector diversification on South African REIT returns. The methodology used is quantitative in nature and compares the returns of

sector diversified REITs to those of specialised REITs to determine whether diversified REITs outperform specialised REITs.

The methodology utilised will be similar to that of the following studies:

Benefield et al (2015) examined REIT sector diversification and its impact on REIT performance over a 10 year period ending in 2006 in the USA. As a measure of return the ROA, ROE, and Tobin's Q measures are utilised to compare the performance of diversified REITs to that of specialised REITs (Benefield, et al., 2015). Similarly, in this study the ROA and Tobin's Q of diversified REITs is measured and compared to that of specialised REITs.

Benefield, et al. (2009) investigated whether sector diversified REITs trade at a discount or premium to NAV and compared them to specialised REITs. The study defined a specialised REIT as a REIT comprising of a minimum of 75% of properties in the same sector and a diversified REIT as one that is invested in two or more sectors with less than 75% invested in a single sector. The methods of measurement utilised are Treynor Index, Jensen's Alpha, and the Sharpe Ratio (Benefield, Anderson, & Zumpano, 2009). Similarly, this study defines a specialised REIT as that with a 75% or more minimum investment in a single sector and a diversified REIT as one that is invested in two or more sectors with less than 75% invested in a single sector. Furthermore, this study also utilises the capital asset pricing model to measure return.

Akinsomi, et al., (2015) investigated the effect of transformation in the form of Broad-Based Black Economic Empowerment (BBBEE) on SA listed and delisted REITs, their risks and return. The study investigated the performance of firms from 2006 to 2012 and utilised CAPM to estimate alpha and beta values as well as the sharp ratio to measure performance (Akinsomi, Kola, Ndlovu, & Motloung, 2015). This study employs CAPM to derive alpha and beta values, similar to Akinsomi, et al., (2015).

Capozza and Seguin (1999) examined the effect of sector diversification by analysing the cash flow and value of REITs and comparing specialised REITs against diversified REITs. The method entails sampling 75 REITs over 8 years and analysing the discount rates applied to them by assessing the cash flows and comparing them to their relative

property replacement costs. Focus of REITs is determined by using Herlindahl indices for property type, where focused REITs have an index value approaching 1 and diversified REITs have a value closer to 0.25 (Capozza & Seguin, 1999). Similarly, in this study a quantitative and comparative methodology is used to firstly categorise the REITs into specialised or diversified and then compare the returns and outperformance of the two groups of REITs.

The studies discussed above are similar in methodology, in that all the studies are quantitative and comparative in nature, which is what is used in this paper. Further to that this paper employs various other measures and definitions from each of the studies above. The definition of diversification is derived from Benefield, et al., (2009). The measures of performance being ROA and Tobin's Q are derived from Benefield, et al., (2015) and the CAPM will be utilised to derive the beta and alpha values similar to Akinsomi, et al., (2015).

## 3.3 Sampling

An exhaustive list of securities classified as REITs is published in the Business Day newspaper daily and has been used as a starting point for this study. Initial data gathering entails obtaining sectorial information from the audited published financial statements of each of the REITs listed in the Business Day and then classifying each REIT as either diversified or specialised.

Similar to Gyourko & Nelling (1996), the property sectors are classified as retail, industrial, offices, residential, hospitality and other. Through analysing the gross lettable area (GLA) composition of the underlying properties of each REIT, the REITs are then classified into either specialised or diversified. REITs that primarily invest in one sector (75% or more) are classified as specialised REITs and REITs invested in various sectors (less than 75% in one sector) are classified as diversified REITs. 28 REITs listed on the JSE from May 2013 to December 2017 forms the initial sample.

As REIT legislature only came into effect in South Africa on 1 May 2013 (SA REIT Association, 2016), the sample size comprises of data dating from 1 May 2013.The

study excludes any data pertaining to the REIT prior to the date of either converting from property loan stock or property unit trust to a REIT, or prior to listing as a REIT.

The Treasury Bills (91 Day) yield rates are extracted from the South African Reserve Bank website.

## 3.4 Measures

Tobin's Q, and ROA are utilised as measures of performance, measuring value and return respectively as used in Benefield, et al. (2015). From INET BFA McGregor Database the financial and market data is gathered and comprises of annual share closing price, annual market capitalization, annual audited financial statements comprising of total assets and profit before tax, which are utilized to calculate the selected measures as follows:

a. Return on Assets

Return on assets (ROA) will measure the return (%) on asset value and allows a comparison of the relative return of diversified REITs vs Specialised REITs. ROA is calculated as follows:

$$R_{it} = \frac{N_{it} - N_{it-1}}{A_{it}}$$

Where R it is the return on asset of REIT i at time t

Nit is the net income after interest and tax of REIT i at time t

$N_{it-1}$ is the net income after interest and tax of REIT i at time t-1

$A_{it}$ is the total asset value (excluding intangible assets) of REIT i at time t. The variables are obtained annually from audited financial statements.

b. Tobin's Q

Tobin's Q measures market value of the REIT assets to their replacement costs and indicates whether the REIT is trading at a premium or discount to replacement value. This is ideal for the study as trading value will indicate investor preference. The Tobin's Q ratio is calculated as follows:

$$T_{it} = \frac{M_{it}}{A_{it}}$$

Where $M_{it}$ is the market value of REIT i at time t

$A_{it}$ is the total asset value (excluding intangible assets) of stock i at time t

c. Debt to Asset Ratio

Debt Asset Ratio measures the percentage of debt assigned to the assets of a REIT and can be calculated as follows:

$$DAR_{it} = \frac{D_{it}}{TA_{it}}$$

Where,

$DAR_{it}$ is the debt to asset ratio of REIT i at time t

Dit is the total debt of REIT i at time t

$TA_{it}$ is the total asset value (excluding intangible assets) of REIT i at time t

All the variables can be obtained from annual audited financial statements

d. Holding period return

The holding period return measures the monthly share price return and allows comparison of the relative return of diversified REITs vs Specialised REITs. Price return is utilised as opposed to total return so the results can be comparable to previous studies. Holding period return is calculated as follows:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it}}$$

Where,

$R_{it}$ is the return of share i at time t;

$P_{it}$ the price of REIT i at time t;

$P_{t-1}$ the price of REIT i at time t-1.

The data is obtained as monthly return data.

e. Alpha and Beta

The capital asset pricing model (CAPM) is frequently utilised as an asset pricing tool and was developed from the modern portfolio theory. CAPM is built on the notion that investors seek to maximise return and minimise risk and thus identifies an efficient portfolio by testing the relationship between risk and expected return (Fama & French, 2004).

The capital asset pricing model (CAPM) is used to derive the alpha and beta values. The equation is as follows:

$$R_{it} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + Є$$

Where,

$R_{it}$ is the monthly Holding Return of REIT i at time t

$R_{ft}$ is the monthly government bond rate (risk free rate) in South Africa at time t α is alpha

β is beta

Є is the error variable

To derive the betas and alphas, the REITs were divided into two groups, being the diversified REITs and the specialised REITs. The monthly Holding Return for each REIT was calculated with the Holding Return of REIT i and time t being R$it$.

The risk free rate is found by using the one month government bond yield rate. The market return is derived by calculating the monthly Holding Return for all the REITs under investigation at time t. To derive β and α, Rit -Rft (Y variable) was plotted against Rmt – Rft (X variable) on a monthly basis for each group of REITs, being diversified REITs and specialised REITs. B is the slope of the line and α is the intercept.

## 3.5 Descriptive Statistics

The sample size comprises of 28 REITs consisting of 15 diversified REITs and 13 specialised REITs. A specialised REIT is classified as one that has invested 75% or more of its assets in a single real sector and a diversified REIT as one that has invested less than 75% of its assets in a single real estate sector. This is the same method used by Benefield et al. (2009). Three of the diversified REITs being Tower Property Fund, Texton and Rebosis have invested 20% of more of their assets outside South Africa and are classified as REITs with significant international exposure. Table 6 details this.

The linear regression in section 4.2 is based on the monthly share price return of each REIT. Table 5 details the average monthly share price return for diversified REITs and specialised REITs over the sample period. This is further detailed through figure 5a which is a line graph illustrating the monthly share price return of specialised REITs, diversified REITs and all the REITs combined. Overall diversified REITs have the higher share price return over the sample period at an average of 0.61% per month or 7.32% per annum, in comparison with 0.56% per month or 6.72% per annum for specialised REITs.

Table 5: Average monthly share price return of diversified REITs as compared to specialised REITs over the sample period

| Year | Diversified | Specialised | Total |
|---|---|---|---|
| 2013 | -0.64% | -0.07% | -0.44% |
| 2014 | 1.83% | 0.56% | 1.38% |
| 2015 | 0.49% | 1.14% | 0.75% |
| 2016 | 0.72% | 0.69% | 0.71% |
| 2017 | 0.04% | 0.23% | 0.12% |
| 2018 | -0.38% | -0.50% | -0.43% |
| **2013 – 2018** | **0.61%** | **0.56%** | **0.59%** |

Figure 1: A Line graph comparing the monthly share price return of specialised REITs to diversified REITs plotted against the monthly share price return of all REITs

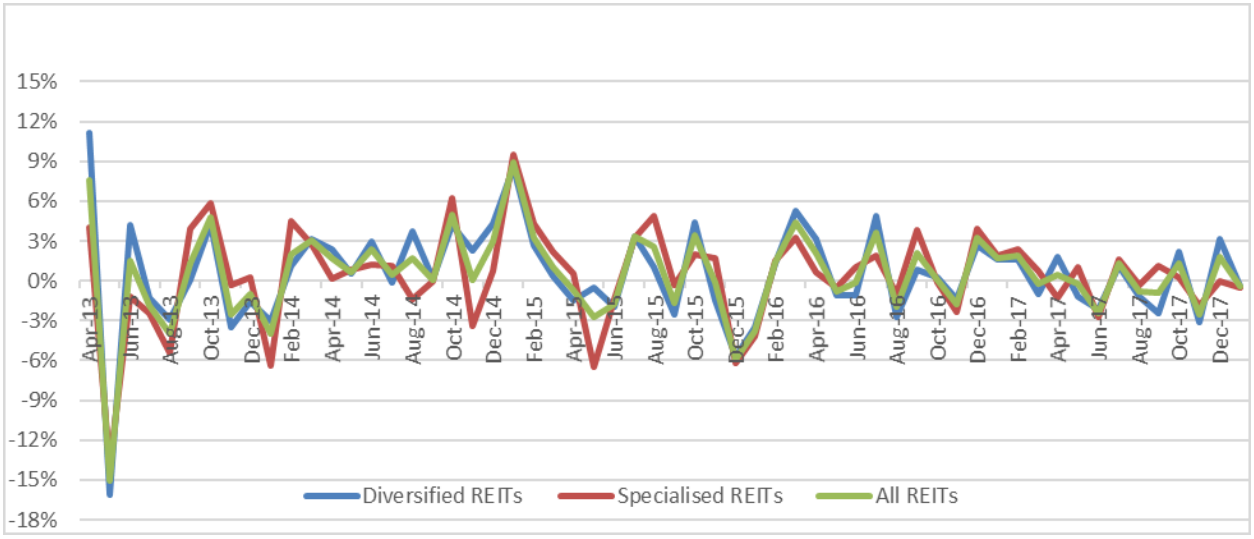


Table 6: A cross-section of REITs with Significant International Exposure Compared to REITs without Significant International Exposure

| **REITs with Significant International Exposure** |
|---|
| **Diversified REITs** |
| Rebosis Property Fund Ltd |
| Texton Property Fund Ltd |
| Tower Property Fund Ltd |
| **REITs without Significant International Exposure** |
| **Diversified REITs** |
| Accelerate Propert Fund Ltd |
| Emira Property Fund Ltd |
| Fortress Income Fund Ltd |
| Gemgrow Properties Ltd |
| Growthpoint Properties Ltd |
| Investec Property Fund Ltd |
| Oasis Crescent Property Fund Ltd |
| Octodec Invest Ltd |
| Orion Real Estate Ltd |
| Redefine Properties Ltd |
| SA Corporate Real Estate Ltd |
| Spear Reit Ltd |
| **Specialised REITs** |
| Capital Property Fund Ltd |
| Delta Property Fund Ltd |
| Equites Prop Fund Ltd |
| Fairvest Property Holdings Ltd |
| Hospitality Prop Fund |
| Hyprop Investments Ltd |
| Indluplace Properties Ltd |
| Liberty Two Degrees Ltd |

| |
|---|
| Newpark Reit Ltd |
| Resilient Reit Ltd |
| Safari Investments Rsa Ltd |
| Stor-Age Prop Reit Ltd |
| Vukile Property Fund Ltd |

# 4. Findings

## 4.1 Return and Value

Table 7 illustrates the differences in performance between diversified REITs and specialised REITs and summarizes ROA, Tobin's Q and leverage. The table sets out N, which denotes the number of observations, the mean and standard deviation and a two sided t-test results. The null hypothesis is that the mean of specialised REITs is equal to the mean of diversified REITs. The alternate hypothesis is that the mean of specialised REITs is not equal to the mean of diversified REITs. The t-test is run at a 5% significance level. The test is run for the ROA measure, the Tobin Q measure as well as the Debt to Asset Ratio.

The results of Table 7 indicate that although both diversified and specialised REITs have market values higher than their replacement costs, illustrated through their positive Tobin's Q ratios and implying that the stocks were overvalued through the sample period, specialised REITs have the higher Q ratio with a lower standard deviation, thus being better valued than diversified REITs and are also less volatile. As the Tobin's Q two tail t- test returned a P-value of 0% which is lower than the alpha level of 5% the null hypothesis is rejected, indicating that the value of the specialised REITs is significantly higher than that of the diversified REITs.

Table 7:T-test results for the entire sample

| **Measure** | **Tobin's Q** | | **ROA** | | **Debt/Asset** | |
|---|---|---|---|---|---|---|
| Tobin's Q | Diversified | Specialised | Diversified | Specialised | Diversified | Specialised |
| Mean | 0.59 | 0.74 | 7.58% | 7.13% | 35.92% | 45.46% |
| Variance | 0.02 | 0.02 | 0.06% | 0.03% | 0.74% | 3.49% |
| Standard deviation | 0.15 | 0.13 | 2.43% | 1.75% | 8.59% | 18.67% |
| Coefficient of variation | | | 32% | 24% | | |
| Observations | 57 | 159 | 57 | 159 | 57 | 159 |
| Hypothesized Mean Difference | 0 | | 0 | | 0 | |
| Df | 37.00 | | 32 | | 63 | |
| t Stat | (4.35) | | 0.81 | | (2.91) | |
| P(T<=t) one-tail | 0.00 | | 0.21 | | 0.00 | |
| t Critical one-tail | 1.69 | | 1.69 | | 1.67 | |
| P(T<=t) two-tail | 0.00 | | 0.43 | | 0.01 | |
| t Critical two-tail | 2.03 | | 2.04 | | 2.00 | |

Diversified REITs have offered a better yield or return on assets than specialised REITs although with double the volatility. However, on a risk adjusted basis, specialised REITs have outperformed diversified REITs, as the return for diversified REITs is more dispersed than that of specialised REITs as reflected through the lower coefficient of variation for specialised REITs. Even though both diversified and specialised REITs are undervalued by the market, demonstrated through a Tobin's Q lower than 1, diversified REITs are more undervalued than specialised REITs with an overall Tobin's Q of 0.59, whereas specialised REITs have a Tobin's Q of 0.74.However, specialised REITs have higher gearing than diversified REITs. With all P values for Tobin's Q, ROA and Debt/Asset ratio being below the alpha value of 5%, all results are statistically significant, thus we reject the null hypothesis. The mean for specialised REITs is not equal to the mean for diversified REITs regarding Tobin's Q, ROA or gearing.

In conclusion, specialised REITs are better valued by the market than diversified REITs and this is evident through the significantly higher Tobin's Q value. However specialised REITs are also significantly higher geared with more volatility in value and gearing than diversified REITs over the sample period. Diversified REITs have yielded a better return, demonstrated through the higher ROA however on a risk adjusted basis specialised REITs' returns are less dispersed than those of diversified REITs which is reflected through a lower coefficient of variation and indicating that specialised REITs returns outperform diversified REIT returns on a risk adjusted basis.

To further test the hypothesis, REITs with 20% or more of their assets invested internationally have been removed from the sample and the T-test re-run. The REITs with significant exposure outside South Africa include Rebosis Property Fund with 30%, Texton with 23% and Tower Property Fund with 28% invested outside South Africa. Table 8 details the T-test results for the REITs that are primarily invested in South Africa.

Table 8: T-test results excluding REITs significantly invested outside South Africa

| Measure | Tobin's Q | | ROA | | Debt/Asset Ratio | |
|---|---|---|---|---|---|---|
| Tobin's Q | Diversified | Specialised | Diversified | Specialised | Diversified | Specialised |
| Mean | 0.60 | 0.74 | 6.96% | 7.12% | 35.92% | 45.5% |
| Variance | 0.03 | 0.02 | 0.14% | 0.03% | 0.74% | 3.5% |
| Standard Deviation | 0.16 | 0.13 | 0.04 | 0.02 | 0.09 | 0.19 |
| Coefficient of Variation | | | 57% | 28% | | |
| Observations | 44.00 | 159.00 | 44.00 | 159.00 | 44.00 | 159.00 |
| Hypothesized Mean Difference | | 0 | | - | | 0 |
| Df | | 25.00 | | 23.00 | | 63.00 |
| t Stat | | (3.44) | | (0.19) | | (2.99) |
| P(T<=t) one-tail | | 0.00 | | 0.43 | | 0.00 |
| t Critical one-tail | | 1.71 | | 1.71 | | 1.67 |
| P(T<=t) two-tail | | 0.00 | | 0.85 | | 0.00 |
| t Critical two-tail | | 2.06 | | 2.07 | | 2.00 |

The results of Table 8 are not too different from those of table 7 and they indicate that although both diversified and specialised REITs still have market values lower than their replacement costs, the Tobin's Q ratio and the variance for diversified REITs have slightly increased with the removal of REITs significantly invested outside South Africa, indicating that REITs with significant international exposure are less valued by the market and contribute towards less volatility even though there is additional risk such as cross currency risk. Specialised REITs still have the higher Q ratio with a lower standard deviation, thus being better valued than diversified REITs in the market and being less volatile. As the Tobin's Q t-test returned a P-value of 0% which is lower than the alpha level of 5% the null hypothesis is rejected, indicating that the market value of the specialised REITs is significantly higher than that of the diversified REITs.

The removal of REITs with a significant international exposure has also resulted in an even lower return yielded by diversified REITs, indicating that the return of REITs with significant international exposure is higher than the entire sample return, although with higher volatility than the results of table 7. Furthermore, the coefficient of variation is lower for specialised REITs and higher for diversified REITs, indicating that on a risk adjusted basis specialised REITs have a better return. The null hypothesis still cannot be rejected as the ROA P-value is higher than the alpha level of 5%, thus indicating that the difference in ROA between specialised REITs and diversified REITs is not significant enough to ignore the null hypothesis. What is clear however is that international REITs seem to have a higher ROA, thus the removal thereof results in a lower ROA for diversified REITs over the sample period.

The removal of REITs with significant international exposure has had no impact on the gearing parameters with specialised REITs remaining with higher gearing than diversified REITs, with higher volatility in gearing and this difference is significant as the P-value is less than our alpha of 5%. Interestingly, although specialised REITs have significantly higher gearing than diversified REITs, this does not result in specialised REITs having a statistically significant higher return, but a statistically significant higher Q value.

In conclusion, although there is no statistically significant difference between the return for specialised REITs and the return for diversified REITs post the removal of REITs with significant international exposure, the Q value for specialised REITs has slightly increased, with specialised REITs still being better valued by the market than diversified REITs. As per table 7, diversified REITs have a statistically significant higher ROA prior to the removal of REITs with international exposure, indicating that REITs with international exposure have contributed towards the statistically significant higher return. The statistically significant higher gearing of specialised REITs may be the main contributor to the higher Q value.

In order to further test the hypothesis, and investigate which property sectors the best performing REITs have invested in over the sample period and if there are any differences between the best performing specialised REITs and the best performing diversified REITs, the top 5 diversified REITs are compared to the top 5 specialised REITs. Table 9 lists the average annual ROA for diversified REITs over the sample period. The top 5 diversified REITs in descending order of ROA are:

1. Fortress Income Fund Ltd with an average return on assets rate of 11.15% over the sample period;

2. SA Corporate Real Estate Fund Ltd with an average return on assets rate of 11.10% over the sample period;

3. Accelerate Property Fund Ltd with an average return on assets rate of 8.81% over the sample period;

4. Spear REIT Ltd with an average return on assets rate of 8.75% over the sample period; and

5. Investec Property Fund Ltd with an average return on assets rate of 7.96% over the sample period.

Table 10 lists the average ROA for specialised REITs over the sample period. In descending order, the top 5 specialised REITs are as follows:

1. Newpark REIT Ltd with an average return on assets rate of 19.84% over the sample period;

2. Liberty Two Degrees Ltd with an average return on assets rate of 12.98% over the sample period;

3. Resilient REIT Ltd with an average return on assets rate of 11.45% over the sample period;

4. Equites Property Fund Ltd with an average return on assets rate of 11.39%% over the sample period; and

5. Fairvest Property Holdings Ltd with an average return on assets rate of 11.05% over the sample period.

Table 9: Diversified REITs average return on assets

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | Average |
|---|---|---|---|---|---|---|
| Accelerate Property Fund Ltd | - | 8.54% | 10.39% | 9.04% | 7.28% | 8.81% |
| Emira Property Fund Ltd | - | 10.16% | 13.79% | 4.48% | 4.84% | 8.31% |
| Fortress Income Fund Ltd | - | 9.26% | 14.05% | 14.05% | 7.23% | 11.15% |
| Gemgrow Properties Ltd | - | 8.02% | -1.94% | 4.30% | 8.83% | 4.80% |
| Growthpoint Properties Ltd | - | 7.29% | 7.61% | 5.14% | 6.79% | 6.71% |
| Investec Property Fund Ltd | - | 7.73% | 10.01% | 6.46% | 7.64% | 7.96% |
| Oasis Crescent Property Fund Ltd | - | - | 7.48% | 7.67% | 6.52% | 7.22% |
| Octodec Investment Ltd | - | 8.29% | 11.33% | 6.81% | 5.24% | 7.92% |
| Orion Real Estate Ltd | - | - | 13.07% | 0.23% | -0.87% | 4.15% |
| Rebosis Property Fund Ltd | 5.13% | 4.03% | 1.55% | 9.98% | - | 5.17% |
| Redefine Properties Ltd | 6.70% | 6.74% | 8.80% | 6.18% | 3.98% | 6.48% |
| SA Corporate Real Estate Ltd | - | 8.58% | 10.05% | 14.67% | - | 11.10% |
| Spear Reit Ltd | - | - | - | - | 8.75% | 8.75% |
| Texton Property Fund Ltd | 8.97% | 8.34% | 7.61% | 5.56% | 5.50% | 7.20% |
| Tower Property Fund Ltd | - | 4.06% | 6.99% | 3.99% | 8.62% | 5.91% |

Table 10: Specialised REITs average return on assets

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | Average |
|---|---|---|---|---|---|---|
| Capital Property Fund Ltd | - | 9.65% | | | | 9.65% |
| Delta Property Fund Ltd | - | | 8.37% | 6.24% | 5.14% | 6.58% |
| Equites Prop Fund Ltd | - | | 12.72% | 9.08% | 12.37% | 11.39% |
| Fairvest Property Holdings Ltd | - | | 8.74% | 11.35% | 13.06% | 11.05% |
| Hospitality Prop Fund Ltd | - | 2.08% | 2.47% | 6.62% | 7.50% | 5.88% |
| Hyprop Investments Ltd | - | 7.28% | 13.10% | 8.18% | 7.93% | 9.12% |
| Indluplace Properties Ltd | - | | 7.50% | 9.63% | 8.76% | 8.63% |
| Liberty Two Degrees Ltd | - | | | 12.98% | | 12.98% |
| Newpark Reit Ltd | - | | | 32.89% | 6.80% | 19.84% |
| Resilient Reit Ltd | - | 13.56% | 16.04% | 9.70% | 6.43% | 11.43% |
| Safari Investments RSA Ltd | - | 7.97% | 10.92% | 4.98% | 5.51% | 7.27% |
| Stor-Age Property Reit Ltd | - | | | 7.48% | 10.94% | 9.21% |
| Vukile Property Fund Ltd | 6.22% | 3.83% | 9.25% | 9.26% | 8.84% | 7.55% |

Table 11: T-test results for the top 5 diversified REITs (by ROA) compared to T test results for the top 5 specialised REITs (by ROA)

| Measure | ROA | | Tobin's Q | | Debt/Asset Ratio | |
|---|---|---|---|---|---|---|
| REIT Type | Diversified | Specialised | Diversified | Specialised | Diversified | Specialised |
| Mean | 0.10 | 0.12 | 0.63 | 0.85 | 0.34 | 0.26 |
| Variance | 0.00 | 0.00 | 0.04 | 0.02 | 0.01 | 0.04 |
| Standard Deviation | 0.03 | 0.04 | 0.19 | 0.15 | 0.08 | 0.19 |
| Coefficient of Variation | | | 30% | 18% | | |
| Observations | 20.00 | 15.00 | 20.00 | 15.00 | 20.00 | 15.00 |
| Hypothesized Mean Difference | | - | | - | | - |
| Df | | 12.00 | | 17.00 | | 9.00 |
| t Stat | | (1.07) | | (2.77) | | 1.18 |
| P(T<=t) one-tail | | 0.15 | | 0.01 | | 0.14 |
| t Critical one-tail | | 1.78 | | 1.74 | | 1.83 |
| P(T<=t) two-tail | | 0.30 | | 0.01 | | 0.27 |
| t Critical two-tail | | 2.18 | | 2.11 | | 2.26 |

Table 11 sets out the T-test results of the top 5 diversified REITs (based on ROA) and the top 5 specialised REITs (based on ROA) as well as the Tobin's Q and leverage in the form of the debt to assets ratio of these top REITs. Again, the table sets out N, which denotes the number of observations, the mean and standard deviation and a two sided t-test results. The null hypothesis is that the mean of the top 5 specialised REITs by ROA is equal to the mean of the top 5 diversified REITs by ROA. The alternate hypothesis is that the mean of the top 5 specialised REITs by ROA is not equal to the mean of the top 5 diversified REITs by ROA. The t-test is run at a 5% significance level. The test is run for the ROA measure, as well as the Debt to Asset Ratio to test the significance of the gearing difference.

Although the average ROA for the top 5 specialised REITs based on ROA is higher than the average ROA for the top 5 diversified REITs based on ROA, the difference is not significant as the P-value of 13% exceeds the alpha value of 5%. The standard deviation for specialised REITs is also higher than that of diversified REITs, however the difference is also not statistically significant. The difference in gearing between the top 5 specialised REITs and the top 5 diversified REITs is also not statistically significant; however, the top 5 specialised REITs by ROA are statistically significantly better valued by the market than the top 5 diversified REITs by ROA, which is demonstrated through the statistically significantly higher Tobin's Q value. Therefore, we fail to reject the null hypothesis regarding the ROA and gearing, but reject the null hypothesis regarding the Tobin's Q value.

Table 12 and table 13 illustrate the sectorial mix of the top 5 diversified and specialised REITs by ROA. In terms of diversified REITs, the two highest yielding REITs, Fortress Income Fund Ltd and SA Corporate Real Estate Fund Ltd have invested the majority of their assets in industrial real estate, with the investment amounting to 66% and 52% respectively. Furthermore, the top 5 diversified REITs by ROA have invested the majority of their assets in industrial real estate, with a 46% investment in industrial real estate, followed by 29% in retail and 17% in offices. The bottom two of the top 5 diversified REITs by ROA being Investec and Spear however also have most assets invested in industrial real estate.

The top 5 specialised REITs by ROA have 56% of their assets invested in retail assets over the sample period and although the average ROA of the top 5 specialised REITs was not statistically significantly higher than the ROA of the top 5 diversified REITs, the Tobin's Q value is. This suggests that REITs with most of their assets invested in retail property have been better valued by the market over the sample period.

Table 12: Top 5 Diversified REITs as per ROA sector mix

| REIT | Industrial | Retail | Residential | Offices | Hospitality | Other |
|---|---|---|---|---|---|---|
| Accelerate Property Fund Ltd | 13% | 50% | - | 27% | - | 10% |
| Fortress Income Fund Ltd | 66% | 24% | - | 9% | - | 1% |
| Investec Property Fund Ltd | 47% | 32% | - | 21% | - | - |
| SA Corporate Real Estate Fund Ltd | 52% | 27% | 16% | 5% | - | - |
| Spear REIT Ltd | 52% | 14% | 3% | 23% | 8% | - |
| **Average** | **46%** | **29%** | **4%** | **17%** | **2%** | **2%** |

Table 13: Top 5 Specialised REITs as per ROA sector mix

| REIT | Industrial | Retail | Residential | Offices | Hospitality | Other |
|---|---|---|---|---|---|---|
| Equites Property Fund Ltd | 82% | - | - | 5% | - | 13% |
| Fairvest Property Holdings Ltd | - | 92% | - | 8% | - | 0% |
| Liberty Two Degrees Ltd | - | 75% | - | 6% | 4% | 15% |
| Newpark REIT Ltd | - | 15% | - | 85% | - | 0% |
| Resilient REIT Ltd | - | 100% | - | - | - | 0% |
| **Average** | **16%** | **56%** | **0%** | **21%** | **1%** | **6%** |

Similar to above, to further test the hypothesis and investigate whether there are any statistically significant differences between the bottom 5 diversified REITs (as measured by ROA) and the bottom 5 specialised REITs (by ROA), the bottom REITs are compared based on sector. We also investigate whether there are any similarities relating to the property sectors the bottom performing REITs invested in. Per table 9 the bottom 5 diversified REITs in ascending order of ROA are:

1. Orion Real Estate Ltd with an average return on assets rate of 4.15% over the sample period;

2. Gemgrow Properties Ltd with an average return on assets rate of 4.8% over the sample period;

3. Rebosis Property Fund Ltd with an average return on assets rate of 5.17% over the sample period;

4. Tower Property Fund Ltd with an average return on assets rate of 5.91% over the sample period; and

5. Redefine Properties Ltd with an average return on assets rate of 6.48% over the sample period.

As per table 10 in descending order, the bottom 5 specialised REITs are as follows:

1. Hospitality Property Fund Ltd with an average return on assets rate of 5.89% over the sample period;

2. Delta Property Fund Ltd with an average return on assets rate of 6.58% over the sample period;

3. Safari Investments RSA Ltd with an average return on assets rate of 7.24% over the sample period;

4. Vukile Property Fund Ltd with an average return on assets rate of 7.57%% over the sample period; and

5. Indluplace Properties Ltd with an average return on assets rate of 8.63% over the sample period.

Table 14: T-test results for the bottom 5 diversified REITs compared to T test results for the bottom 5 specialised REITs based on ROA

| Measure | ROA | | Tobin's Q | | Debt/Asset Ratio | |
|---|---|---|---|---|---|---|
| Tobin's Q | Diversified | Specialised | Diversified | Specialised | Diversified | Specialised |
| Mean | 0.05 | 0.07 | 0.41 | 0.73 | 0.31 | 0.46 |
| Variance | 0.00 | 0.00 | 0.04 | 0.02 | 0.07 | 0.03 |
| Standard deviation | 0.04 | 0.02 | 0.21 | 0.15 | 0.26 | 0.18 |
| Coefficient of variation | | | 51% | 21% | | |
| Observations | 21 | 138 | 21 | 138 | 21 | 138 |
| Hypothesized Mean Difference | | 0 | | 0 | | 0 |
| Df | | 17.00 | | 21.00 | | 21.00 |
| t Stat | | (1.95) | | (5.74) | | (2.18) |
| P(T<=t) one-tail | | 0.03 | | 0.00 | | 0.02 |
| t Critical one-tail | | 1.74 | | 1.72 | | 1.72 |
| P(T<=t) two-tail | | 0.07 | | 0.00 | | 0.04 |
| t Critical two-tail | | 2.11 | | 2.08 | | 2.08 |

Table 15: Bottom 5 Diversified REITs as per ROA sector mix

| REIT | Retail | Industrial | Offices | Residential | Hospitality | Other |
|---|---|---|---|---|---|---|
| Orion Real Estate Ltd | 22% | 16% | 48% | 1% | 13% | - |
| Rebosis Property Fund Ltd | 45% | 4% | 51% | - | - | - |
| Redefine Properties Ltd | 30% | 40.40% | 29.10% | - | - | 0.50% |
| Tower Property Fund Ltd | 46% | 7% | 47% | - | - | - |
| Gemgrow Properties Ltd | 14% | 49% | 37% | - | - | - |
| **Average** | **31%** | **23%** | **42%** | **0.2%** | **3%** | **0%** |

Table 16: Bottom 5 Specialised REITs as per ROA sector mix

| REIT | Retail | Industrial | Offices | Residential | Hospitality | Other |
|---|---|---|---|---|---|---|
| Delta Property Fund Ltd | 2.40% | 2.70% | 94.90% | - | - | - |
| Indluplace Properties Ltd | - | - | - | 100% | - | - |
| Safari Investments RSA Ltd | 99% | - | - | - | - | 1% |
| Vukile Property Fund Ltd | 91% | 3% | 4% | 1% | - | 1% |
| Hospitality Property Fund Ltd | - | - | - | - | 100% | - |
| **Average** | **38.48%** | **1.14%** | **19.78%** | **25.25%** | **20.00%** | **0.40%** |

Table 17: Diversified REITs average Tobin's

| REIT | 2013 | 2014 | 2015 | 2016 | 2017 | Average |
|---|---|---|---|---|---|---|
| Accelerate Property Fund Ltd | | 0.48 | 0.65 | 0.55 | 0.54 | 0.55 |
| Emira Property Fund Ltd | | 0.61 | 0.63 | 0.48 | 0.49 | 0.55 |
| Fortress Inc Fund Ltd | | 0.50 | 0.36 | 0.88 | 0.32 | 0.52 |
| Gemgrow Properties Ltd | | 0.21 | 0.23 | 0.22 | 0.10 | 0.19 |
| Growthpoint Properties Ltd | | 0.69 | 0.69 | 0.62 | 0.57 | 0.64 |
| Investec Property Fund Ltd | | 0.79 | 0.84 | 0.58 | 0.59 | 0.70 |
| Oasis Crescent Property Fund Ltd | | | 0.88 | 0.89 | 0.95 | 0.91 |
| Octodec Investments Ltd | | 0.53 | 0.52 | 0.46 | 0.47 | 0.50 |
| Orion Real Estate Ltd | | | 0.24 | 0.35 | 0.54 | 0.38 |
| Rebosis Property Fund Ltd | 0.79 | 0.56 | 0.37 | 0.30 | | 0.51 |
| Redefine Properties Ltd | 0.62 | 0.63 | 0.84 | 0.75 | 0.70 | 0.71 |
| SA Corporate Real Estate Ltd | | 0.85 | 0.75 | 0.80 | | 0.80 |
| Spear Reit Limited | | | | | 0.63 | 0.63 |
| Texton Property Fund Ltd | 0.75 | 0.70 | 0.59 | 0.52 | 0.54 | 0.62 |
| Tower Property Fund Ltd | | 0.55 | 0.51 | 0.46 | 0.50 | 0.50 |
| **Average** | **0.72** | **0.59** | **0.58** | **0.56** | **0.53** | **0.57** |

Table 18: Specialised REITs average Tobin's Q

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | Average |
|---|---|---|---|---|---|---|
| Capital Property Fund Ltd | | 0.84 | | | | 0.84 |
| Delta Property Fund Ltd | | | 0.38 | 0.31 | 0.48 | 0.39 |
| Equites Prop Fund Ltd | | | 1.00 | 0.80 | 0.87 | 0.89 |
| Fairvest Property Holdings Ltd | | 0.65 | 0.78 | 0.52 | 0.66 | 0.65 |
| Hospitality Property Fund Ltd | | 0.14 | 0.08 | 0.27 | 0.84 | 0.44 |
| Hyprop Investments Ltd | | 0.72 | 1.02 | 0.93 | 0.84 | 0.88 |
| Indluplace Properties Ltd | | | 1.09 | 0.83 | 0.85 | 0.93 |
| Liberty Two Degrees Ltd | | | | 1.07 | | 1.07 |
| Newpark Reit Ltd | | | | 0.59 | 0.46 | 0.53 |
| Resilient Reit Ltd | | 0.77 | 1.06 | 1.26 | 1.05 | 1.04 |
| Safari Investments RSA Ltd | | 0.89 | 0.85 | 0.65 | 0.66 | 0.75 |
| Stor-Age Property Reit Ltd | | | | 0.86 | 0.88 | 0.87 |
| Vukile Property Fund Ltd | 0.85 | 0.82 | 0.83 | 0.67 | 0.81 | 0.79 |
| **Average** | 0.85 | 0.80 | 0.71 | 0.59 | 0.77 | 0.71 |

Similar to Table 10, Table 14 sets out the T-test results of the bottom 5 diversified REITs in comparison to the bottom 5 specialised REITs based on ROA and leverage. The bottom 5 specialised REITs have a higher ROA than the bottom 5 diversified REITs, and a higher standard deviation however the difference is not significant as the P value exceeds the alpha value of 5%. However, specialised REITs have a statistically significant higher gearing and Tobin's Q than the bottom diversified REITs with lower volatility, indicating that even the worst performing specialised REITs in terms of ROA are better valued by the market than the worst performing diversified REITs. Therefore, consistent with the entire population and table 10, we fail to reject the null hypothesis of the ROA of means being equal, however, we reject the null hypothesis regarding the Tobin's Q and gearing being equal.

Table 15 and table 16 illustrate the sectorial mix of the bottom 5 diversified and specialised REITs by ROA. In terms of diversified REITs, the lowest yielding REIT, Orion Real Estate Fund Ltd has 48% of its assets invested in offices. Gemgrow, the second lowest yielding diversified REIT is primarily invested in industrial (49%) and offices (37%). Similarly, Rebosis and Tower also have most of their assets invested in offices at 51% and 47% respectively. This is different from the top 5 diversified REITs which were primarily invested in industrial real estate. The bottom 5 diversified REITs seem to be predominantly invested in offices.

Interestingly 2 of the bottom 5 specialised REITs by ROA, Safari and Vukile are predominantly (90% or more) invested in retail with Delta invested in offices and the other two in residential and hospitality. None of the bottom 5 are predominantly invested in industrial property.

In order to further test the hypothesis with regards to value, the top 5 diversified REITs are compared to the top 5 specialised REITs by value of Tobin's Q. Table 6.11 lists the average annual Tobin's Q for diversified REITs over the sample period. The top 5 diversified REITs in descending order of Tobin's Q are:

1. Oasis Crescent Property Fund Ltd with an average Tobin's Q of 0.91 over the sample period;

2. SA Corporate Real Estate Ltd with an average Tobin's Q of 0.80 over the sample period;

3. Redefine Properties Ltd with an average Tobin's Q of 0.71 over the sample period;

4. Investec Property Fund Ltd with an average Tobin's Q of 0.70 over the sample period; and

5. Growthpoint Properties Ltd with an average Tobin's Q of 0.64 over the sample period.

Table 18 lists the average Tobin's Q for specialised REITs over the sample period. In descending order, the top 5 specialised REITs are as follows:

1. Resilient REIT Ltd with an average Tobin's Q of 1.04 over the sample period;

2. Indluplace Properties Ltd with an average Tobin's Q of 0.93 over the sample period;

3. Equites Property Fund Ltd with an average Tobin's Q of 0.89 over the sample period;

4. Hyprop Investments Ltd with an average Tobin's Q of 0.88 over the sample period; and

5. Storage Property REIT with 0.87

Although Liberty Two Degrees has the highest Tobin's Q, it has not been included in the top REITs by Tobin's Q as there is only one observation.

Table 19 sets out the T-test results of the top 5 diversified REITs and the top 5 specialised REITs based on Tobin's Q. The table sets out N, which denotes the number of observations, the mean and standard deviation and the two sided t-test results. The null hypothesis is that the mean of the top 5 specialised REITs by Tobin's Q is equal to the mean of top 5 diversified REITs by Tobin's Q. The alternate hypothesis is that the mean of top 5 specialised REITs Tobin's Q is not equal to the mean of top 5 diversified REITs by Tobin's Q. The t-test is run at a 5% significance level. The test is run for the

Tobin's Q measure, as well as the Debt to Asset Ratio and ROA to test the statistical significance of the gearing difference and yield for the least valued REITs.

Table 19: T-test results for the top 5 diversified REITs compared to T test results for the top 5 specialised REITs based on Tobin's Q

| Measure | Tobin's Q | | Debt/Asset Ratio | | ROA | |
|---|---|---|---|---|---|---|
| REIT Type | Diversified | Specialised | Diversified | Specialised | Diversified | Specialised |
| Mean | 0.73 | 0.92 | 0.34 | 0.18 | 0.08 | 0.10 |
| Variance | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 |
| Standard Deviation | 0.09 | 0.12 | 0.11 | 0.11 | 0.02 | 0.02 |
| Coefficient of Variation | | | | | 25% | 20% |
| Observations | 20.00 | 17.00 | 20.00 | 17.00 | 20.00 | 17.00 |
| Hypothesized Mean Difference | | - | | - | | - |
| Df | | 20.00 | | 23.00 | | 24.00 |
| t Stat | | (4.71) | | 3.58 | | (2.54) |
| P(T<=t) one-tail | | 0.00 | | 0.00 | | 0.01 |
| t Critical one-tail | | 1.72 | | 1.71 | | 1.71 |
| P(T<=t) two-tail | | 0.00 | | 0.00 | | 0.02 |
| t Critical two-tail | | 2.09 | | 2.07 | | 2.06 |

The top 5 specialised REITs (based on the Tobin's Q measure) are statistically significantly better valued by the market, yield a statistically significant higher return on assets and have statistically significant less debt than the top 5 diversified REITs (based on the Tobin's Q measure). Furthermore, the coefficient of variation is lower for the top specialised REITs, demonstrating less dispersion of return and thus a better risk

adjusted return. The difference in the three measures is significant as the P value is lower than the alpha value for all 3 measures. The volatility in the return and gearing is the same for the top 5 diversified REITs and the top 5 specialised REITs (as measured by Tobin's Q), however the Tobin's Q value for the top 5 specialised REITs (as measured by Tobin's Q) has been more volatile than the Tobin's Q for diversified REITs. We therefore reject the null hypothesis for the top 5 diversified and specialised REITs as measured by Tobin's Q.

Table 20: Top 5 Diversified REITs as per Tobin's Q sector mix

| REIT | Industrial | Retail | Residential | Offices | Hospitality | Other |
|---|---|---|---|---|---|---|
| Growthpoint Properties Ltd | 46% | 22% | - | 32% | - | 1% |
| Investec Property Fund Ltd | 47% | 32% | - | 21% | - | - |
| Oasis Crescent Property Fund Ltd | 69% | 23% | - | 8% | - | - |
| Redefine REIT Ltd | 40% | 30% | - | 29% | - | 1% |
| SA Corporate Real Estate Ltd | 52% | 27% | 16% | 5% | - | - |
| **Average** | **51%** | **27%** | **3%** | **19%** | **0%** | **0%** |

Table 21: Top 5 Specialised REITs as per Tobin's Q sector mix

| REIT | Industrial | Retail | Residential | Offices | Hospitality | Other |
|---|---|---|---|---|---|---|
| Equites Property Fund Ltd | 82% | - | - | 5% | - | 13% |
| Hyprop Investments Ltd | - | 96% | - | 4% | - | - |
| Indluplace Properties Ltd | - | - | 100% | - | - | - |
| Liberty Two Degrees | - | 75% | - | 6% | 4% | 15% |
| Resilient REIT Ltd | - | 100% | - | - | - | - |
| **Average** | **16%** | **54%** | **20%** | **3%** | **1%** | **6%** |

Table 20 and table 21 illustrate the sectorial mix of the top 5 diversified and specialised REITs by Tobin's Q. In terms of diversified REITs, the two REITs with the highest Tobin's Q, Oasis Crescent Property Fund Ltd and SA Corporate Real Estate Ltd also have the highest proportion of investments in industrial property, at 69% and 52% respectively. Furthermore, the top 5 diversified REITs by Tobin's Q have invested the majority of their assets in industrial real estate, with a 51% investment in industrial real estate, followed by 27% in retail and 19% in offices.

The top 5 specialised REITs by Tobin's Q have 54% of their assets invested in retail property, followed by 20% in residential property and 16% in industrial property. The top performing specialised REIT by Tobin's Q is Liberty Two Degrees Ltd and is 75% invested in retail property. However, Liberty Two Degrees Ltd has only been part of the sample for 1 year. The second best performing specialised REIT by Tobin's Q is Resilient REIT Ltd which is 100% invested in retail property.

Specialised REITs significantly outperformed diversified REITs in terms of value and return as illustrated by the Tobin's Q and ROA measures over the sample period. Surprisingly, SA Corporate Real Estate Ltd, which is predominantly invested in industrial and retail property is the only REIT that is in the Top 5 Diversified REITs by both the ROA and Tobin's Q measure. In terms of specialised REITs, 3 REITs feature in both the top 5 by ROA and the top 5 by Tobin's Q: Equites Property Fund Ltd (82% industrial), Resilient REIT Ltd (100% retail) and Liberty Two Degrees Ltd (75% retail). It seems the best return in terms of value and yield has come from REITs predominantly invested in retail and industrial property over the sample period, with specialised REITs invested in retail resulting in the best returns.

Like above, the bottom 5 diversified REITs are compared to the bottom 5 specialised REITs. Per table 17 the bottom 5 diversified REITs in ascending order of Tobin's Q are:

1. Gemgrow Properties Ltd with an average Tobin's Q of 0.19 over the sample period;
2. Orion Real Estate Fund Ltd with an average Tobin's Q of 0.38 over the sample period;
3. Octodec Investments Ltd with an average Tobin's Q of 0.50 over the sample period;
4. Tower Property Fund Ltd with an average Tobin's Q of 0.50 over the sample period; and
5. Rebosis Property Fund Ltd with an average Tobin's Q of 0.51 over the sample period.

As per Table 18 in ascending order, the bottom 5 specialised REITs are as follows:

1. Delta Property Fund Ltd with an average Tobin's Q of 0.39 over the sample period;

2. Hospitality Property Fund Ltd with an average Tobin's Q of 0.44 over the sample period;

3. Newpark REIT Ltd with an average Tobin's Q of 0.53 over the sample period; and

4. Fairvest Property Holdings Ltd with an average Tobin's Q of 0.65 over the sample period;

5. Safari RSA Investments Ltd with an average Tobin's Q of 0.75 over the sample period.

Table 22: T-test results for the bottom 5 diversified REITs compared to T test results for the bottom 5 specialised REITs based on Tobin's Q

| Measure | Tobin's Q | | Debt/Asset Ratio | | ROA | |
|---|---|---|---|---|---|---|
| REIT Type | Diversified | Specialised | Diversified | Specialised | Diversified | Specialised |
| Mean | 0.37 | 0.65 | 0.40 | 0.36 | 0.06 | 0.07 |
| Variance | 0.02 | 0.04 | 0.02 | 0.01 | 0.00 | 0.00 |
| standard deviation | 0.14 | 0.19 | 0.15 | 0.11 | 0.04 | 0.02 |
| Coefficient of Variation | | | | | 67% | 29% |
| Observations | 20.00 | 84.00 | 20.00 | 84.00 | 20.00 | 84.00 |
| Hypothesized Mean Difference | | - | | - | | - |
| Df | | 21.00 | | 13.00 | | 11.00 |
| t Stat | | (5.49) | | 0.82 | | (0.90) |
| P(T<=t) one-tail | | 0.00 | | 0.21 | | 0.19 |
| t Critical one-tail | | 1.72 | | 1.77 | | 1.80 |
| P(T<=t) two-tail | | 0.00 | | 0.43 | | 0.39 |
| t Critical two-tail | | 2.08 | | 2.16 | | 2.20 |

Table 22 sets out the T-test results of the bottom 5 diversified REITs Q in comparison to the bottom 5 specialised REITs based on the Tobin's Q measure. The bottom 5 specialised REITs by Tobin's Q have a higher Q ratio than the bottom 5 diversified REITs by Tobin's Q and the bottom 5 specialised REITs by Tobin's Q are more volatile than the bottom 5 diversified REITs by Tobin's Q. The difference is significant as the P value is less than the alpha value of 5%. Therefore, we reject the null hypothesis of the means being equal with regards to the Tobin's Q value. The bottom 5 specialised REITs by Tobin's Q are statistically significantly better valued in comparison to the bottom 5 diversified REITs by Tobin's Q and they are more volatile than the diversified REITs. However, although the bottom 5 specialised REITs (based on the Tobin's Q measure) have a higher return on assets and less gearing than the bottom 5 diversified REITs (based on the Tobin's Q value), the difference is not statistically significant.

Table 23 and table 24 illustrate the sectorial mix of the bottom 5 diversified and specialised REITs by Tobin's Q. The bottom 5 diversified REITs by Tobin's Q measure are predominantly invested in offices (43%), followed by industrial property (32%) and retail property (19%). Interestingly, the bottom 5 specialised REITs by the Tobin's Q measure are also predominantly invested in offices (37.6%), followed by industrial property (21.8%) and retail property (20.4%). This is unlike the top 5 specialised and diversified REITs by Tobin's Q which are predominantly invested in industrial and retail property.

Table 25 summarises the results of all the t-tests that have been run to compare the performance of specialised REITs to that of diversified REITs in terms of return and value which are indicated under the "outperformance" column. The significance of the difference in performance is indicated with a "Y" for yes and an "N" for no, based on the comparison of the two tailed P-value to the alpha value. Similarly, in the column labelled "Gearing", the REIT sector with the highest gearing is indicated with an "X" and the significance of the gearing difference is indicated with a Y or N. The column titled "Main Sector" compares the predominant sector invested in by diversified REITs to that invested in by specialised REITs.

In summary even though diversified REITs yield a higher return on assets than specialised REITs for the entire sample, the difference is not statistically significant, although specialised REITs are statistically significantly higher geared than diversified REITs. However, specialised REITs are better valued by the market than diversified REITs and the difference is statistically significant for the entire sample and demonstrated through the statistically significantly higher

Tobin's Q ratio for specialised REITs. This is the case even after removing REITs with significant investment outside South Africa.

The return for the top 5 specialised REITs (as measured by ROA) is also not statistically different from the return of the top 5 diversified REITs (as measured by ROA), and neither is the gearing different. It seems the top performing REITs by ROA have similar gearing and return and we thus cannot reject the null hypothesis. However, the top 5 specialised REITs (as measured by ROA) are statistically, significantly better valued by the market than the top 5 diversified REITs (as measured by ROA), and this is demonstrated through the statistically significantly higher Tobin's Q value. The null hypothesis is thus rejected in this instance, as the Tobin's Q mean for the top 5 diversified REITs is not equal to the Tobin's Q mean for the top 5 specialised REITs.

Again, with a comparison of the bottom 5 diversified REITs by ROA to the bottom 5 specialised REITs by ROA, specialised REITs outperform diversified REITs in terms of return, but not by a statistically significant measure. However, regarding gearing and Tobin's Q, the bottom 5 specialised REITs (as measured by ROA) are statistically significantly more geared and better valued than the bottom 5 diversified REITs (as measured by ROA). We therefore fail to reject the null hypothesis regarding the mean return of the bottom performing REITs as measured by ROA, however, we reject the null hypothesis regarding value as measured by Tobin's Q as well as gearing.

When looking at property sector, specialised REITs are mostly invested in retail property and diversified REITs have most of their assets invested in industrial property, except for the bottom 5 diversified REITs by Tobin's Q and ROA which are predominantly invested in offices.

Specialised REITs outperformed diversified REITs with a statistically significantly higher Tobin's Q over the sample period for the entire sample and specialised REITs are also significantly more geared over the sample period. The result is the same when sampling the entire population without REITs with significant international exposure.

The results are also the same for the top 5 diversified REITs by Tobin's Q, being compared to the top 5 specialised REITs by Tobin's Q.

Similarly, when comparing the bottom 5 diversified REITs by Tobin's Q to the bottom 5 specialised REITs by Tobin's Q, specialised REITs still have a statistically significantly higher

Tobin's Q value than diversified REITs, however the difference in gearing is not statistically significant. What s different with the bottom 5 REITs by Tobin's Q comparison is that the bottom 5 specialised REITs by Tobin's Q are also yield a statistically significant higher return on assets. In this instance we therefore fail to reject the null hypothesis regarding both value and return.

Table 23: Bottom 5 Diversified REITs as per Tobin's Q sector mix

| REIT | Retail | Industrial | Residential | Offices | Hospitality | Other |
|---|---|---|---|---|---|---|
| Gemgrow Properties Ltd | 49% | 14% | - | 37% | - | - |
| Octodec Investments Ltd | 17% | 31% | - | 30% | - | - |
| Orion Real Estate Ltd | 16% | 22% | - | 48% | - | - |
| Rebosis Property Fund Ltd | 4% | 45% | - | 51% | - | - |
| Tower Property Fund Ltd | 7% | 46% | - | 47% | - | - |
| **Average** | **19%** | **32%** | **0%** | **43%** | **0%** | **0%** |

Table 24: Bottom 5 Specialised REITs as per Tobin's Q sector mix

| REIT | Retail | Industrial | Residential | Offices | Hospitality | Other |
|---|---|---|---|---|---|---|
| Delta Property Fund Ltd | 3% | 2% | - | 95% | - | - |
| Fairvest Property Fund Ltd | - | 92% | - | 8% | - | - |
| Safari RSA Investments Ltd | 99% | - | - | - | - | 1% |
| Newpark Reit Ltd | 0% | 15% | - | 85% | - | - |
| Hospitality Property Fund Ltd | - | - | - | - | 100% | - |
| **Average** | **20.4%** | **21.8%** | **0%** | **37.6%** | **20.00%** | **0.40%** |

Table 25: A summary of the results of the T-tests run

| Subject | Outperformance | | | | Gearing | | | | Main Sector | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Divers ified – | Specia- lised | Higher Volatility | Signific- ant (Y/N) | Diver- sified | Specia- lised | Higher Volatility | Signific- ant (Y/N) | Diver- sified | Specialised |
| Entire Population | | | | | | | | | | |
| Entire Population Tobin's Q | | X | Diversified | Y | | X | Specialised | Y | Industrial | Retail |
| Entire Population (excl int) ROA | X | | Diversified | N | | X | Specialised | Y | Industrial | Retail |
| Entire Population (excl int) Tobin's Q | | X | Diversified | Y | | X | Specialised | Y | Industrial | Retail |
| Top 5 by ROA* | | X | Specialised | N | X | | Specialised | N | Industrial | Retail |
| Bottom 5 by ROA* | | X | Diversified | N | | X | Diversified | Y | Offices | Retail |
| Top 5 by Tobin'sQ | | X | Specialised | Y | X | | Specialised | Y | Industrial | Retail |
| Bottom 5 by Tobin's Q | | X | Specialised | Y | X | | Diversified | N | Offices | Offices |

*Tobin's Q of the specialised REITs (as measured by ROA) significantly higher than the Tobin's Q of diversified REITs (as measured by ROA)

**ROA of the specialised REITs (as measured by Tobin's Q) significantly higher than the ROA of diversified REITs (as measured by Tobin's Q)

## 4.2 Linear Regression

Table 26 details the beta and alpha values derived by utilising the regression equation referred to in section 3.4. The performance difference between diversified REITs and specialised REITs as compared to the market return is measured by alpha. The market return is calculated by utilising the combined return of both diversified and specialised REITs for the period under investigation. REITs that have a 20% or more international investment exposure have been removed from the sample. The sample comprises of 1343 monthly observations collected from 13 specialised REITs and 15 diversified REITs and spans from May 2013 to December 2017.

The yearly performance is characterised as follows:

2013: Both specialised REITs and diversified REITs performed worse than the market with a negative alpha of -0.013 and -0.014 respectively, although specialised REITs slightly outperformed diversified REITs by 0.1%. Also, both diversified REITs and specialised REITs had betas less than 1, meaning that they are less volatile than the market and therefore less risky, however specialised REITs were the least risky with a beta of 0.012, meaning they were 98.8% less risky than the market whilst diversified REITs had a beta of 0.092 meaning they were 90.8% less risky than the market.

2014: Diversified REITs outperformed the market by 0.76% whilst specialised REITs performed slightly worse than the market by 0.09%. Diversified REITs were also the least volatile with a beta of 0.45 whilst specialised REITs were closer correlated to the market volatility with a beta of 0.71.

2015: Specialised REITs outperformed the market by 2% with an alpha value of 0.02, whilst diversified REITs underperformed with an alpha value of -0.004. However, diversified REITs were also more volatile than specialised REITs with a beta value of 0.56, whilst specialised REITs had a beta of 0.1.

2016: Both diversified REITs and specialised REITs outperformed the market by 0.27% and 0.31% respectively, with specialised REITs being the better performer. However diversified REITs showed more risk, with a higher beta of 0.58 whilst specialised REITs were less volatile with a beta of 0.44.

2017: Specialised REITs outperformed the market by 0.21% whilst diversified REITs underperformed by 1%. However specialised REITs had a negative beta of 0.16 whilst diversified REITs had a positive beta of 0.16. The volatility in the two types was the same, however they moved in opposite directions to the market on average.

2013-2018: Specialised REITs outperformed the market on a risk adjusted basis by 0.4%, whilst diversified REITs underperformed by 0.4%. However, specialised REITs demonstrated higher volatility and risk with a beta of 0.66 whilst diversified REITs showed less risk and volatility with a beta of 0.35.

Table 26: Linear Regression Results

| REIT Type | Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2013 – 2017 |
|---|---|---|---|---|---|---|---|
| **Specialised** | Alpha | -0.01309 | -0.00088 | 0.02018 | 0.00318 | 0.00206 | 0.00363 |
| | Beta | 0.01179 | 0.70959 | 0.10613 | 0.43585 | -0.15624 | 0.06593 |
| | N | 33 | 89 | 114 | 133 | 144 | 513 |
| **Diversified** | Alpha | -0.01397 | 0.00757 | -0.00439 | 0.00266 | -0.01004 | -0.00357 |
| | Beta | 0.09236 | 0.45030 | 0.56447 | 0.57696 | 0.15747 | 0.34883 |
| | N | 66.00 | 177.00 | 189.00 | 194.00 | 204.00 | 830 |

## 4.3 Discussion

### 4.3.1 Return

When looking at the entire sample, although diversified REITs have a higher return on assets than specialised REITs, the return on assets of diversified REITs is not statistically significantly higher than the return for specialised REITs even though specialised REITs are statistically significantly more geared than diversified REITs. This is the case even after removing REITs with significant investment outside South Africa. The higher gearing in specialised REITs contravenes Lewellen (1971) who is in support of diversification, contending that diversified companies achieve higher leverage than undiversified companies (Lewellen, 1971). The return results mirror those of Ziobrowski

& Ro (2009) who found that diversified REITs marginally performed better than specialised REITs over the period analysed, however the difference was not statistically significant (Ziobrowski & Ro, 2009).

The results are slightly different when comparing the top 5 diversified REITs by ROA to the top 5 specialised REITs by ROA. In this case specialised REITs perform better than diversified REITs however the performance difference is not statistically significant either. In terms of gearing, although diversified REITs have higher gearing this is also not statistically significant. These results support the view of Gyourko & Nelling (1996) who contends that sector diversification has not resulted in significant return benefits. There is thus no statistically significant difference in terms of the top performing REITs.

These results are like those of the bottom 5 diversified REITs by ROA compared to the bottom 5 specialised REITs by ROA where specialised REITs outperform diversified REITs, but not by a statistically significant measure. The difference is that the bottom 5 specialised REITs by ROA are statistically significantly more geared than the bottom 5 diversified REITs by ROA thus not aligning with Lewellen (1971) who is in support of diversification, contending that diversified companies achieve higher leverage (Lewellen, 1971) although the higher gearing in diversified REITs has not resulted in a higher return.

Interestingly specialised REITs are predominantly invested in retail property and diversified REITs have most of their assets invested in industrial property, except for the bottom 5 diversified REITs which are predominantly invested in offices.

Asset managers seeking to maximise return through investing in diversified REITs vs specialised REITs therefore need to consider that diversified REITs have not yielded a statistically significant better ROA over the sample period. Furthermore, on a risk adjusted basis, specialised REITs have had a better return. Furthermore, asset managers ought to consider the underlying sector in which the REITs are predominantly invested in and whether there is likely to be demand for that sector over the investment horizon.

### 4.3.2 Value

In terms of value and Tobin's Q for the entire sample, specialised REITs outperformed diversified REITs with a significantly higher Tobin's Q over the sample period. Interestingly specialised REITs are also significantly more geared over this period, meaning that the gearing may be increasing value. The result is the same when sampling the entire population without REITs with significant international exposure. These results support those of Lang & Stulz (1994) who found that diversified companies trade at a discount to undiversified firms and have the lowest Tobin's Q across all companies.

In terms of the top 5 diversified REITs by Tobin's Q, being compared to the top 5 specialised REITs by Tobin's Q, specialised REITs significantly outperformed diversified REITs however diversified REITs are significantly more geared than specialised REITs. The top performing specialised REITs (as measured by Tobin's Q) also yield a statistically significant higher return on assets than the top 5 performing diversified REITs (as measured by Tobin's Q). This is different from the findings of Benefield et. al (2015) who finds a positive relationship between diversified REITs and their ROA, and Tobin's Q, meaning that diversified REITs yielded a higher return and traded at a premium to their asset replacement costs.

When comparing the bottom 5 diversified REITs by Tobin's Q to the bottom 5 specialised REITs by Tobin's Q, specialised REITs still have a statistically significantly higher Tobin's Q value than diversified REITs. And although diversified REITs have higher gearing, the difference is not statistically significant. Interestingly, both the bottom 5 diversified REITs by Tobin's Q and the bottom 5 specialised REITs by Tobin's Q have invested most of their assets in residential property, meaning that residential property performed the worst in terms of value over the sample period.

Investors and asset managers thus need to consider that we have found a negative relationship between diversification of REITs and value over the sample period. If investors and asset managers are looking to maximise value then they should consider investing in multiple specialised REITs vs investing in diversified REITs as we have found specialised REITs to be better valued by the market throughout the entire sample,

when looking at the best performing REITs and when looking at the bottom performing REITs.

### 4.3.3 Risk and Market Outperformance

In terms of share price outperformance against the market, calculated using monthly share price return over the sample period, specialised REITs have outperformed the market and outperformed diversified REITs although specialised REITs were more volatile than diversified REITs. With diversified REITs predominantly invested in industrial property and specialised REITs mostly invested in retail property this is in line with the findings of Gyourko & Nelling (1996) who investigated whether the market risk of REITs varies across property sector or property geography and found that the beta of REITs varied according to which property sector the REIT focuses on, with retail REITs tracking the market more closely. Furthermore, the research found that diversifying REITs seldom results in improved returns (Gyourko & Nelling, 1996). Additionally, specialised REITs outperforming diversified REITs is inconsistent with Modern Portfolio Theory which states that investors can optimize expected returns and minimise risk by building diversified portfolios of stocks as a substitute to investing in a single stock (Markowitz, 1952). This is however consistent with past literature which indicates that sector diversified REITs are less volatile than specialised REITs (Ziobrowski & Ro, 2009).

Therefore, SA investors and asset managers looking for share price outperformance should consider investing in specialised REITs instead of diversified REITs. However, they would also have to consider the additional volatility and risk that comes with investing in specialised REITs. Investors looking for less risk and volatility in REITs, who are willing to take a lower return can consider diversified REITs. Investors should also consider the underlying property sector that the selected REITs are predominantly invested in.

# 5 Conclusion

The aim of this research is to investigate the effect of sector diversification on SA REIT returns and value. With South Africa being a developing country (Layne, 1998) and REIT legislature having been introduced in South Africa in 2013 (SA REIT Association, 2016), it was important that this be investigated so as to add to the body of knowledge and aid investors in making sound investment decisions in developing environments such as South Africa. Although there have been previous studies done on this subject, there has been limited research focussed on South Africa or developing nations. Further to this, there has been no consensus on the effect of diversification on REITs from the studies found and conducted in first world countries.

Modern Portfolio Theory states that investors can optimize expected returns and minimise risk by building diversified portfolios of stocks as a substitute to investing in a single stock (Markowitz, 1952). When investigating sector focus in REITs Ziobrowski & Ro (2009) found sector diversified REITs less volatile than specialised REITs and resulting in higher returns although not by a significant margin and thus in alignment with the Modern Portfolio Theory. When Capozza & Seguin (1999) investigated diversification across REIT sectors, it was found that value is reduced by sector diversification. This is in line with Benefield et al. (2015) and Anderson et al. (2015) who found that diversification of REITs can lead to higher management costs which reduce the bottom-line profit.

In this study we find that specialised REITs are better valued by the market than diversified REITs and the Tobin's Q value is less volatile than that of diversified REITs. This is demonstrated through the statistically significant higher Tobin's Q ratio obtained and a lower standard deviation. However, the regression pointed out that specialised REITs have an overall higher beta value over the period of investigation, meaning there is more risk associated with the specialised REITs share price than the share price of diversified REITs. In line with Ziobrowski & Ro diversified REITs have resulted in a better return on assets, although not significant when looking at the entire sample.

In contrast to the Modern Portfolio Theory, there has not been a statistically significant difference between the performance of diversified REITs and specialised REITs over

the sample period when looking at return measured through the return on assets, however the value difference as measured through the Tobin's Q ratio has been statistically significantly different with specialised REITs performing better than diversified REITs. Further to this specialised REITs are significantly statistically higher geared than diversified REITs, with statistically significantly higher volatility in gearing. It may seem like the higher gearing has resulted in better value for specialised REITs.

Removing REITs with significant international exposure from the sample resulted in the Tobin's Q ratio for diversified REITs slightly increasing indicating that diversified REITs with significant international exposure are less valued than diversified REITs without significant international exposure. However, the removal of REITs with significant international exposure also resulted in a reduced ROA of diversified REITs indicating that significant international exposure contributed towards the higher ROA.

In an attempt to investigate the differences between the top performing specialised REITs against the top performing diversified REITs, the top 5 specialised REITs were compared to the top 5 diversified REITs (as ranked by ROA) and no statistically significant difference was found in terms of return. However the top specialised REITs were better valued by the market than the top diversified REITs and the difference was statistically significant. Between the top 5 diversified REITs by ROA and the top 5 specialised REITs by ROA in terms of performance relating to ROA the performance of the top performers was very similar. The gearing of the top performing REITs in terms of ROA is also not statistically significantly different. The results are similar when investigating differences in the bottom performing REITs as ranked by ROA.

The top 5 performing specialised REITs (as ranked by Tobin's Q) have significantly outperformed the top 5 diversified REITs (as ranked by Tobin's Q) in terms of value (Tobin's Q) and return (ROA) and specialised REITs have higher gearing and the difference is statistically significant across all three measures. Although the Tobin's Q measure has been more volatile for specialised REITs the gearing and return was more volatile for diversified REITs. This means the market values the specialised REITs above diversified REITs even amongst the top performers, but also, the top valued specialised REITs also have higher yields than diversified REITs.

Furthermore, over the sample period diversified REITs were predominantly invested in industrial property whilst specialised REITs were predominantly invested in retail property. Since specialised REITs statistically significantly outperformed diversified by value, we can say that retail property has resulted in the best valued REITs over the sample period. Furthermore, with the worst performing REITs by value (both the bottom 5 diversified REITs by Tobin's Q and the bottom 5 specialised REITs by Tobin's Q) being predominantly invested in office, we can say that the office sector was the worst performing in terms of value.

In conclusion, when investigation the effects of sector diversification in South Africa over the sample period beginning May 2013 and ending in December 2017, there is no evidence of a statistically significant difference in terms of return based on ROA between sector diversified REITs and specialised REITs, with diversified REITs having an average ROA of 7.58% over the sample period and specialised REITs having an average ROA of 7.13% over the sample period. Although diversified REITs performed slightly better than specialised REITs, the difference was never statistically significant, and this result has been in line with Ziobrowski & Ro (2009). On a risk adjusted basis however, measured through the coefficient of variation, specialised REITs have a better return on assets, although not statistically significant. Additionally, the findings indicate that specialised REITs are statistically significantly better valued by the market than diversified REITs (as measured through the Tobin's Q value), which is in line with Capozza & Seguin (1999) who found that value is reduced by sector diversification. We have found specialised REITs to be statistically, significantly better geared than diversified REITs over the sample period. We thus find an inverse relationship between value and diversification.

When investigating the differences and similarities between the top valued diversified REITs against the top valued specialised REITs we find that the top specialised REITs significantly outperform the top diversified REITs not only in terms of value but also in terms of return. This is also in line with Benefield et al. (2015) and Anderson et al. (2015) who found that diversification of REITs can lead to higher management costs

which reduce the bottom-line profit. The top performing REITs in terms of value and return have thus been the top 5 specialised REITs as measured by value.

Since specialised REITs were predominantly invested in retail property, we have concluded that retail property was the best performing sector over the sample period when it comes to value. Furthermore, we found that the worst performing REITs in terms of value are predominantly invested in office property and concluded that the office sector was the worst performing sector over the sample period in terms of value.

With South African REITs having the highest dividend yield in the world (Jain, 2017) and have consistently outperformed cash and bonds in South Africa (SA REIT Association, 2018), it would be worthwhile to analyse historical SA REIT returns and the impact of diversification on returns. Understanding the effect of sector diversification on SA REITs makes this report attractive and relevant for investors seeking information on which REIT to invest in. This report contributes to literature by adding to the studies that exist on diversification of REITs in South Africa and the rest of the world as the effects of sector diversification differ across the globe. With the South African REIT market being so young and limited studies existing on REITs and the diversification thereof, this study will add to the body of knowledge. The studies done on South African REITs diversification focus mostly on the performance of REITs in a mixed asset portfolio and less so on specialised REITs being compared to diversified REITs. Asset managers, fund managers and investors can now consider comparable evidence of the effects of diversification on SA REIT returns when faced with deciding between diversified REITs and specialised REITs.

The study can be improved by utilising more sophisticated methodologies, using total return instead of just share price return and running the tests over a longer period so as to maximise observations and be in line with existing research where the sample period spans over 10 years.

Recommended future research areas include investigating the benefits of sector diversification in South African REITs and investigating costs associated with diversification. The research can also be extended to other African REIT markets. With

different REIT markets yielding different diversification results, it would be interesting to investigate the differences in diversification return effects between various global REIT markets.

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