

MACRO-ECONOMIC AND FIRM-SPECIFIC
DETERMINANTS OF RETURNS OF LISTED REAL ESTATE
INVESTMENT TRUSTS (REITS) IN SOUTH AFRICA

Masters in Management Finance and Investment

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1. Introduction and Context

This study aims to determine the macro-economic and firm-specific performance determinants of stock market-listed Real Estate Investment Trusts in the South African market.

1.1 Motivation and Significance of Study?

The results of this study intends to enhance the field of REIT research in South Africa. This may be a small contribution to the overall field but seeks to add to academic research. South Africa is just one of the more recent countries to change REIT legislation and the results of this research may aid further, in the impact of legislation on REIT performance. Investors may gleam from the results which determinants may predict REIT returns and on an individual firm level, they may determine which firm factors influence a performing REIT stock. This may also add to the tools at an investors disposal. The proposed study may also aid future research on how the economics of South African REIT influence REIT performance and currently if South Africa REITs determinants are in line with their international counterparts.

1.2 What is a Real Estate Investment Trust?

Globally, a Real Estate Investment Trust (REIT) is defined as a company that owns and manages income-generating property, and can be either listed or unlisted on a stock exchange. However, the international standard for listed REITs follows a prescribed model that is used by more than 40 countries.

The structure of a REIT has the following characteristics:

- executive management may be comprised of either external or internal employees;
- a percentage of income must be derived from rent;
- international exposure may or may not be allowed;
- a maximum percentage of a REIT's assets may be allowed into real estate development at any given time;
- a gearing cap is imposed;
- a minimum pay-out cap is prescribed; and
- there must full tax transparency.

In South Africa (SA) and as required by the Johannesburg Stock Exchange (JSE)—South Africa's stock exchange— listed REITs have the following prescribed guidelines and characteristics (most of which are in line with their international counterparts):

- they must own at least 300 million rand (ZAR) worth of property;
- have a debt ratio below 60%;
- earn 75% of its income from rental or investment income derived from indirect property ownership, and;
- pay at least 75% of its taxable earning to its investors.

Additionally, as South Africa is now at the stage to offer Shari'ah-compliant REIT investments, this report may assist in determining the structure for a Shari'ah-compliant REIT. This is of particular relevance as Shari'ah Law is guided by two basic principles of Islamic economics:

- 1) the sharing of a firm's profits and losses, and
- 2) the prevention of the collection and payment of interest by lenders and investors.

By investing in SA REITs, an investor is exposed to local, and through some REITs, global commercial property. Rather than physically owning property, an investor may instead own a piece of a property through a single share in a REIT. In this way, personal liquidity is maximised while the overbearing costs and time involved with physical property ownership are minimised. Furthermore, this approach offers the added benefit of income predictability through inflationary rental agreements. REITs also fulfil a unique role in the economy by investing in real estate and communities.

1.3 Background and Context of REITS

REITS were formally started in the United States (US) in 1960 by President Dwight D. Eisenhower with the signing into law of the Cigar Excise Tax Extension Act. According to (Reit.com, 2003), the United States Congress—the bicameral legislature of the federal government of the United States—formulated the legislation to govern this Act with the primary motive of giving investors the option of investing in income-generating property on a diversified and large scale.

In the same year, the National Association of Real Estate Investment Funds (NAREIF) was formed, compelling all US REITs to share a uniformity in the disclosure of financials; the successor to this association was the National Association of Real Estate Investment Trusts (NAREIT). The change in governing bodies was a necessary result of REIT-governing legislature which proposed that funds from operations (FFO) be disclosed, allowing investors the ability to rely on FFO data before making REIT investment decisions.

The first documented publication concerning REITs was by (Emmerman, 1969), and was aimed at portfolio managers, detailing the short run performance of REITs. At this stage, there was already interest in the performance of REITs to ascertain whether they were a viable vehicle through which to diversify an investor's portfolio. In 1969, Europe launched its first REIT, and in the 1970s the REIT class was further stratified by investors to identify different operational property sectors, among the first of which were the Energy and Healthcare sectors as they offered REITs long-term rental agreements with very little risk.

In the late 1980s, the first observable measure of REITs performance was the downturn in the real estate market. Historical review (Case, Wachter, & Worley, 2011) shows that REIT stock prices started to decrease before those of the real estate market, showing some relationship between external factors and determinants. Subsequent to this downturn, REIT stock prices also started to increase before those of the real estate market.

By 1990, the REIT market capitalization breached the 1 billion US dollar mark and by 2000, the global emergence of investors started to action cross-country investment in REITs. As a result, global REITs started looking offshore for significant returns not found in their own national real estate market.

The United Kingdom (UK) and the US signed a tax treaty allowing UK pension funds to invest in US REITs without any taxes withheld on REIT dividends. This precipitated a global trend of expansion; with more countries signing tax treaties, REITs were given a worldwide hedge. In 2010, emerging markets such as South Africa entered the NAREIT global index.

In South Africa, REITs officially started listing on the JSE in 1997, and in March 2013, legislature was passed by Finance Minister Pravin Gordon—the Real Estate and Investment Trust Act—to set out prescribed guidelines and characteristics determining what constituted

a REIT. Before 2013, REITs were allowed on the JSE only in the form of Property Unit Trusts (PUT) and Property Loan Stock (PLS). The key differences between a PUT and a PLS structures and limitations were as follows:

Table 1 : Pre-2003 Differentiators Between Property Unit Trusts and Property Loan Stock

PLS	PUT
Pays Capital Gains Tax on sale of assets	No Capital Gains Tax dividends are distributed to shareholders
Able to invest in other listed companies	Unable to invest in other listed companies
Company-specific gearing ratio	Gearing limit of 30%
Governed by Companies Act	Governed by Collective Investment Schemes Acts

The 2013 legislation created an even parity between PLS and PUT entities in terms of tax treatment and the regulations governing their operations. (Boshoff & Bredell, 2013) pointed out that the benefits of having a formalised REIT structure in a country are that, among others, there is an increase in dividend yield and an increase in foreign investment. REIT stocks also enjoy an additional benefit compared to stocks in a PLS or PUT in that any trade of a REIT share will not incur Security Transfer Tax (STT).

Historically the South African REIT market can be broken up into two types: Trust REITs and Company REITs. Trust REITs, previously known as Property Unit Trusts, were created to address the changes in how REITs were taxed. Property Loan Stocks became known as Company REITs and firms had the option of converting to either new REIT structure within legal requirements. Since the change, however, PLS REITs have ceased to exist while Trust REITs still exist, albeit in a diminishing number of firms.

In terms of positive returns, over the last 10 years South African REITs have consistently outperformed cash, equities and bonds on the JSE, almost guaranteeing that any diverse investor would typically have some form of REIT exposure (Bloomberg 2016, n.d.).

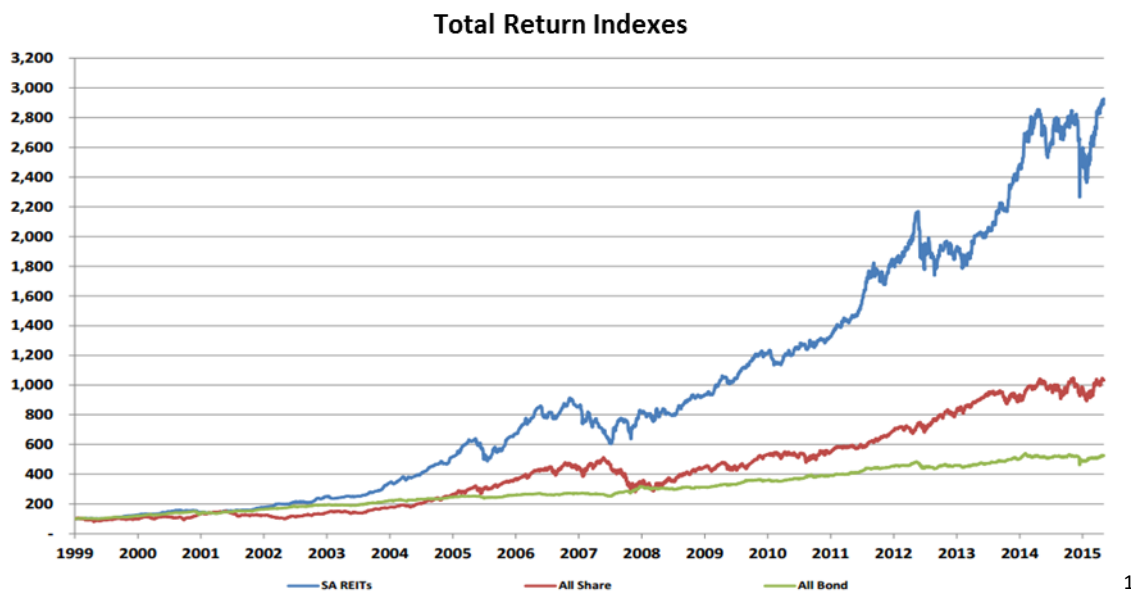
1.4 Performance of REITs

Typically, there are two ways to beat inflation: capital growth and income dispersals, and REITs typically exhibit both inflation-beating characteristics.

Globally, there are more than 200 stock-exchange-listed REITs, with a combined market value of 1 trillion US dollars. In the US alone, more than 70 million Americans invest in REITs through retirement funds and savings, with 60 billion US dollars spent on infrastructure directly attributed to REITs.

Again, focusing on the South African context, REITs have also considerably outperformed the All Share and All Bond investments on the JSE over the last 10 years; the market cap is also growing exponentially.

Figure 1 : REIT Performance (Total Return Indexes)



1

REITs provide a natural protection against inflation as real estate rents and values tend to increase when the Consumer Price Index (CPI) rises, making a REIT a very attractive investment vehicle. Notably, in order to operate under a REIT structure, firms are required to distribute their income, which forces an income return while giving the investor exposure to the equity market. This is significant as income is derived from rental agreements, and as

¹ Sourced from Grindrod Capital Management

many leases are linked to a periodical fixed increase in rental fees, combined with equity growth, creating an inflation hedge.

(Case, Wachter, & Worley, 2011) showed that over the last 20 years, portfolio diversification with allocation to US REITs improved annual returns by 0.25% and reduced portfolio volatility by 0.21%. This demonstrated that REITs have proven to be the best sector to provide diversification, offering improved returns while reducing risk exposure.

1.5 Problem Statement

This study seeks to understand the performance of the listed REITs property sector. Over the last 10 years, as highlighted in the preceding discussion and by (de Wet, 2012), South African REITs have earned better returns than both bonds and the stock market overall. Given the better performance of REITs over the other asset classes, the question is: “What influences better returns for REITs investments when compared the other asset classes?”

This is especially important to an investor wishing to diversify their portfolio and exploit the better REIT results to earn above-average returns on their portfolio.

Hence, our question is formulated and becomes: “Are the South African REIT returns significantly influenced by the shifts in market fundamentals as a consequence of changes, over time, in the macro-economy?” (Bley & Olson, 2003) showed that REITs enhance the risk-return relationship of an investment portfolio, further supporting the notion that diversifying an investment portfolio to including a REIT fund is in an investor’s best interests.

We thus explore these questions by trying to understand the firm-specific determinants of REIT performance, therefore questioning: “Are the South African REITs’ returns significantly influenced by the structure of the REIT?”

This study seeks to address this knowledge gap.

1.6 Objectives and Research Statements

The specific objectives of this study are:

- To identify the macro-economic variables that may influence performance of South African REITs

- To identify the firm-specific variables that may influence performance of individual South African REITs

This study seeks to test only REITs listed on the South African stock market; unlisted REITs are difficult to track and are not forced to publish their financial results to the public.

1.7 Thesis Layout

This examination of REITs is structured as follows:

Chapter 1; The background, context and most up-to-date information regarding REITs in a global setting. This chapter then closely examines REITs' role in the South African environment by discussing the following: what a REIT is, the background and the history of REITs and, lastly, the performance of REITs. A discussion of the problem statement, followed by relevant substantiation demonstrating that REITs have consistently outperformed the JSE All Share Index, cash, equities and bonds in terms of return on investment. Accordingly, this chapter identifies which factors contributed to this performance and highlights the need for further exploratory study and lastly show a detailed explanation of this research's objectives and statements.

Chapter 2; This chapter comprises an attempt to identify the macro-economic determinants, noted in the previously mentioned literature, pertaining to the global REIT market. These determinants are then framed within an African context, paying particular attention to South Africa which has the dominating financial market in Africa (Bloomberg 2016, n.d.). From the literature, we identify the variables that will be used to test the hypothesis and the methodology supporting this approach. Lastly, this chapter then highlights, through literature, firm-specific factors that may also attribute to REITs' performance.

Chapter 3; In this chapter, the questions uncovered in the previous chapter are addressed, along with a full, detailed explanation of all pertinent data and models.

Chapter 4; This section comprises of an examination and explanation of the outcomes exposed by the models developed in Chapter 5. In addition to a discussion of general observations, this chapter also includes testing for normality and analysis of the equation hypothesis.

Chapter 5; This culminating chapter details the overall summary for investors and identifies any shortcomings exposed by the research. It also includes ideas for future research into REITs.

2. Literature Review

The empirical studies covered in this literature review form the basis of the research, and throughout the literature review a common theme emerges, namely: in earlier data, the relationship between the variables (determinants) and REIT returns tend to have a negative correlation but from the early 2000s onwards data, results and literature suggest that positive relationships exist or start to form.

2.1 Macro-Economic Determinants Summary

According to (Schulte, 2009), three major factors play a part in US REIT returns: the interest rate, stock market returns and market cycle. The majority of studies worldwide, detailed below, follow similar analyses, highlighting the need for investigation of the following variables: gross domestic product (GDP), taxation, inflation and unemployment.

However, across all studies, a commonality emerges, namely that, globally, various factors have different roles as determinants of REITs' performance.

2.1.1 Economic Growth

It should be expected that a growing economy gives rise to more economic activity and business expansion, leading to a greater demand for commercial real estates and property (Geltner, Miller, & Clayton, 2001). Geltner, Miller and Clayton ran through basic economic theory in his analysis and then showed the application thereof in the US commercial property market, giving rise to our base assumption.

In the South African context (Cloete, 2004) used the Fisher-Dipasquale-Wheaton (FDW) real estate model to test the sector, and although the data can be considered somewhat dated, the conclusion is in line with prevailing economic theory in that there is a positive relationship between economic growth and property market.

More recently, however, (Fitch, 2016) tied REIT performance in the US to two key variables: GDP and unemployment. In this study, there was a significantly stronger performance relationship between REITs, GDP and unemployment than in any other financial sector.

In explaining the asset pricing model (Sanders K. a., 1998), the predictability of real estate returns is highly linked to the state of the economy. (Merikas, 2012) also found a bi-directional causality between housing investment and economic growth. Contrary to this, (Leung, 2009) found that there is inconclusive evidence pertaining to the US REIT markets in terms of causality between GDP growth and REIT returns.

2.1.2 Inflation

A critical examination of research material determines that, prior to 2000, most studies concur that there is no relationship between inflation and the property market; however, studies using post-2010 data argue contrary to that position and state that there is a relationship between short-term inflation and the property market.

To accurately examine the South African market, inflation will be tested as a performance determinant for listed REITs.

During periods of rising inflation (Cohen, 2012) observed that real estate securities offer maximum potential while providing diversification among holdings in a portfolio of assets. (Apergis, 2003) stated that inflation has a negative effect on demand for property investments. Earlier work by (Sanders C. H., 1990) showed that demand in both REITs and stocks is driven by interest rates and unexpected inflation. (Chaudhry, 1999) supported this empirical evidence by stating that the associations between real estate and financial assets performance can also be attributed to inflation impact. There is a middle ground, however, with (Titman, 2003) specifically highlighting that the relationship between real estate investment and inflation is prevalent over the long-term but not in the short-term. Titman's results also show that there is no relationship between interest rates and REIT returns.

In terms of the South African market (Chang, 2011) showed that interest rates, inflation and the growth rate per capita exhibited the strongest effect on commercial real estate returns. However, in the US (Chatrath, 1998) showed that no relationship exists. Many other studies have corroborated this in relation to the US market up to 2000, whereas after 2000 a relationship seems to form, as shown by (Buranasiri, 2012).

It seems, therefore, that there still exists a measure of uncertainty regarding the relationship between inflation and REIT performance.

2.1.3 Interest Rates

REITs are not unique in their susceptibility to the effects of interest rates; when interest rates rise, the cost of borrowing increases, decreasing firms' performance and driving down REIT stock prices. Recently in the US (Banati, Hofwegen, & Wander, 2015) revealed that there is sensitivity in most REIT operational sectors and that there exhibits no positive relationship between interest rate and REIT performance. It must be noted, though, that their results predominately focussed on REIT performance in the Residential, Healthcare and Commercial sectors.

Historically (K. Chen, 1988) found that equity REITs are sensitive to inflation but mortgage REITs are sensitive to both inflation and interest rates. Several years later (Glenn Mueller, 1995) found that REITs, in general, have a lower correlation to the stock market when interest rates change. When looking at managing the risk exposure to interest rates, (Marcus T. Allen, 2000) showed the impact of interest rate volatility on REITs and suggested ways to mitigate the risk when comparing different asset structures, e.g. financial leverage.

(Chris Brooks, 2011) examined the economic and financial determinants in the UK market and his results showed that interest rate term spread and inflation are strong determinants of the property market and REITs. Furthermore, his results also showed that lagged values of real estate itself are an even stronger determinant of REIT performance.

As shown through relevant literature, prevailing studies indicate a strong relationship between interest rate and REIT performance globally.

This study will therefore investigate whether the South African market demonstrates the same relationship between the REITs performance and interest rates.

2.1.4 Unemployment

Very little work has been undertaken to understand the relationship between unemployment metrics and REIT performance prior to 2000. Recently (Fei, Ding, & Deng, 2011) studied the US market REIT return data from 1987 to 2008 and posited that the relationship can be explained by credit spread, inflation and unemployment rate. From the Phillips curve, it can be expected that unemployment will correlate with inflation, and as South Africa's current unemployment rate is just over 24% (StatsSA, 2016), the results may

substantiate the argument that unemployment is a strong determinant affecting REIT performance.

2.1.5 Stock Market

As a whole, the US stock market appears to have a strong correlation with REIT performance. Examining the relationship (Clayton & MacKinnon, 2003), determined that REIT performance mirrored large-cap stock during the 1970s and 1980s, but mirrored small-cap stocks and real estate factors through the 1990s.

Interestingly, over time, there is a proportion of US stock market returns that cannot be explained through stock, bonds or real estate factors. (Wang, Erickson, & Chan, 1995) examined REIT performance and noted that, due to the lack of investor attention when not in a boom cycle, REIT performance is inconsistent with the stock market. (Case, Yang, & Yildirim, 2010) tested the performance change over time of REITs and non-REITs against other stock types; their results showed that from 1991 to late 2008, the correlation between the two asset classes increases steadily over time but did not exceed 59%.

In the UK (Leone, 2011) yielded similar results and demonstrated that unexpected changes in the stock market had a greater impact on REIT performance than on UK property investment. In general, the studies are consistent across different markets and leveraged the most recurrently used variables to test the performance of REITs.

2.2 Firm-Specific Determinants

(Schulte, 2009) determined in his study that five firm-specific factors play a part in REIT performance, namely: size, book-to-market (BTM) ratio, leverage, dividend yield, and the FFO payout ratio.

These factors are used to explain the returns of US REITs for both boom and bust cycles. Various other studies emphasise similar firm characteristics as being dominant in the makeup of a firm's performance. A study by (Ha, 2010) of the Asian REIT market, looked at the extent to which a firm's performance, i.e., its stock price, was affected by variables such as its size and its leverage. The results were diverse across the different Asian markets,

indicating that each REIT market has a different set of determinants that affect performance.

Consequently, REITs in South Africa should demonstrate results similar to those of other developing economies due to its strong financial systems, as illustrated by having the largest financial system in Africa.

2.2.1 Size

(McIntosh, Liang, & Tompkins, 1991) from previous literature, discussed that, in the US, small firms earn a higher average rate of returns than larger firms, outperforming them by an average of 6%. When focussing on REITs, the results show that, after accounting for risk, REITs support the small-firm effect.

A key observation is that firm size may influence its financing policies. (Schulte, 2009) again showed through the Sharpe and Sortino ratios (both benchmarking formulas used to calculate performance) that size has a negative impact on a REIT firm's performance. (Redman & Manakyan, 1995) found that the Sharpe ratios for asset size when regressed against financial ratios were found to be insignificant in prompting higher returns; their study was, however, limited to western United States REITs. These counter-arguments espouse that efficiencies can be gained elsewhere, which may lead to falsifying the full-size effect of REIT returns.

2.2.2 Book-to-Market Value

Significant studies have been undertaken on stock performance and (Chen et al, 1998) showed that human capital efficiency and financial performance have a significant effect on a firm's market value.

Other authors concur with the findings of Chen et al; (Chui, Titman, & Wei, 2003) relay that higher returns are contributed to by increased book-to-market (BTM) values for REIT stocks. The BTM ratio shows positive results against REIT performance, and the only slight abnormality is that when other firm determinants are engaged, the result is negative.

A study using data spanning the period from 1990 to 2006 (Ooi, Webb, & Zhou, 2007) showed that investors place an over-reliance on historical performance information which

leads to mispricing in REITs stock. This is evidenced by value stocks which carry a low price relative to earnings also carry low prices when compared to their competitor's earnings, dividends and assets.

2.2.3 Price per Share/Earnings per Share/Dividend per Share Ratio

Another important measure of stock performance is the price/dividend/earnings per share ratios. From valuation techniques, current performance is used to mimic future earnings, dividends and price. Most research excludes this variable as it tends to be a positive coefficient to BTM values. A mixed review (Ling & Naranjo, 1999) showed that the results of REIT stock markets using multifactor asset pricing models failed to support the hypothesis post-1990. The more significant studies (Fama & French, 1993) have shown that stocks with high price-earnings ratios compared to market pricing showed significant increases in average returns.

Using the Fama and French three-factor model they determined, that should this relationship be plotted, the resultant u-shaped nature of the graph detailing earnings and average returns would be apparent and the converse would be true: firms that have negative earnings, have higher average returns.

2.2.4 Leverage

(Schulte, 2009) again showed that there is a negative coefficient for leverage on both the Sharpe and Sortino ratios; the results show that REITs, by lowering funding costs and maximising tax deductions, gear up their debt capacity. (Ooi, Li, & Ongl, 2010) discussed in their journal that, due to their niche legal nature, REITs tend to seek external financing more frequently.

(Chan, Hendershott, & Sanders, 1990) showed the impact of unexpected inflation and changes in the risk and term structures of interest rates, and that the impacts of those variables are greater on higher-leveraged REITs than on those less leveraged. Using a multifactor Arbitrage Pricing Model, they conclude that leverage in REITs plays a significant part in hedging against unexpected inflation.

(Faulkender & Petersen, 2006) found that firms with access to debt from public markets have 40% more debt than firms that are unable to source funding from the public market. Those firms unable to access funding from the public market make use of financial

leverage with a multiplier effect to access cheaper funding to impact REIT performance. (Marts & Elayan, 1990) also tested the aforementioned variables and concluded similar results, namely that leverage increases when the property market declines.

Supporting the Market Timing Theory of Capital Structure, (Boudry, Kallberg, & Lui, 2009) found that a firm is more likely to issue equity when its price-to-net asset value is high, and more so when the cost of capital is lower in the public market than in the private market.

Finally, (Giambona, Harding, & Sirmans, 2008) tested whether asset liquidation values influence both leverage and debt maturity for REITs, and the results show a positive correlation between their measurement variables.

Based on this, in conjunction with (Fama & French, 1993) research on the returns of stocks and bonds, when reviewing REIT performance in a South African context, our data analysis should reveal a positive relationship between leverage and return.

2.2.5 Free Cash Flow/Dividends

South African REITs are unique in terms of free cash flow (FCF) as they are legally required to pay out 75% of their taxable earnings to shareholders. With that in mind, a REIT business can grow by using its own funds through retained earnings or by using external funds.

However, this means that in order to fund a high-growth strategy, REITs are forced to go to an external market for finance. (Hardin, Highfield, Hill, & Kelly, 2009) looked at the factors determining the cash holdings of REITs, and their results showed that there exists an inverse relationship between funds from operations, leverage and internal advisement, which is further inversely related to the cost of finance and growth. The implication of these relationships is that firms hold minimal cash reserves to reduce agency problems of cash flow and reduce the cost of external capital.

The characteristic of free cash flow theory is confirmed by (Zhou & Ruland, 2006) in that when growth is low, the association between pay-out and earnings is high. The multi-variate regression between various determinants show a positive relationship between earnings growth and dividend pay-out.

Various other scholars note similar relationships, most notably (Bradley, Capozza, & Seguin, 1998) who explored expected cash flow volatility as a determinant of dividend policy. Their

results show that the pay-out ratio is lower for firms with higher-than-expected cash flow volatility.

2.3 Summary of Literature

REIT growth has its foundations in economic growth, for, broadly speaking, as an economy grows, stock performance also grows, excluding any outlying factors such as managerial diseconomies of scale. (Cloete, 2004) showed that there is a strong relationship between property growth and economic activity. This, in turn, should lead to a relationship between REIT performance and economic growth.

In general, REIT fixed-income contracts from rentals are inflationary-tied; hence, we should see a strong relationship between REIT performance and inflation. Literature, however, states otherwise. (Sanders K. a., 1998) showed that in periods of negative inflation there is no link between performance and inflation; however, there is a strong relationship between REIT performance and unexpected inflation.

This study will seek to clarify this discrepancy, framed within the South African context, as (Chang, 2011) showed a strong relationship between inflation and the commercial real estate market. The various studies mentioned above show strong relationships between REIT performance and interest rate due to the cost of funding for REITs. (Chris Brooks, 2011) discusses that the lags of real estate's returns are even stronger when compared to interest rates, supporting the argument that we should see similar results in South Africa.

A relatively new determinant requiring inspection is the impact of unemployment on South African REIT performance. Again, very little data is available but as South Africa has one of the highest employment rates in the world for a developed financial economy (StatsSA, 2016), this would be a unique differentiator in REIT performance research.

Pertinently, listed REITs should follow the equity market performance; (Leone, 2011) showed that the two asset classes of small and large stocks mirrored REIT performance in the UK.

The core research for this study is (Schulte, 2009) who examined firm-specific REIT determinants and found that the key finance decision-making influencer is size; (McIntosh,

Liang, & Tompkins, 1991) re-examined this by splitting up small and large REIT firms and found this was only true for large-cap REIT stocks.

In the South African context, size may not be a factor on REIT performance, as preliminary research by the author shows that the smallest REIT firms were often absorbed by larger REITs to benefit from economies of scale.

Dividends per share as a determinant has a mixed result in terms of research application as REIT legislation differs from country to country. In the US alone (Ling & Naranjo, 1999) showed that the hypothesis of REIT dividends being a significant determinant failed to hold true. (Chan, Hendershott, & Sanders, 1990), in an earlier paper, stated that leverage for REIT structures is highly dependent on the link with inflation. Finally, (Schulte, 2009) obtained results supporting the negative co-efficient for leverage in general.

Table 2 : Summary of Literature

Determinants	Literature
GDP	(Cloete, 2004); (Fitch, 2016); (Sanders K. a., 1998); (Merikas, 2012).....
Inflation	(Cohen, 2012); (Chaudhry, 1999); (Chatrath, 1998)
Stock Market	(Wang, Erickson, & Chan, 1995); (Clayton & MacKinnon, 2003) (Leone, 2011)
Interest Rate	(K. Chen, 1988); (Chris Brooks, 2011); (Marcus T. Allen, 2000)
Unemployment	(Fei, Ding, & Deng, 2011)
Book-to-Market Value	(Schulte, 2009); (Chen et al, 1998); (Ooi, Webb, & Zhou, 2007)
Size	(McIntosh, Liang, & Tompkins, 1991); (Schulte, 2009)
Earnings per Share	(Schulte, 2009); (Ling & Naranjo, 1999)
Leverage	(Schulte, 2009); (Chan, Hendershott, & Sanders, 1990); (Giambona, Harding, & Sirmans, 2008)
Free Cash Flow/ Dividend Yield	(Schulte, 2009); (Hardin, Highfield, Hill, & Kelly, 2009); (Bradley, Capozza, & Seguin, 1998)

To the author's knowledge, key points in this study pertaining to unemployment and its effect on the performance of South African REITs are discussed in terms of REIT research for the first time. The study will also demonstrate basic regression techniques if sufficient for the hypothesis but will explore more advanced techniques if required. The majority of the determinants are used to confirm international expectations and providing criteria for further research. From the literature there has been a clear gap between research in REITs in emerging economies and significant new research is not forthcoming.

3 Data and Methodology

Data has been sourced from the firms listed on the JSE REIT index and individual listed REITs in conjunction with economic data from Statistics South Africa (StatsSA). To complement this, firm-specific variables will also be used, with data sourced from the relevant firm's financial statements.

It is important to note that the JSE only established the REIT index in late 2002, which means that legacy data is predominantly PLS-dominant; REIT companies listed on the JSE prior to 2002 became part of the REIT index after the Real Estate and Investment Trust Act came into effect in 2013.

The data is sourced as follows:

3.1 Data Proxies

Interest rate changes in South Africa are determined by the South African Reserve Bank (SARB), and while regulatory meetings occur monthly, changes in the official South African interest rate happen infrequently; in the last five years since 2016 (StatsSA, 2016), there have been only seven official interest rate changes.

(Dube & Zhou, 2013) analysed the official South African repo-to-treasury bill (TB) rate, the money market rate and the 10-year government bond. Using a two-regime Vector Error Correction Model (VECM) that relates short-term interest rate to long-term interest rate, they found that out of all long-term interest rates and intermediate short-term interest rates, the 10-year government bond was a dependable proxy for the official interest rate. So, for the purposes of this study, we will be using the 10-year government bond yield as an indicator of the official interest rate.

In South Africa, the proxy to the JSE stock market is the JSE All Share Index (ALSI), as determined and supported by literature from (Clark & Daniel, 2006). They studied determinants such as business confidence, motor vehicle sales, the gold price, exchange rate and the JSE ALSI to describe the change in the property market in South Africa. This study consequently identified the JSE ALSI as a reliable proxy for stock market returns in South Africa. Furthermore, the JSE ALSI is commonly used as a proxy for the South African stock market and is often the most quoted indicator used in the media as it is understood

and easily interpreted by investors. This is supported by the fact that more than 50% of Unit Trust managers continue using the JSE ALSI as their benchmark (Equinox, 2012).

GDP is one of the primary indicators of the economy, and (Li & Lei, 2011), in their study on REIT pricing, used the US GDP to proxy the performance of the US and noted the standard use of the proxy.

Likewise, inflation is the general rate at which prices of goods and services increase in the economy (Buranasiri, 2012). In the context of REITs, there is very little literature in the field pertaining to unemployment, but the official definition of unemployment for South Africa is: “A person who is actively searching for unemployment and is unable to find work.” (StatsSA, 2016).

Determinants such GDP, inflation and unemployment will be sourced as the official rates obtained from StatsSA.

3.2 Macro-Economic Determinants

Table 3 : Data Proxy Macro Determinants

Variable	Proxy	Data Source	Time Series
GDP	Official SA GDP	StatsSA	Quarterly 1960
Inflation	Official SA inflation	StatsSA	Quarterly 1960
Stock Market	JSE All Share Index	JSE	Monthly 2000
Interest Rate	10-year-bond yield	SARB	Monthly 1990
Unemployment	SA unemployment rate	StatsSA	Quarterly
REIT Index	J256/J253	JSE	Monthly

The current REIT Index (J256) only began in 2013 when legislation differentiating a REIT from a PUT and a PLS was brought into force; fortunately, the JSE has made available relevant data back-dated to 2010. Our data from Q1 2004 to 2010 is, hence, the older PLS REIT Index; from Q1 2010 onwards it is the official REIT Index data.

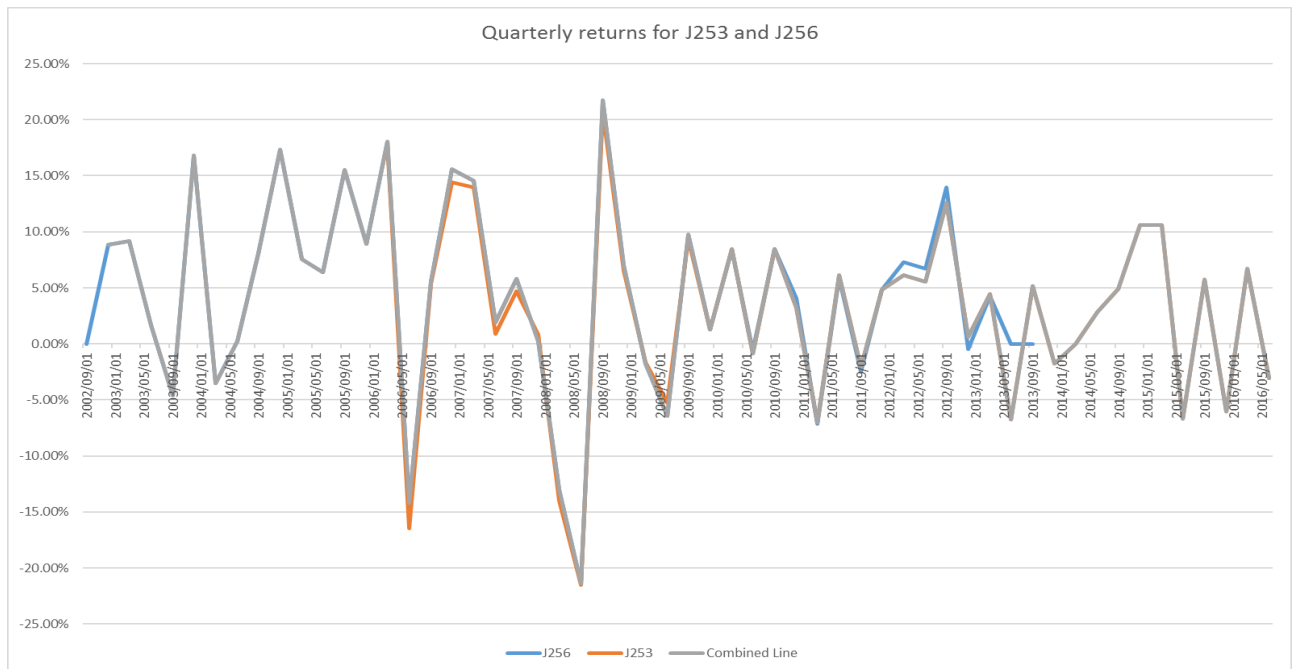
Additional data was sourced from Bloomberg and INET Bridge; however, this data was presented in a monthly format; to ensure that it conformed to the rest of our data, a quarterly, weighted average return on number of days was then calculated.

$$R_j = \frac{R_i * D(M_i) + R_{i+1} * D(M_{i+1}) + R_{i+2} * D(M_{i+2})}{D(M_i) + D(M_{i+1}) + D(M_{i+2})}$$

Where R_i is the monthly return of month i , and $D(M_i)$ is the number of days for month i .

Figure 2 shows the data available and the proxies used. For the purposes of testing, the data will be split to see if the change in legislation influenced REIT performance and determinants.

Figure 2 : Data Merger J253 & J256



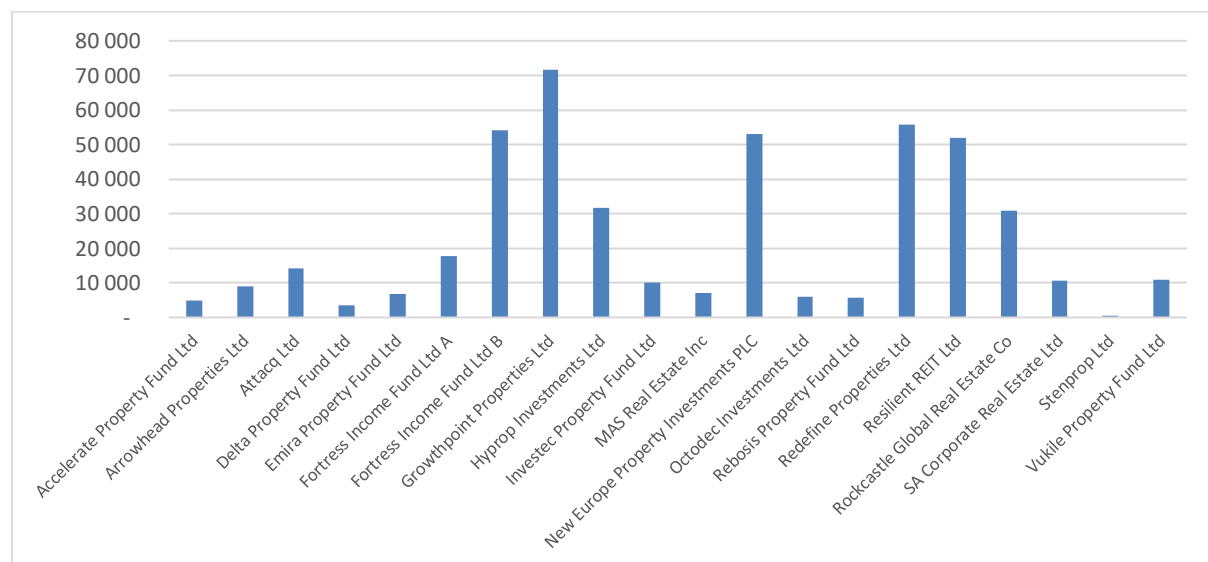
2

² Sourced from JSE, prepared by author

3.3 Firm-Specific Determinants

The top nineteen REITs, judged by market cap, were selected, and, combined, encompass more than 95% of the total SA REIT market. The data will be presented in terms of annual results, as JSE-listed companies are required to submit financials every year. Each company, however, has a different financial year-end, so specific care is needed to retrieve the price of the stock at each firm's financial year-end. As such, we select the corresponding year-end and the variable at the point in time; we then take previous annual value to create a log-linear change.

Figure 3 : Firms by Market Cap



3

Historically, post-2008, REIT firms in South Africa experienced funding issues as a consequence of the global financial crisis. Additionally, many of the smaller firms were bought out by larger firms, this is evidenced in the data as individual firm cap size grew exponentially.

³ Sourced JSE, prepared by author

Table 4 : Data Proxy Firm Determinants

Variable	Proxy	Data Source	Time Series
Size	Market Cap	JSE-listed company	Annual; Various
Book-to-Market Value	Book-to-Market	JSE-listed company	Annual; Various
Price per Share	Price per Share	JSE-listed company	Annual; Various
Leverage	Leverage	JSE-listed company	Annual; Various
Free Cash Flow	Earnings per Share	JSE-listed company	Annual; Various

3.4 Summary of literature and expected hypothesis

From the literature, we have identified the variables to be tested. They are listed in the table below:

Table 5 : Literature Determinants

Variable	Symbol	Definition	Calculation	Hypothesis	Literature
Total Return	Ri	Change in the return of stock	$Ln\left(\frac{R_i}{R_{i-1}}\right)$		(Cloete, 2004); (Schulte, 2009)
GDP	GDP	Change in the gross domestic product of South Africa	$Ln\left(\frac{GDP_i}{GDP_{i-1}}\right)$	$B_i > 0$	(Cloete, 2004); (Fitch, 2016); (Sanders K. a., 1998); (Merikas, 2012).....
Inflation	Inf	Change in inflation of South Africa	$Ln\left(\frac{Inf_i}{Inf_{i-1}}\right)$	$B_i > 0$	(Cohen, 2012); (Chaudhry, 1999); (Chatrath, 1998)
Stock Market	JSE	Change in the JSE All Share Index	$Ln\left(\frac{JSE_i}{JSE_{i-1}}\right)$	$B_i > 0$	(Wang, Erickson, & Chan, 1995); (Clayton & MacKinnon, 2003) (Leone, 2011)
Interest Rate	Int	Change in the official rate of interest in South Africa	$Ln\left(\frac{Int_i}{Int_{i-1}}\right)$	$B_i < 0$	(K. Chen, 1988); (Chris Brooks, 2011); (Marcus T. Allen, 2000)
Unemployment	Un	Change in the rate of unemployment of South Africa	$Ln\left(\frac{Un_i}{Un_{i-1}}\right)$	$B_i < 0$	(Fei, Ding, & Deng, 2011)
Book-to-Market Value	BTM	Change in market value of equity / book value of equity	$Ln\left(\frac{\frac{BV_i}{MV_i}}{\frac{BV_{i-1}}{MV_{i-1}}}\right)$	$B_i < 0$	(Schulte, 2009); (Chen et al, 1998); (Ooi, Webb, & Zhou, 2007)

Size	S	Change market capitalisation of stock	$Ln\left(\frac{S_i}{S_{i-1}}\right)$	$B_i < 0$	(McIntosh, Liang, & Tompkins, 1991); (Schulte, 2009)
Earnings per Share	PPS	Change in earnings per share of stock	$Ln\left(\frac{EPS_i}{EPS_{i-1}}\right)$	$B_i > 0$	(Schulte, 2009); (Ling & Naranjo, 1999)
Leverage	L	Change in total debt/ total asset	$Ln\left(\frac{\frac{TD_i}{TA_i}}{\frac{TD_{i-1}}{TA_{i-1}}}\right)$	$B_i < 0$	(Schulte, 2009); (Chan, Hendershott, & Sanders, 1990); (Giambona, Harding, & Sirmans, 2008)
Free Cash Flow/ Dividend Yield	FCF	Change in free cash flow/ total share	$Ln\left(\frac{Div}{Div_{i-1}}\right)$	$B_i > 0$	(Schulte, 2009); (Hardin, Highfield, Hill, & Kelly, 2009); (Bradley, Capozza, & Seguin, 1998)

**Where i is the current month value of the variable*

3.5 Regression

Based on previous international research, regression modelling and vector auto-regression have been the most commonly used statistical method for identifying the macro-economic determinants of REIT performance. Regression analysis is used for forecasting variables, studying the relationship between variables, and the testing of a hypothesis.

The basic regression equations are defined as the following:

Equation 1 : Simple Ordinary Least Square Regression

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots + \beta_n X_n + \varepsilon$$

There are four assumptions used for regression modelling (Neter et al, 2004), namely: linearity, statistical independence, homoscedasticity and normality. If either of these assumptions is violated, then insights generated by the results of a regression model will often be misleading. To proceed further, we test for normality using the Jarque-Bera test to ascertain if the data follows a normal distribution. If the data conforms, we can apply parametric test statistics.

In our data, we will also test for endogeneity, a variable attribute which occurs when the errors are correlated with the independent variables. (Westerheide, 2006) discussed cointegration of real estate stocks with inflation, bonds and common stocks in an international comparison and found that weak cointegration exists between inflation and REIT performance in most countries that formed part of the study.

Furthermore, if, in this study, cointegration is found between the variables, we must use a more advanced modelling techniques such as Vector Auto Regression or Vector Error Correction Model (Baum, 1993). Our general observation is that REIT performance is a strong reflection of house-price performance; hence, there should be endogenous variables since property reflects the assets that REITS can invest in.

Testing for stationarity will reveal if the simple ordinary least square (OLS) regression in equations will generate spurious regression.

Notably, Vector Auto Regression (VAR) will be used to capture linear independencies along times series data. The Wold theorem states that every co-variance stationary times series can be written as the sum of the two-time series, one deterministic and one stochastic. This allows for the approximation of a linear model, ensuring that any vector of times series has a VAR representation and a natural starting point for empirical analysis. (Sims, 1980) assumed that all variables are expected to be endogenous.

The model is a restricted VAR that has cointegration restrictions built into the equation but to improve the analysis of extrapolated data, we use a VECM as it has more effective co-efficient estimates—compared to a standard VAR model—if there is integration among the endogenous terms (Yoo, 1987).

We infer from the literature stated that:

Equation 2 : Functional Ordinary Least Square

$$\begin{aligned} REIT\ Return_t &= F(Interest\ Rate_t, GDP_t, Inflation_t, Stock\ Market_t, Unemployment_t) \\ &= F(B10Y_t, GDP_t, Inf_t, JSE_t, Unemp_t) \end{aligned}$$

We test for stationarity through the equation. If $REIT\ Return_t$ and either of the variables in function $F(B10Y_t, GDP_t, Inf_t, JSE_t, Unemp_t)$ are non-stationary random processes, then the relationship in Equation 2 will yield spurious regression.

Equation 3 : Unit Root

$$Y_t = \alpha + \beta X_t + \varepsilon_t$$

In this equation Y_t is the independent variable, X_t the dependent variable and ε_t denotes the error term?

We will address this through the Augmented Dickey-Fuller test (Dickey & Fuller, 1979) as stationarity of a series can influence the behaviour of the variables.

The Johansen and Julius Cointegration test uses two tests, the maximum eigenvalue test and the trace test, to determine the number cointegration vectors through the two test statistics. Both tests may give different results but the trace test results will be given

preference. (Lütkepohl, 2000), through a Monte Carlo comparison, showed that the trace test is, in some conditions, superior to the maximum eigenvalue test but that there may be a difference in small sample sizes.

Equation 4 : Johansen Test Statistic

$$LR_{max}\left(\frac{r}{n+1}\right) = -T * \ln(1 - \gamma)$$

$$LR_{tr}\left(\frac{r}{n}\right) = -T * \sum \ln(1 - \gamma_i)$$

Where γ is the maximum eigenvalue, T is the value of the sample size and r the number of cointegration relationships. If no cointegration exists, a VECM is no longer required and a VAR model can be used.

The basic VAR equation is defined by the following:

Equation 5 : Basic Vector Auto Regression Equation

$$Y_t = C + A_1 Y_{t-1} + \dots + A_p Y_{t-p} + u_t$$

Where y_t is a vector of K variables. Where y_{t-p} is the p -th lag of y .

The general form of the VECM can be described by Equation 5 in terms of first difference and it includes a constant term.

Equation 6 : Basic Vector Error Correction Model Equation

$$\Delta Y_t = \alpha + \Gamma_1 \Delta Y_{t-1} + \dots + \Gamma_{k-1} \Delta Y_{t-k+1} + \Pi Y_{t-1} + u_t$$

Where ΔY_t is the vector of change in period t , Π is the impact matrix and Γ is a vector.

3.5.1 Testing of the Macro-Economic Variables

GDP	is the rate of change in gross domestic product
Inf	is the rate of change in consumer price inflation
JSE	is the rate of change in the All Share Index
B10Y	is the rate of change in 10-year-bond yield
Unemp	is the rate of change in unemployment

3.5.2 Testing of the Firm-Specific Variables by Panel Regression

For firm-specific data, we will be using panel regression for the top five JSE-listed REIT firms by examining the impact on the return of REIT stocks. (Schulte, 2009) tested this in an unbalanced panel-data OLS regression; this forms the core of our methodology and test determinants for South Africa. (Batlagi, 2005) identified the significant factors that benefit panel regression, the most important being that it eliminates bias arising from the omitted variables. This is important as REITs in South Africa, being a comparatively new asset class, face data constraints.

The general form of the Panel Regression Equation is:

Equation 7 : Generic Panel Regression Equation

$$Y_t = \alpha + \beta_{i,t} \sum X_{i,t} + \varepsilon_t$$

Where i is the cross-sectional dimension 1 to N; period t extends from 1 to T. $X_{i,t}$ represents / determinant over an observation t . ε_i denotes the error term.

Equation 8 : Panel Regression Equation

$$R_t = \beta_{i,0} + \beta_{1,t}BTM_t + \beta_{2,t}S_t + \beta_{3,t}PPS_t + \beta_{4,t}Lev_t + \beta_{5,t}Div_t + \beta_{6,t}B10Y_t + \beta_{7,t}GDP_t \\ + \beta_{8,t}Inf_t + \beta_{9,t}JSE_t + \beta_{10,t}Unemp_t + \varepsilon_t$$

BTM is the rate of change in book-to-market values of a stock

S is the rate of change of market cap of a stock

PPS is the rate of change in the price per share of a stock

Lev is the rate of change in leverage of a stock

Div is the rate of change of dividend pay-out

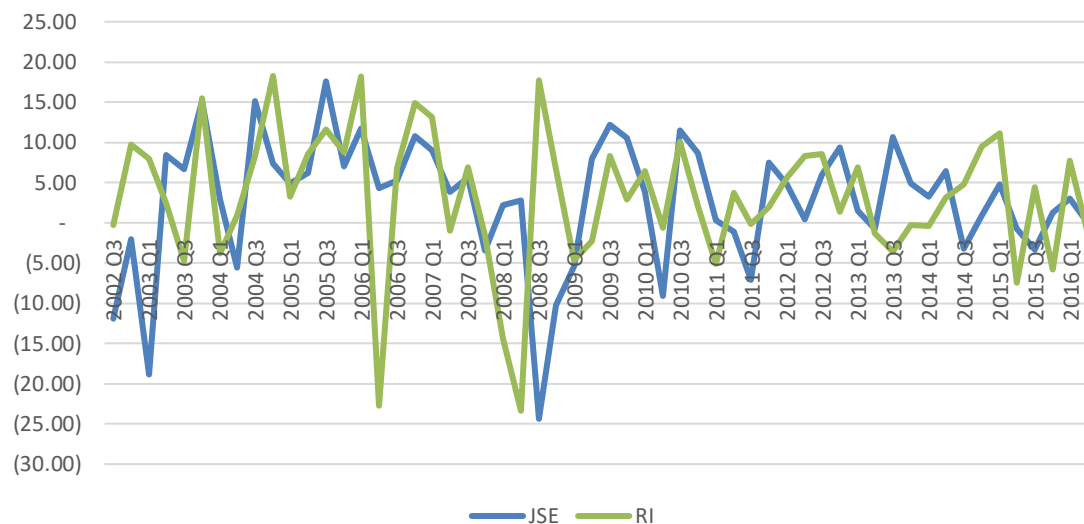
To be comprehensive, the proposed equation will have both macro-economic variables and firm-specific variables, and not suffer from omitted variables. We will start with variables determined in the macro-equation and add firm variables to ensure completeness.

4 Results

4.1 Macro-Economic Determinants

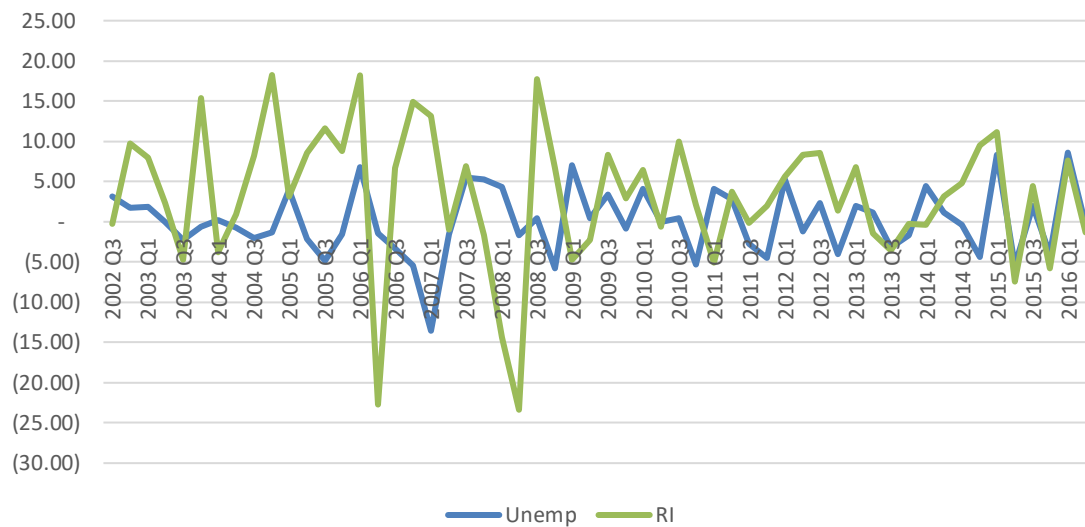
4.1.1 General Observations

Figure 4 : REIT Returns vs JSE ALSI



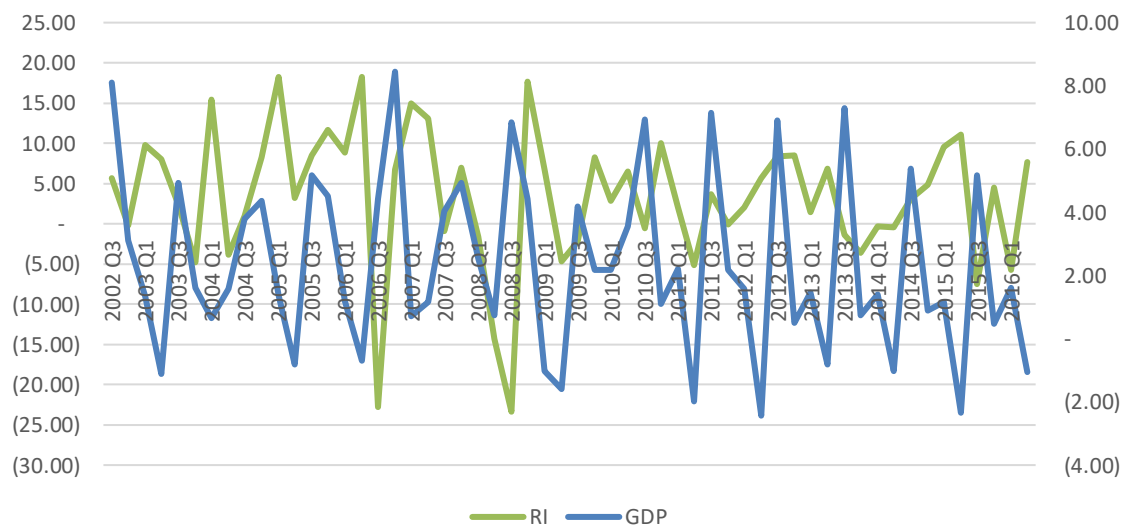
The comparisons of returns in Figure 4 shows a close association between REIT returns and JSE ALSI returns. There also seems to be evidence of some lagged response in REIT returns in response to changes in the JSE ALSI returns, unemployment, GDP and 10-year government bond yield. The volatility of the 2008 financial crisis is clearly evident along with the subsequent tranquillity in returns series post-crisis.

Figure 5 : REIT Returns vs Unemployment



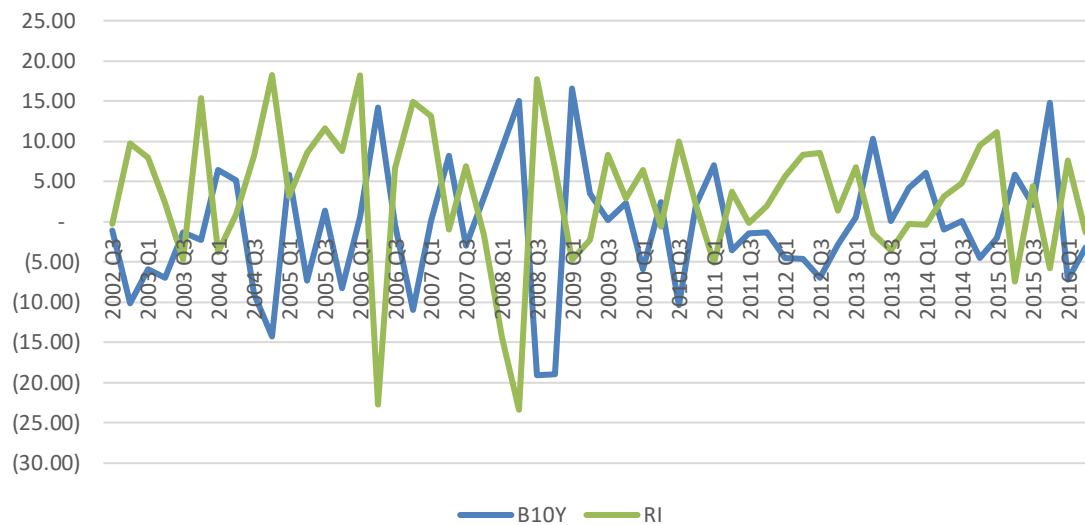
Unemployment has been steadily increasing, with REIT returns also following a similar path.

Figure 6 : REIT Returns vs GDP



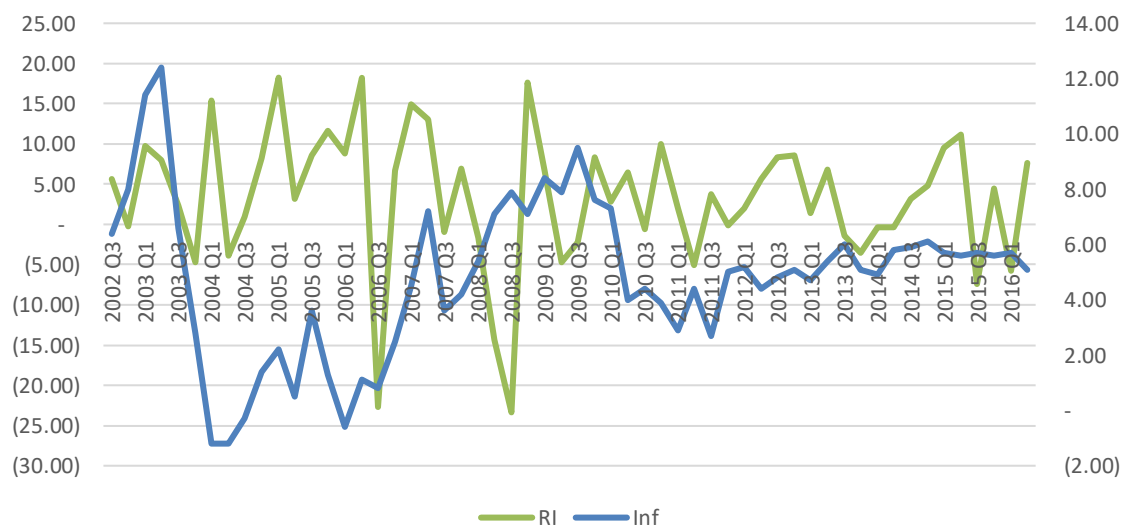
As summarised by (Li & Lei, 2011), in relation to GDP, investors place great value on the annual growth in GDP. They continue, stating that if GDP output is declining, most companies will not be able to increase profits, and if the total aggregate demand for goods and services increases more than the total aggregate supply, inflation occurs causing prices to rise. The graph confirms the change pre-2009 but GDP starts to behave erratically post the period.

Figure 7 : REIT Returns vs 10 Year Government Bond Yield



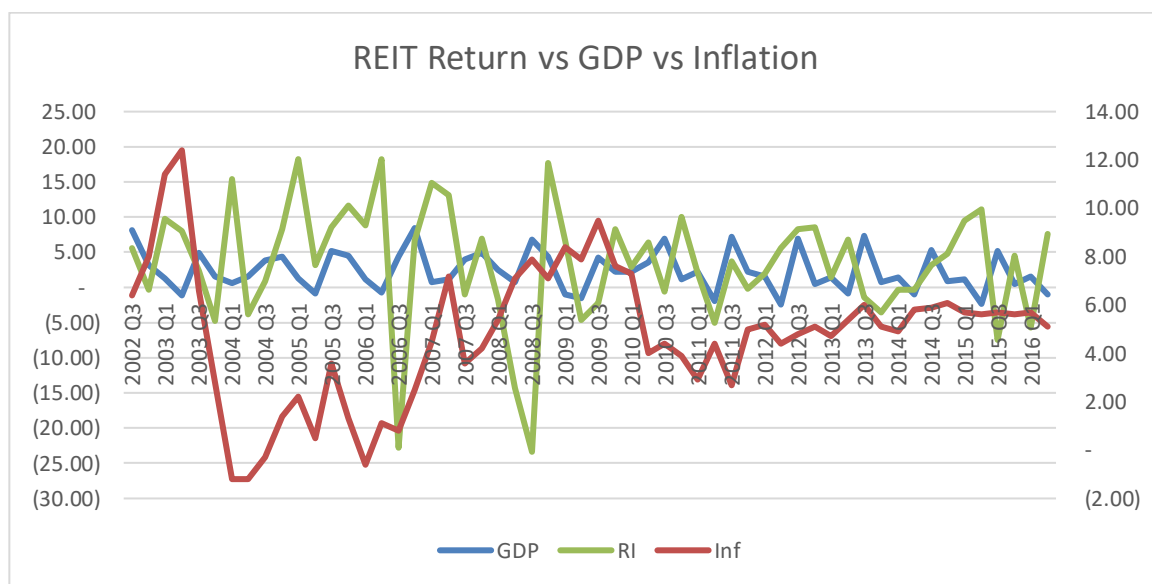
Similarly, the performance of the 10-year government bond after 2009 highlights the volatility in the early periods of the data set; stabilisation occurs towards the end of the measurement period in comparison with REIT returns. (Miyajima, Mohanty, & Chan, 2015) offered an explanation to this, by splitting the period into three phases: 2000- 2008, 2008-2013 and post-2013. They examined the local currency bonds in a panel VAR analysis and attributed this volatility to a high degree of systematic risks in SA with commodity and equity shocks as the primary cause of spill-overs into other classes.

Figure 8 : REIT Returns vs Inflation



Finally, since 2002, South Africa has experienced very little negative inflation. The Consumer Price Index (CPI), measured by the weighted average of the price of a basket of goods and services, has been continuously increasing per quarter whereas REIT returns have had fluctuating returns through positive and negative growth. And even though the returns have increased in the long-term, there seems to be very little relation between REIT returns and Inflation.

Figure 9 : REIT Returns vs GDP vs Inflation



To have a clear understanding between REIT returns, GDP and inflation, Figure shows 9 displays the three variables over the sample period. (Nell, 2000), in his paper on South African GDP and inflation, stated that South Africa experiences a two-sided pattern when looking at the relationship between GDP and inflation. His results showed that inflation at low levels may be beneficial to growth whereas inflation at high levels appears to impose costs in growth terms. This finding is contrary to literature by (Cloete, 2004) (Chaudhry, 1999) and others, where they found the both GDP and inflation are positively correlated with REIT returns. This may be supported by the fact that, on average, South Africa experiences low periods of inflation and a GDP lower than inflation.

The author has made a brief observation: large fluctuations are observed in the data preceding the 2008 financial crisis; there appears to be an almost reset or stabilisation of variables in comparison with each other.

Table 6 Summary Statistics

Statistics	B10Y	GDP	INF	JSE	RI	UNEMP
	2002Q3	2002Q3	2002Q3	2002Q3	2002Q3	2002Q3
Sample	2016Q2	2016Q2	2016Q2	2016Q2	2016Q2	2016Q2
Observations	56	56	56	56	56	56
Mean	-0.549003	2.939286	5.7625	2.837744	3.237343	0.076936
Median	-0.658361	3.15	5.6	4.055483	3.45279	-0.187617
Maximum	16.56859	7.1	12.4	17.58229	18.24426	8.599045
Minimum	-19.07306	-2.6	0.3	-24.36885	-23.36526	-13.54765
Std. Dev.	7.672641	2.018161	2.6996	7.915808	8.47059	4.102642
Skewness	-0.013313	-0.478017	0.557834	-1.060197	-0.890417	-0.291243
Kurtosis	3.231265	3.225757	3.457405	4.830499	4.70161	3.866429
Jarque-Bera	0.126449	2.251588	3.392513	18.30918	14.15597	2.543308
Probability	0.938733	0.324395	0.183369	0.000106	0.000843	0.280368

Table 5 displays the summary statistics for macro-economic determinants. In total, there were 56 observations for each of the variables from Q2 2002 to Q2 2016.

The average return on the REIT index for the period is 3.23%, with a peak of 18.24% and a trough of -23.36%. Volatility recorded during the period is measured by the standard deviation, revealing a high volatility of 8.4%. The REIT index median of 3.45% is higher than the volatility mean of 3.23%, indicating the volatility of the return period is positively skewed.

The 10-year bond yield has high volatility, as indicated by its standard deviation of 7.67%; average deviation was -0.54% and the median -0.65%. The upper tail and lower tail of 16.56% and -19.07% can be interpreted with the summary statistics to show great volatility. This is partially due to the completion of a rate cycle, with rates expected to continue to rise in the future.

GDP has an average of 2.93% over the period, with a median of 3.15%. Standard deviation is relatively low at 2.01%; the maximum GDP volatility recorded during the period was 7.1% and the minimum was -2.6%.

Likewise, inflation follows the same trajectory as GDP, with an average of 5.76%, median of 5.6% and a standard deviation of 2.69%. Low volatility can be seen with a maximum of 12.4% and minimum of -0.3%

The average change in unemployment is 0.07%; greater than 0, it shows a marginally increasing unemployment rate and a median of -0.18%. The standard deviation shows a large variation of 4.10% between observations, with a maximum of 8.59% and a minimum of -13.54%.

The JSE ALSI has an average of 2.83%, indicating that since Q3 2002 the average return of the JSE ALSI has been lower than REIT returns over the observational period. The median of 4.05%, which is higher than the average, infers that the volatility has skewed the average to below the median. The standard deviation of 7.91% also highlights the volatility. This is due to the 2008 financial crisis with a maximum of 17.58% and minimum of -24.36% per quarter.

4.1.2 Normality

Table 7 : Normality Macro Determinants

Statistics	B10Y	GDP	INF	JSE	RI	UNEMP
	2002Q3	2002Q3	2002Q3	2002Q3	2002Q3	2002Q3
Sample	2016Q2	2016Q2	2016Q2	2016Q2	2016Q2	2016Q2
Observations	56	56	56	56	56	56
Jarque-Bera	0.126449	2.251588	3.392513	18.30918	14.15597	2.543308
Probability	0.938733	0.324395	0.183369	0.000106	0.000843	0.280368

At low levels of observations in a data set, the Jarque-Bera (JB) test is used to ascertain whether the data is normally distributed. The JB test for normality is a goodness of fit test to see whether the sample data has excess skewness and kurtosis (Bera & Jarque, 1980). The JB test statistic follows a chi-squared distribution with n=2 degrees of freedom.

We do not reject the null hypothesis if the probability is > 0.95 at a 5% confidence interval; additionally, it must be noted that the data set is not normally distributed.

From Table 7, we do not reject the null hypothesis that data sets are normally distributed for macro-economic determinants.

4.1.3 Unit Root Tests

Table 8 : Unit Roots

Series	Level	First Difference	No Unit Root Level	No Unit Root First Difference
B10Y	-7.16977	-6.82148	TRUE	TRUE
GDP	-2.27237	-5.39502	FALSE	TRUE
INF	-4.13765	-4.29844	TRUE	TRUE
JSE	-5.92135	-7.72028	TRUE	TRUE
RI	-7.62730	-8.57277	TRUE	TRUE
UNEMP	-8.03063	-8.41498	TRUE	TRUE

From Table 8, the stationary results from Augmented Dickey-Fuller (ADF) test for the first difference show that there are no unit roots for the variables at a 5% significance level. The variables are stationary and integrated of the same order I (1), and we can proceed to the Johansen Cointegration test.

4.1.4 Lag Selection

A study by (Tsai & McQuarrie, 1998) used various statistical models to run numerous simulations; they found, in general, that this is no “best criteria” when deciding a model and that the standard Akaike Information Criterion model yields too many lags.

In our observations, we run the AIC model, Stochastic Cointegration (SC) model and Hannan-Quinn (HQ) model.

In conclusion, Tsai and McQuarrie detail that selection should be one that minimises these criteria. (Khim & Liew, 2004) details the appropriate lag length to use when using quarterly data, for samples greater than 120, the HQ criteria are preferred, and for values below 120

the SC criteria is preferred. From Table 9, we select the SC and HQ values, indicating a lag (1,2), as it minimises these values.

Table 9 : Lag Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-686.9796	NA	722031.30000	27.67918	27.87038	27.75199
1	-570.8026	204.47140	18930.52000	24.03211	25.17932*	24.46897*
2	-543.7139	42.25839	17956.96000	23.94856	26.05178	24.74948
3	-513.5136	41.07249*	15797.84*	23.74054	26.79978	24.90552
4	-493.6162	23.08094	22746.88000	23.94465	27.95990	25.47368
5	-461.6035	30.73224	22883.02000	23.66414	28.63540	25.55722
6	-425.2673	27.61549	23655.64000	23.21069*	29.13796	25.46783

4.1.5 Cointegration Test

Table 10 : Trace and Eigenvalue Tests

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob**
None *	0.75328	210.88370	95.75366	0.00000
At most 1 *	0.59021	136.71120	69.81889	0.00000
At most 2 *	0.50933	89.42989	47.85613	0.00000
At most 3 *	0.37482	51.69530	29.79707	0.00000
At most 4 *	0.29274	26.80051	15.49471	0.00070
At most 5 *	0.14727	8.44366	3.84147	0.00370

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob**
None *	0.75328	74.17256	40.07757	0.00000
At most 1 *	0.59021	47.28128	33.87687	0.00070
At most 2 *	0.50933	37.73459	27.58434	0.00180
At most 3 *	0.37482	24.89479	21.13162	0.01410
At most 4	0.29274	18.35685	14.26460	0.01070
At most 5 *	0.14727	8.44366	3.84147	0.00370

From Table 10, the trace test statistics rejects the null hypothesis of no cointegration among variables if the test statistic is greater than critical value at 5%.

From both tables “at most 5” is rejected by the maximum eigenvalue and trace test.

We can clearly see that cointegration does exist; hence, we reject the null hypothesis of no cointegration among the variables as all the variables have long-run associations. Since cointegration is found among the variables, we select the VECM model.

4.1.6 Vector Error Control Model

Table 11 : VECM Model Cointegration Vector

Series	Coeff	Std Error	T Statistic
RI (-1)	1		
B10Y (-1)	-2.29186	-0.46963	[-4.88011]
JSE (-1)	0.99255	-0.34264	[2.89680]
UNEMP (-1)	-1.11987	-0.92182	[-1.21485]
INF (-1)	2.66144	-0.81870	[3.25083]
GDP (-1)	-1.96047	-1.31957	[-1.48569]
C	-0.154773		
R-squared	0.896771		

The coefficients in the cointegration equation give the estimated long-run relationship among the variables; the co-efficient on that term in the VECM shows how deviations from that long-run relationship affect the changes in the variable in the next period.

The significant variables are the 10-year government bond yield, JSE ALSI, and inflation; GDP and unemployment are the insignificant variables.

The interest rate is, as expected, of great statistical significance for REIT returns; (Chen et al, 1998) and then later (Brooks & Tsolacos, 2011) showed the significance of the interest rate and the negative correlation between the variables.

Our data supports this hypothesis with the interest rate being the strongest variable for our model. If we consider that when determining present value, future higher interest rates

reduce the present value of future cash flows in today's terms, it would be safe to assume that when interest rates rise, REIT returns will start to decrease.

Our findings on inflation are supported by (Cohen, 2012) and (Chatrath, 1998), both their papers detail the effect of inflation on REIT returns and their statistical significance.

Our results support this, showing a correlation between REIT returns and inflation, and that there is a positive correlation between the variables.

The JSE ALSI is positively correlated but less statistically significant than inflation or interest rates. Literature from (Wang, Erickson, & Chan, 1995), (Clayton & MacKinnon, 2003) supported our results; their results showed the positive correlation but not the significance of the variable.

Upon further research (Keim & Gyourko, 1992) suggested that the stock market reflects information of the real estate market but that this was also dependent on the frequency of property appraisals. Additionally, they also analysed the return and risk properties of the REITs dependence on rental cash flows from existing buildings. This may suggest why the degrees of significance between stock market returns and REIT returns appears low.

GDP and unemployment remain insignificant in relation to REIT returns. Consistent with our brief literature on unemployment, (Fei, Ding, & Deng, 2011) showed that unemployment is statistically significant for REIT returns under certain economic conditions, e.g., high US unemployment tends to increase US REIT share prices.

In South Africa, we expected the opposite to occur since the country has one of the highest unemployment rates in the world (StatsSA, 2016). We find that unemployment is negatively correlated and the significance is low.

The statistical significance of GDP, however, remains the anomaly in our results. From research by (Cloete, 2004) and (Sanders C. H., 1990), we expected REIT returns to be statistically significant and positively correlated. And, while being more statistically significant than unemployment, our hypothesis of positive correlation is rejected.

This leaves us consider us to why our results contradict (Cloete, 2004) and (Sanders C. H., 1990). (Chiang, Lee, & Wisen, 2004) attempted to explain this anomaly, by dissecting the

asymmetry between the market beta of equity REITs, based on high and low GDP states in both an increasing and decreasing monthly REIT returns.

After trying to control for known effects, they conclude that controls for size and stock market returns are required.

Their determination addresses the relatively small size of REITs in South Africa compared to the overall market in contrast to rest of the world. In addition, the change in legislation may prove to be a significant determinant of REIT returns when comparing GDP and REIT returns.

Table 12 : Summary of Hypothesis Vs Testing

Variable	Hypothesis	Literature
GDP	$B_i > 0$	$B_i < 0$
Inflation	$B_i > 0$	$B_i > 0$
Stock Market	$B_i > 0$	$B_i > 0$
Interest Rate	$B_i < 0$	$B_i < 0$
Unemployment	$B_i < 0$	$B_i < 0$

When inflation and the JSE ALSI increase, we expect REIT returns to rise, and when interest rates increase, we expect REIT returns to decrease as the cost of funding increases.

As expected, when unemployment increases we may find that REIT returns start to decrease. Our expectation that REIT returns would increase when the GDP increases is rejected from our hypothesis testing.

The r-squared denotes a goodness of fit for our data and is a respectable statistical model showing that at least 89% of REIT returns can be attributed to our suggested economic determinants.

4.2 Firm-Specific Determinants

Table 13 : General Observations

Statistics	SIZE	B10Y	BTM	DPS	EPS	GDP	INF	JSE	LEVERAGE	RI	UNEMP
Observations	122	122	122	122	122	122	122	122	122	122	122
Mean	30.9693	0.2168	-12.8602	9.1366	5.7750	8.2579	5.8230	11.0040	-8.7470	14.0839	0.6171
Median	24.8186	1.0886	-3.8319	8.7017	11.2553	7.8429	5.9000	13.1486	-4.3121	15.0097	0.7874
Maximum	180.3162	24.2131	96.0490	127.3605	639.7459	14.3095	16.3000	40.5737	141.0987	93.6093	13.4425
Minimum	-26.3253	-24.6079	-671.712	-335.475	-924.796	4.5233	-2.5000	-32.1598	-181.915	-42.9624	-23.9693
Std. Dev.	32.0918	11.7726	67.2271	38.1089	156.6679	2.4134	2.7990	15.3348	52.6111	20.3494	5.2647
Skewness	1.4506	-0.2475	-7.9337	-5.7734	-1.8413	0.6698	0.9417	-0.6944	-0.5257	0.3147	-1.4185
Kurtosis	6.7994	2.5788	77.3224	57.0700	17.2954	2.7197	6.3721	3.7993	5.1016	4.4734	9.7744
Jarque-Bera	116.1661	2.1474	29359.27	15539.22	1107.763	9.5204	75.8330	13.0517	28.0725	13.0484	274.2016
Probability	-	0.3417	-	-	-	0.0086	-	0.0015	0.0000	0.0015	-

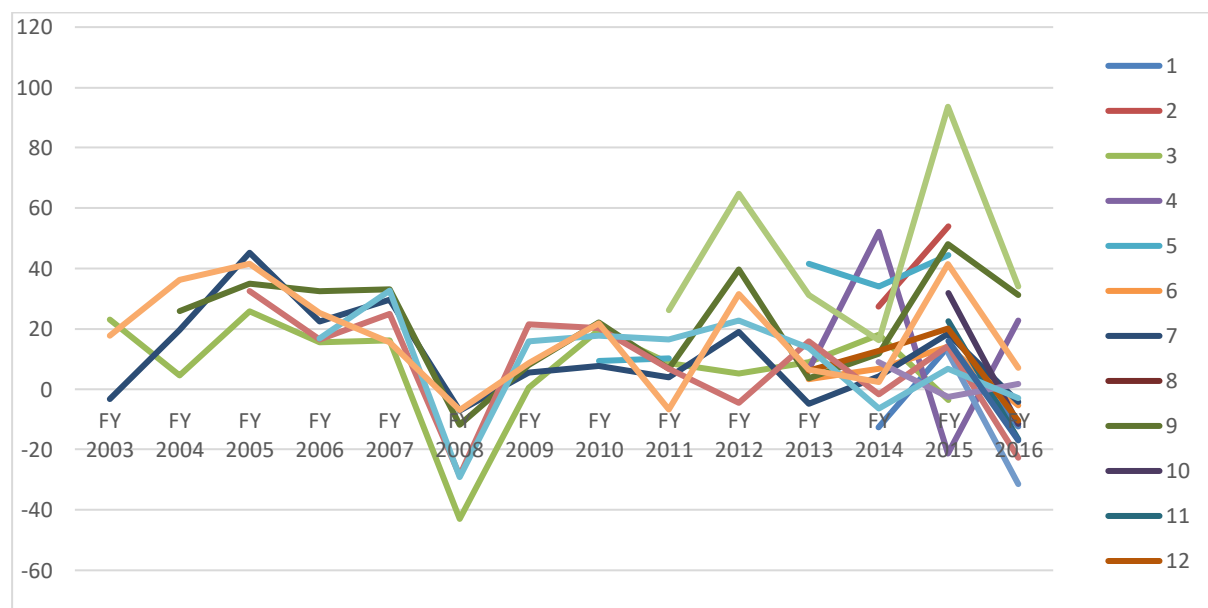
4.2.1 General Observations

Table 13 displays the summary statistics for firm-specific determinants. The original total number of observations for each of the variables across South African listed REITs was 147 from 2003 to 2016. Upon inspection, firm data and reporting posted insignificant observations during their opening period and were excluded from the data.

The final number of observations was 122 with various firms operating from different periods from 2002.

Since REITS are a relatively new class on the JSE, a number of new firms have entered the stock exchange and have grown exponentially. Firms are also absorbing smaller entrants to increase cost efficiencies.

Figure 10 : Firm REIT Returns



Consistent with the 2008 financial crisis, firms experienced a downturn; those that were able to recover underwent a subsequent revival. (Newell & Peng, 2015) confirmed this in their study of the international impact on Australian REITs, noting that firms with high gearing fared worse in performance rehabilitation. SA REIT firms returns seem consistent with this, experiencing growth and value shrinkage together as expected of an industry.

Figure 11 : Change in Firm Earnings Per Share

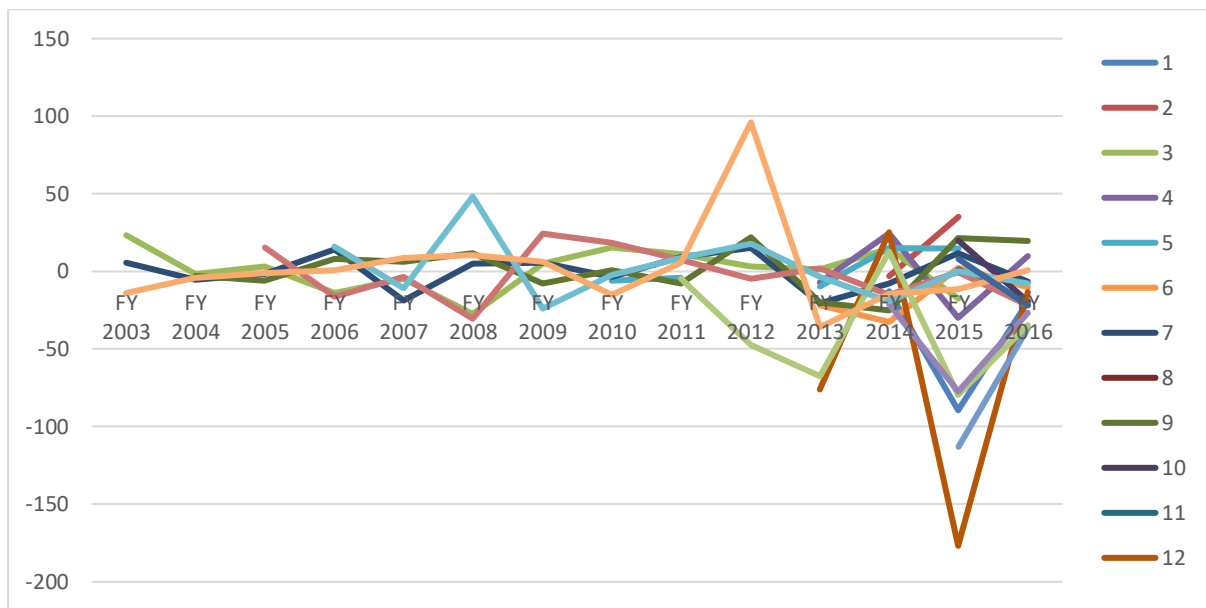
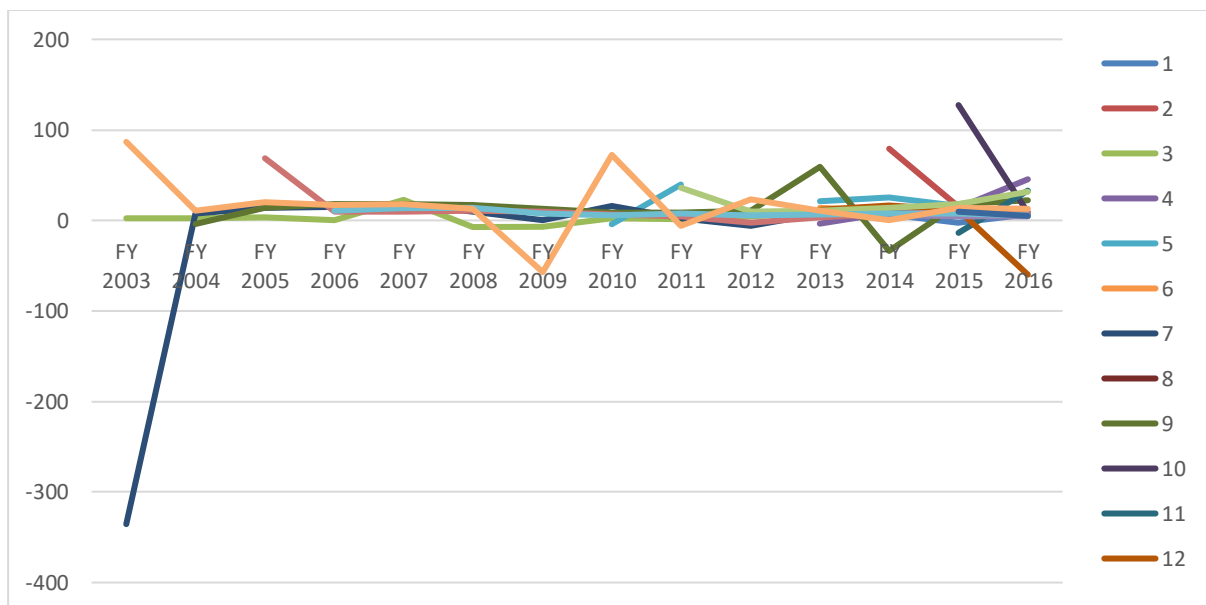


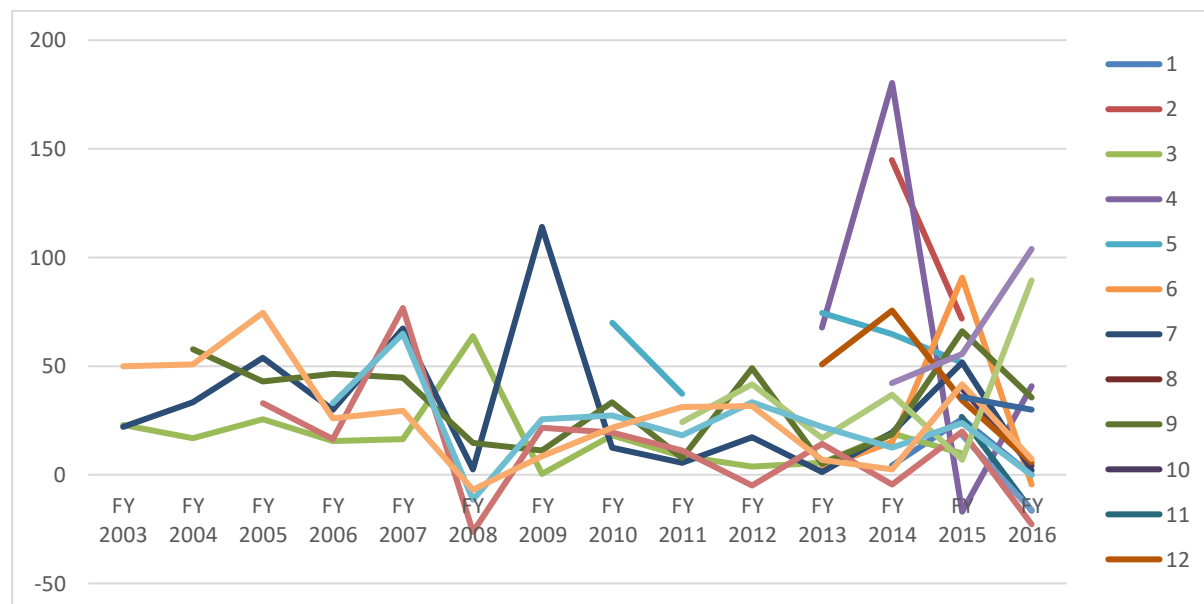
Figure 12 : Change in Firm Dividend Per Share



Both EPS and DPS reflect a consistent message of growth with the mean being 9% and 5%. The reflection of a low of -335% and -924% shows the impact of the 2008 financial crisis. Consistent with studies regarding Malaysian REITs, (San & Malasia, 2011) noted that current stock prices in crises periods were poor reflections on firm earnings and financing ability. Similarly, the maximum of 127% and 639% reflect the financial rebound post-crisis.

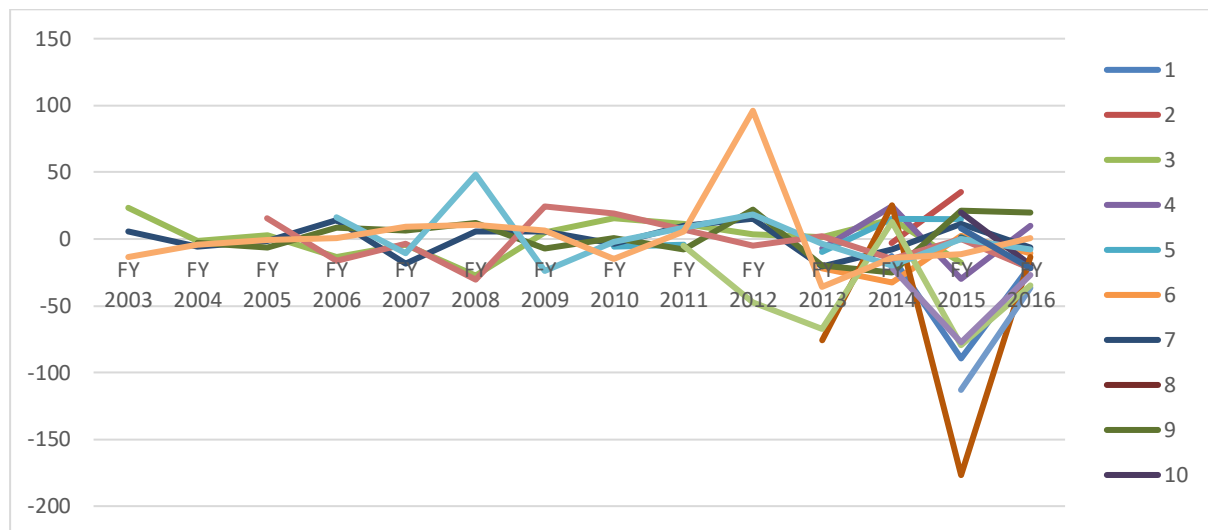
From Figure 12 we can also see the number of new entrants into market post-2013 legislation. As more individuals look to diversify their portfolios, the demand for a REIT alternative has increased considerably.

Figure 13 : Change in Firm Size



The size of listed REITS have an average of 30% throughout the period, whilst this is high it is expected with a fairly new asset class with multiple new listing that is growing fast by absorbing and purchasing assets. The maximum of 180% is in line with expectations and the minimum of -26% follows with smaller firms selling off their assets to bigger players, and being absorbed by other firms too. Interestingly, firms seem to respond to the change in legislation with existing firms increasing their market cap post-2013 during financial years 2014 and 2015. (Brown, Cudd, & Crain, 2000) noted in their study of the change in tax legislation with regards to US REITs that institutional ownerships of REITs increased, spurring demand for REIT investment options. They observed new market entrants due, in part, to investor demand. Similar observations were recorded by (Howe & Jain, 2004) in the US REIT Modernization Act of 1999. A key observation from the data set is also the reliance of the industry on a few key firms which make up the bulk of REIT firms listed on the JSE. One can expect that the shift of the larger firms to have a significant impact on the stock performance of smaller firms.

Figure 14 : Change in Firm Book-To-Market Value

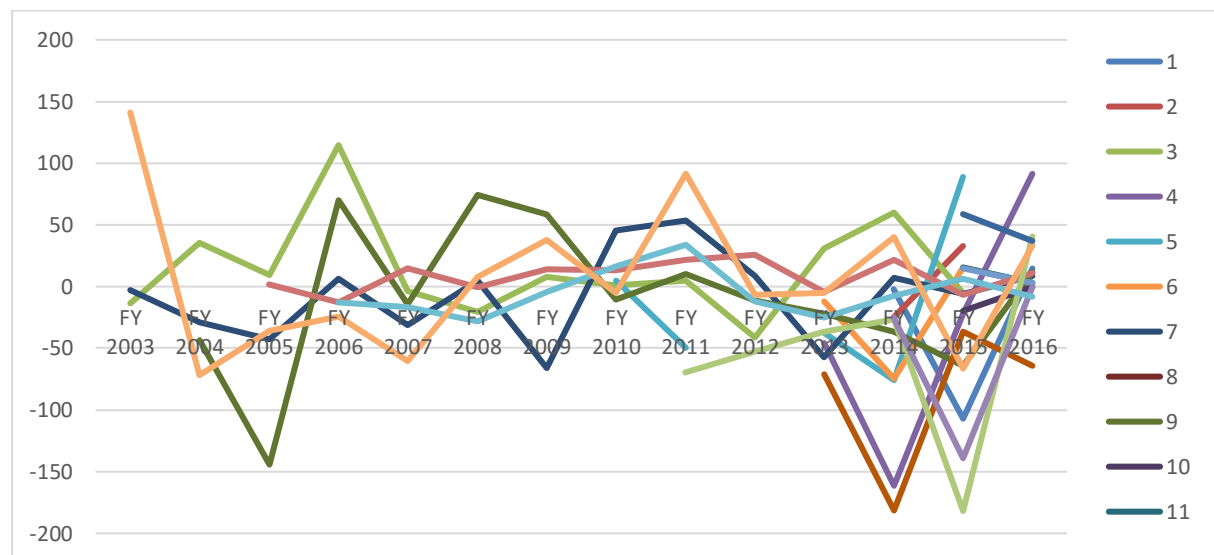


The BTM ratios are also extreme, with the change following suite as their limits tend toward 1 from a high position. We can also see that, post-legislation, there was an impact on a firm's BTM ratios. Examining the data, it seems that we are going through a transition phase and that firms' BTM will look to normalise again in the future. (Baik, Billings, & Morton, 2006) examined the effect of Generally Accepted Accounting Principles (GAAP) on REIT performance and market perceptions. They found that the reliance of FFO as an estimator for firm performance changed when firms reported on the GAAP standard, with investors having perceived lessor manipulation and instead placing greater reliance on other metrics, such as BTM and EPS. This concurs with our observation that BTM is key metric when evaluating firm performance.

The change in leverage shows the effect of legislation, with firms being forced to de-leverage towards a maximum of 30%. The data set seems to be very volatile but a few firm observations seem consistent with each other. In addition to the post-legislation effect, we may infer that since REITs are a relatively new asset class in South Africa, the volatility can be explained by the extreme stages of growth when compared in conjunction with Figure 13. A study by (Ooi, Li-Lin, & Ong-Eng, 2008) observed that REIT firms that target leverage, played a secondary role to market timing in their financing decision of REITS. They found evidence that depending on market conditions, firms take advantage in the short run of moving away from their target leverage, and in the long run move their capital structure to

their target debt level. Relative to the South African context, regulation forced the REIT market to conform to the legislated debt level to be classified as an SA REIT.

Figure 15 : Change in Firm Leverage



4.2.3 Panel Regression Model

From Table 11, we have determined the significant macro-economic determinants of REIT returns through the VECM model. As a start to our stepwise panel regression, we begin with the significant variables: the 10-year government bond yield, the JSE ALSI and inflation. We then incorporate the firm-specific variables into our panel model.

We will estimate the equation using a stepwise regression until all variables are tested.

Table 14 : Stepwise Panel Regression

Statistics	Eq1	Prob	Eq2	Prob	Eq3	Prob	Eq4	Prob	Eq5	Prob	Eq6	Prob
Constant	7.58	0.08	7.67	0.08	-0.07	0.99	-0.05	0.99	0.59	0.89	1.84	0.66
B10Y	-0.68	0.00	-0.66	0.00	-0.54	0.00	-0.53	0.00	-0.54	0.00	-0.54	0.00
JSE	0.47	0.00	0.46	0.00	0.37	0.00	0.37	0.00	0.35	0.00	0.33	0.00
INF	0.25	0.69	0.20	0.75	0.34	0.56	0.34	0.56	0.20	0.73	0.05	0.93
BTM			-0.02	0.39	-0.01	0.58	-0.01	0.58	-0.01	0.56	-0.01	0.65
SIZE					0.26	0.00	0.26	0.00	0.25	0.00	0.23	0.00
EPS							0.00	0.89	0.00	0.88	0.00	0.84
DPS									0.08	0.06	0.08	0.04
LEV											-0.04	0.18
R-squared	0.23		0.24		0.40		0.40		0.42		0.43	
F-statistic	12.03		9.18		15.24		12.60		11.59		10.44	
DW -stat	1.73		1.75		1.78		1.77		1.82		1.84	
SE of Reg	18.03		18.05		16.15		16.21		16.03		15.97	
Prob(F-Stat)	0.00		0.00		0.00		0.00		0.00		0.00	

Our selection for our base variables to begin testing stems from our VECM model results, the 10-year government bond, the JSE ALSI and inflation. From our literature (Schulte, 2009) identified in his testing that both interest rates and stock market returns play a part in US REIT returns. Inflation through our identified VECM model will also be added as a starting point for the base equation.

From our base equation when BTM is added to the equation, inflation statistical significance increases marginally and our goodness of fit increases. When Size is added to the regression model, the goodness of fit increase significantly with inflation increase in statistical significance. The addition of EPS has a minimal impact to our model and marginal increases are gained from adding DPS and LEV. From table 14, our probability(F-Stat) is less than 0.0001 at all significance levels with a highest F-stat when Size is added to our model. The

Durbin Watson Test(DW- stat) is a measure of autocorrelation, where 0-2 is positive autocorrelation, 2 is no autocorrelation and 2-4 is negative autocorrelation. As we add more variables to the equation the DW-stat increases and tends to no autocorrelation in the data.

As expected the interest rate and the JSE ALSI are statistically significant; inflation is less statistically significant, though. But as more firm determinants are added, inflation decreases in significance.

The 10-year government bond is found to be greatly statistically significant with a probability greater than 0.001. Likewise, the stock performance is also statistically significant with a probability less than 0.001; the performance of both variables is consistent with our hypothesis.

BTM ratios of firms are not statistically significant from our panel data set and our hypothesis of negative correlation is supported by (Schulte, 2009) and (Chen et al, 1998).

To understand this result, we look to (Loughran, 2009) as he provided a counterintuitive view to the BTM ratios initially reported by Fama and French. His results suggest that if the data is driven by two features—the January seasonal BTM effect and the small returns of young growth stocks—BTM has less importance on stock returns.

Consistent with our hypothesis, BTM is negatively correlated with REIT stock returns from Table 4 and Table 14. However BTM is statistically insignificant with a probability greater >0.65. We do not reject our null hypothesis of $B_i < 0$.

This view may be echoed in our panel data set, as small firms have been absorbed into larger REIT firms' pre-2013 legislation, and, post-legislation, there have been a number of new market entrants.

From the panel data results, we see that size is positively correlated with REIT returns and is greatly statistically significant. This follows our hypothesis statement and is supported by (McIntosh, Liang, & Tompkins, 1991) and (Schulte, 2009). From Table 4 and Table 14, size was found to be statistically significant with a probability of <0.0001. We do not reject our null hypothesis of $B_i > 0$ and size is positively correlated to stock returns.

In the South African context, as suggested, earlier economies of scale can be found, i.e., larger firms being able to source cheaper funding for larger deals, increasing the probability of REIT returns through property developments.

In contrast, smaller firms tend to go through growth phases offering minimal returns while building up their asset base; this is supported by the increased number of new REIT market entrants.

EPS is not statistically significant and positively correlated. Our hypothesis, derived by (Schulte, 2009) and (Ling & Naranjo, 1999), holds true but the significance does not.

An explanation may be found through the change in legislation where firms were not forced to distribute 75% of their taxable earnings. We do not reject the null hypothesis of $B_i > 0$, and EPS is positively correlated. EPS is less statistically significant with a probability greater than 0.84 from Table 4 and Table 14.

Contrarily, DPS, as expected, is statistically significant and positively correlated. (Bradley, Capozza, & Seguin, 1998), (Hardin, Highfield, Hill, & Kelly, 2009) and (Schulte, 2009) support our hypothesis and statistical significance. DPS is found to be greatly statistically significant at the 10% level. We do not reject the null hypothesis $B_i > 0$, and dividends is positively correlated with firm returns from Table 4 and Table 14.

Currently, firms are forced to distribute at least 75% of their earnings to shareholders; this alone shows that DPS is highly correlated with REIT returns as higher DPS increases the stock price.

Lastly, leverage ratios supported by (Chan, Hendershott, & Sanders, 1990), (Schulte, 2009) and (Giambona, Harding, & Sirmans, 2008) showed a negative correlation between firms' returns and leverage, which lends support to our hypothesis. Leverage is found to be less statistically significant with a probability of less than 0.18 and is negatively correlated with stock returns from Table 4 and Table 14.

We do not reject the null hypothesis of $B_i < 0$. (Allen, Madura, & Springer, 2000) suggested an explanation for the significance of that, in that, in addition to leverage, REIT firms need to use a combination of tools such as asset structure and REIT industry specialisation to

minimise the impact of market risk and interest rate risk. Looking at the South African REIT industry, REITS have not yet matured enough to sub-specialise into different asset holdings, such as Medical, Retail and Industrial, but the majority have a diversified asset holding across industries. This may lend credence to the argument that the risk of non-specialisation may lead to an increased market risk of funding.

The regression model has a goodness of fit of 0.43, showing that at least 43% of REIT firm returns can be attributed to our suggested determinants.

4.3 Summary of Results

Table 15 : Summary of Results

Variable	Hypothesis	Result
Inflation	$B_i > 0$	$B_i > 0$
Stock Market	$B_i > 0$	$B_i > 0$
Interest Rate	$B_i < 0$	$B_i < 0$
Book-to-Market Value	$B_i < 0$	$B_i < 0$
Size	$B_i > 0$	$B_i > 0$
Earnings per Share	$B_i > 0$	$B_i > 0$
Leverage	$B_i < 0$	$B_i < 0$
Dividend	$B_i > 0$	$B_i > 0$

5 Conclusion

By exploring the characteristics of both REIT performance and firm determinants in the South African market, this study has arrived at several conclusions, based on the questions this study sought to answer, namely:

- To identify the macro-economic variables that may influence performance of SA REITs;
- To identify the firm-specific variables that may influence individual performance of SA REITs

Both the 10-year government bond rate and the JSE ALSI index influence the performance of the REIT market. The 10-year government, in particular, highlighted the relationship between REIT performance and interest rate.

The first notable point derived from our observations is that the South African market only experienced a short upward interest rate cycle in the latter part of the collected time series data. While this should not alter our conclusion, we need to make a note of this for future research as the converse must be tested too; for in a downward rate cycle South African stock, interest rate and REIT performance are highly correlated.

A further observation was that the performance of the South African stock market has an impact on listed REIT performance. While lags may exist, the results of our analyses show a respectable correlation of both upwards and downwards cycles. Looking at of the 2008 financial crises, data revealed that South African REITs were not immune to global and local market performance.

And while GDP and unemployment, as determinants, had little to no relationship with REIT performance, there is still need for further analysis of the role unemployment plays as a determinant of REIT performance. South Africa is in a unique situation as a developing economy in that it has high unemployment rates, and our observations have only included an upward cycle with REIT performance.

The result may well be different if South Africa were to grow formal employment more than its population grows, creating a greater need for more buildings and infrastructure to be built. However, as of this point, no conclusive deductions can be made.

Another significant result that warrants discussion is, that compared to our international peers, SA's GDP seems to be negatively correlated to REIT returns.

Overall, this study emphasises that when interest rates decrease, inflation and stock markets returns increase, resulting in a position where investors are more likely to benefit from higher REIT stock returns.

Importantly, the comparison between firms yielded significant results too. Both a firm's leverage and its BTM ratios are significant factors that contribute its performance.

Dividends, earnings per share and market cap are less statistically relevant as determinants of a firm's performance.

However, we do need to bear in mind that there are two time periods that need to be taken into account; pre- and post- 2013 legislation. Investors should rationalise that firms that make up the REIT Index since 2013 have had their firm structure and performance shift significantly to comply with the standards imposed by the legislature.

In terms of firm-specific determinants, we have again observed GDP as negatively correlated to REIT returns, converse to our assumptions and international literature, while size, dividend per share, the stock market return and the 10-year government bond yield are statistically significant.

This study emphasises that when interest rates decrease, stock market returns increase, dividend returns increase and a firm's size increases, investors are more likely to benefit from higher REIT stock returns. As such, despite providing useful insights into the South African REIT market, there are limits to this research paper that investors should take note of.

The exclusion of data before 2003 may be not as significant as expected, but well-established REITs may have been incorporated into larger firm structures during that period. Additionally, the REIT market is still in its infancy as firms adjust to international standards

and best practices to maximise economic profit within REIT legislature. A future study would be needed, highlighting the progression of the South African REIT market.

Lastly, with regards to regression techniques, investors could be presented with more significant tools to direct their investments over different investment cycles should they use more complex models to break up the investment period.

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Appendix: Data – Macro Variables

Date	10YB	GDP	Inf	Unemp	RI	JSE
2003/03	-4.21%	-0.17%	6.60%	10.15%	9.16%	-17.22%
2003/06	-7.40%	3.20%	2.80%	0.00%	1.63%	8.75%
2003/09	3.78%	2.89%	-1.20%	-3.07%	-4.59%	6.87%
2003/12	-4.79%	1.83%	-1.20%	0.00%	16.83%	16.37%
2004/03	4.92%	1.87%	-0.30%	-7.04%	-3.50%	2.94%
2004/06	8.13%	3.65%	1.40%	0.00%	0.21%	-5.46%
2004/09	-10.60%	3.92%	2.20%	-12.88%	8.09%	16.35%
2004/12	-9.70%	2.90%	0.50%	0.00%	17.32%	7.62%
2005/03	-2.03%	-1.05%	3.60%	5.22%	7.55%	5.07%
2005/06	-1.58%	4.64%	1.30%	0.00%	6.40%	6.44%
2005/09	-0.50%	5.17%	-0.60%	-2.89%	15.54%	19.22%
2005/12	-5.85%	2.38%	1.10%	0.00%	8.88%	7.23%
2006/03	-2.77%	-1.29%	0.80%	-1.70%	18.07%	12.46%
2006/06	12.64%	4.21%	2.50%	0.00%	-14.22%	4.35%
2006/09	4.22%	8.02%	4.50%	-4.33%	5.52%	5.35%
2006/12	-9.61%	1.63%	7.20%	0.00%	15.59%	11.35%
2007/03	-2.82%	2.11%	3.60%	6.79%	14.53%	9.44%
2007/06	6.72%	2.93%	4.20%	0.00%	1.89%	3.92%
2007/09	4.32%	5.23%	5.40%	-11.02%	5.82%	5.72%
2007/12	-1.89%	3.46%	7.10%	0.00%	0.23%	-3.34%
2008/03	10.49%	0.26%	7.90%	10.48%	-13.03%	2.17%
2008/06	12.99%	4.77%	7.10%	-2.59%	-21.38%	2.79%
2008/09	-12.66%	4.48%	8.40%	0.88%	21.74%	-21.63%
2008/12	-13.50%	-0.50%	7.90%	-5.70%	6.96%	-9.76%
2009/03	7.80%	-1.69%	9.50%	6.98%	-1.80%	-5.32%
2009/06	5.34%	2.90%	7.60%	0.87%	-6.45%	8.28%
2009/09	-2.03%	3.96%	7.30%	5.60%	9.79%	12.98%
2009/12	3.79%	1.39%	4.00%	-1.63%	1.27%	11.06%
2010/03	-1.22%	-1.06%	4.40%	4.15%	8.44%	3.91%
2010/06	0.78%	6.87%	3.90%	0.00%	-0.86%	-8.66%
2010/09	-11.90%	1.77%	2.90%	1.20%	8.43%	12.18%
2010/12	5.81%	2.59%	4.40%	-5.91%	3.22%	9.04%
2011/03	6.68%	0.35%	2.70%	3.77%	-7.01%	0.27%
2011/06	-4.92%	3.50%	5.00%	3.23%	6.15%	-1.05%
2011/09	-2.94%	3.05%	5.20%	-2.34%	-2.11%	-6.87%
2011/12	3.15%	2.80%	4.40%	-4.80%	4.84%	7.79%
2012/03	-1.65%	-1.86%	4.80%	5.04%	6.15%	4.90%
2012/06	-2.51%	4.65%	5.10%	-0.80%	5.56%	0.46%
2012/09	-9.31%	1.78%	4.70%	1.61%	12.59%	6.08%

2012/12	-0.41%	2.06%	5.40%	-2.78%	0.61%	9.77%
2013/03	0.27%	0.21%	6.00%	2.04%	4.44%	1.56%
2013/06	7.44%	4.37%	5.10%	1.20%	-6.77%	-0.71%
2013/09	2.64%	2.51%	4.90%	-3.16%	5.19%	11.25%
2013/12	2.09%	1.90%	5.80%	-1.63%	-1.78%	5.05%
2014/03	2.40%	-0.11%	5.90%	4.56%	0.00%	3.27%
2014/06	-2.11%	2.43%	6.10%	1.19%	2.81%	6.64%
2014/09	-2.16%	2.61%	5.70%	-0.39%	4.88%	-3.16%
2014/12	-3.92%	1.94%	5.60%	-4.33%	10.61%	0.88%
2015/03	-0.38%	-1.54%	5.70%	8.64%	10.61%	4.84%
2015/06	6.66%	2.63%	5.60%	-5.30%	-6.70%	-0.72%
2015/09	1.68%	1.57%	5.70%	2.00%	5.71%	-3.32%
2015/12	10.27%	2.58%	5.10%	-3.92%	-6.02%	1.21%
2016/03	-0.75%	0.57%	7.00%	8.98%	6.73%	3.07%
2016/06	-2.37%	2.43%	5.60%	-0.37%	-3.08%	-0.06%

Appendix: Data – Firm Specific

Company	Fin Year	Date	Internal	RI	EPS	DPS	Leverage	BTM	Size	B10Y	GDP	Inf	Unemp	JSE
			Year End											
Vukile Property Fund Ltd	FY 2014	2014												
		Q1	03/31/2014	-12.62	-16.02	6.42	-2.19	-12.75	4.12	20.75	8.53	8.30	0.80	18.10
Vukile Property Fund Ltd	FY 2015	2015												
		Q1	03/31/2015	14.03	21.03	-2.56	-107.08	-89.42	25.72	-7.30	5.34	2.30	4.65	8.83
Vukile Property Fund Ltd	FY 2016	2016												
		Q1	03/31/2016	-12.43	-10.24	6.77	14.70	-19.51	-0.14	15.46	7.28	8.70	1.13	0.13
Rockcastle Global Real Estate Co	FY 2014	2014												
		Q2	06/30/2014	27.39	28.50	79.21	-24.98	-2.97	144.81	9.41	6.65	5.90	0.79	25.25
Rockcastle Global Real Estate Co	FY 2015	2015												
		Q2	06/30/2015	53.97	-95.13	15.13	32.89	35.19	71.88	-0.49	5.54	7.60	-1.98	1.68
SA Corporate Real Estate Ltd	FY 2003	2003												
		Q2	07/31/2003	23.02	36.44	2.11	-13.24	23.36	22.90	-24.01	8.05	1.60	6.76	-24.38
SA Corporate Real Estate Ltd	FY 2004	2004												
		Q2	07/31/2004	4.57	40.56	2.89	35.18	-1.44	16.88	7.98	10.10	2.60	-3.52	19.09
SA Corporate Real Estate Ltd	FY 2005	2005												
		Q2	07/31/2005	25.82	130.37	3.16	9.76	3.07	25.72	-24.61	10.19	3.80	-1.47	33.67
SA Corporate Real Estate Ltd	FY 2006	2006												
		Q4	12/31/2006	15.61	60.82	-	114.61	-13.58	15.56	3.45	12.16	5.50	-3.48	31.98
SA Corporate Real Estate Ltd	FY 2007	2007												
		Q4	12/31/2007	16.05	-56.86	22.73	-3.32	-4.62	16.25	8.30	13.47	11.30	-4.33	15.04
SA Corporate Real Estate Ltd	FY 2008	2008												
		Q4	12/31/2008	-42.96	-147.68	-7.29	-20.54	-27.39	63.77	-13.86	8.80	2.30	-2.68	-29.74

		2009												
SA Corporate Real Estate Ltd	FY 2009	Q4	12/31/2009	0.39	-122.27	-7.17	7.62	5.11	0.38	22.57	6.41	4.40	9.99	25.17
		2010												
SA Corporate Real Estate Ltd	FY 2010	Q4	12/31/2010	19.51	639.75	2.58	1.21	15.51	18.05	-11.67	9.89	4.30	-0.83	14.92
		2011												
SA Corporate Real Estate Ltd	FY 2011	Q4	12/31/2011	8.78	-51.32	1.44	4.51	10.99	8.75	0.59	9.56	6.60	-0.42	-0.42
		2012												
SA Corporate Real Estate Ltd	FY 2012	Q4	12/31/2012	5.09	79.69	4.50	-41.30	3.18	3.85	-18.93	6.47	8.70	2.48	20.47
		2013												
SA Corporate Real Estate Ltd	FY 2013	Q4	12/31/2013	8.95	63.11	8.24	31.11	1.67	5.39	15.23	8.85	5.70	-1.65	16.42
		2014												
SA Corporate Real Estate Ltd	FY 2014	Q4	12/31/2014	18.15	-16.60	8.63	60.21	14.59	18.93	0.79	6.79	3.60	0.83	7.32
		2015												
SA Corporate Real Estate Ltd	FY 2015	Q4	12/31/2015	-3.42	43.32	10.71	-5.37	-17.49	9.71	20.63	5.16	4.30	0.82	1.84
		2013												
MAS Real Estate Inc	FY 2013	Q1	02/28/2013	6.60	-318.02	-3.55	-45.51	-6.84	67.62	-13.91	8.56	6.10	-0.80	17.22
		2014												
MAS Real Estate Inc	FY 2014	Q2	06/30/2014	52.18	-549.24	8.20	-161.46	24.53	180.32	9.41	6.65	5.90	0.79	25.25
		2015												
MAS Real Estate Inc	FY 2015	Q2	06/30/2015	-21.31	131.58	13.95	-22.13	-29.83	-17.00	-0.49	5.54	7.60	-1.98	1.68
		2016												
MAS Real Estate Inc	FY 2016	Q2	06/30/2016	22.91	-96.59	45.45	91.38	9.79	40.71	6.45	7.08	6.40	6.20	0.79
New Europe Property Investments PLC		2010												
New Europe Property Investments PLC	FY 2010	Q4	12/31/2010	9.37	22.28	-4.23	4.56	-5.77	69.96	-11.67	9.89	4.30	-0.83	14.92
		2011												
New Europe Property Investments PLC	FY 2011	Q4	12/31/2011	10.26	92.01	39.68	-49.57	-4.39	37.28	0.59	9.56	6.60	-0.42	-0.42

New Europe Property Investments PLC	FY 2013	2013 Q4	12/31/2013	41.55	52.57	20.81	-37.14	-9.66	74.47	15.23	8.85	5.70	-1.65	16.42
New Europe Property Investments PLC	FY 2014	2014 Q4	12/31/2014	34.17	40.87	25.67	-75.84	15.06	64.91	0.79	6.79	3.60	0.83	7.32
New Europe Property Investments PLC	FY 2015	2015 Q4	12/31/2015	44.45	24.53	15.82	88.84	14.86	51.55	20.63	5.16	4.30	0.82	1.84
Octodec Investments Ltd	FY 2013	2013 Q3	08/31/2013	3.31	189.70	13.79	-12.21	-21.98	3.31	8.15	9.01	5.90	-4.00	20.81
Octodec Investments Ltd	FY 2014	2014 Q3	08/31/2014	6.88	-5.05	10.87	-74.58	-32.54	14.97	9.49	6.75	4.90	3.61	11.37
Octodec Investments Ltd	FY 2015	2015 Q3	08/31/2015	14.10	66.97	7.40	15.48	2.36	90.66	1.44	4.52	5.40	0.39	1.51
Octodec Investments Ltd	FY 2016	2016 Q2	08/31/2016	-5.34	-39.67	6.30	2.78	-10.38	-4.46	6.45	7.08	6.40	6.20	0.79
Redefine Properties Ltd	FY 2003	2003 Q3	08/31/2003	-3.09	-94.99	-335.48	-2.63	5.62	22.09	-24.25	7.40	-0.80	1.35	-5.87
Redefine Properties Ltd	FY 2004	2004 Q3	08/31/2004	19.49	74.47	7.29	-29.21	-5.52	33.42	0.39	11.09	1.70	-3.31	27.59
Redefine Properties Ltd	FY 2005	2005 Q3	08/31/2005	45.23	142.24	13.98	-42.80	-1.59	53.80	-14.26	11.38	4.40	-4.29	36.11
Redefine Properties Ltd	FY 2006	2006 Q3	08/31/2006	22.41	-42.95	14.87	6.62	13.91	29.78	6.07	12.89	9.20	0.47	28.21
Redefine Properties Ltd	FY 2007	2007 Q3	08/31/2007	29.66	56.51	18.25	-31.37	-18.71	67.54	-5.60	11.69	9.20	-15.06	29.19
Redefine Properties Ltd	FY 2008	2008 Q3	08/31/2008	-7.08	-75.52	9.98	5.13	5.31	2.31	8.11	12.70	15.70	8.34	-22.86

		2009												
Redefine Properties Ltd	FY 2009	Q3	08/31/2009	5.53	3.07	-0.14	-66.04	5.83	114.08	1.31	4.53	6.40	5.04	4.41
		2010												
Redefine Properties Ltd	FY 2010	Q3	08/31/2010	7.76	5.15	16.21	45.78	-3.40	12.54	-11.52	8.71	2.40	3.62	16.76
		2011												
Redefine Properties Ltd	FY 2011	Q3	08/31/2011	3.86	13.93	2.23	53.57	9.55	5.36	4.07	9.35	6.00	-1.19	0.74
		2012												
Redefine Properties Ltd	FY 2012	Q3	08/31/2012	19.11	59.01	-6.06	8.44	15.20	17.34	-17.44	7.19	3.50	1.98	18.65
		2013												
Redefine Properties Ltd	FY 2013	Q3	08/30/2013	-4.69	157.73	7.09	-57.04	-20.52	1.25	8.15	9.01	5.90	-4.00	20.81
		2014												
Redefine Properties Ltd	FY 2014	Q3	08/31/2014	4.27	-26.59	8.16	7.10	-7.94	19.27	9.49	6.75	4.90	3.61	11.37
		2015												
Redefine Properties Ltd	FY 2015	Q3	08/31/2015	18.30	-2.62	7.07	-5.65	11.62	51.52	1.44	4.52	5.40	0.39	1.51
		2016												
Redefine Properties Ltd	FY 2016	Q2	08/31/2016	-4.09	-28.91	7.23	8.34	-6.26	2.18	6.45	7.08	6.40	6.20	0.79
		2016												
Rebosis Property Fund Ltd	FY 2016	Q2	08/31/2016	-4.02	503.34	7.87	1.75	-22.31	3.19	6.45	7.08	6.40	6.20	0.79
		2004												
Resilient REIT Ltd	FY 2004	Q4	12/31/2004	25.93	25.10	-3.68	-43.46	-2.97	57.85	-11.64	12.14	4.90	-3.92	19.76
		2005												
Resilient REIT Ltd	FY 2005	Q4	12/31/2005	35.12	110.95	14.26	-144.31	-6.09	42.96	-8.24	10.87	4.00	-4.55	35.75
		2006												
Resilient REIT Ltd	FY 2006	Q4	12/31/2006	32.64	-20.30	18.12	69.81	8.25	46.42	3.45	12.16	5.50	-3.48	31.98
		2007												
Resilient REIT Ltd	FY 2007	Q4	12/31/2007	33.06	21.61	18.05	-14.60	6.55	44.70	8.30	13.47	11.30	-4.33	15.04

		2008												
Resilient REIT Ltd	FY 2008	Q4	12/31/2008	-11.78	-82.22	16.79	74.32	11.73	14.55	-13.86	8.80	2.30	-2.68	-29.74
		2009												
Resilient REIT Ltd	FY 2009	Q4	12/31/2009	8.03	161.82	13.28	58.12	-7.45	11.13	22.57	6.41	4.40	9.99	25.17
		2010												
Resilient REIT Ltd	FY 2010	Q4	12/31/2010	22.14	146.75	8.73	-10.90	0.88	33.48	-11.67	9.89	4.30	-0.83	14.92
		2011												
Resilient REIT Ltd	FY 2011	Q4	12/31/2011	6.85	-26.27	8.54	10.18	-7.50	7.83	0.59	9.56	6.60	-0.42	-0.42
		2012												
Resilient REIT Ltd	FY 2012	Q4	12/31/2012	39.81	50.00	10.27	-11.05	22.02	49.10	-18.93	6.47	8.70	2.48	20.47
		2013												
Resilient REIT Ltd	FY 2013	Q2	06/30/2013	3.79	97.06	59.19	-21.93	-20.03	5.09	1.09	8.29	4.00	1.59	16.05
		2014												
Resilient REIT Ltd	FY 2014	Q2	06/30/2014	11.73	26.02	-33.66	-36.53	-25.08	18.75	9.41	6.65	5.90	0.79	25.25
		2015												
Resilient REIT Ltd	FY 2015	Q2	06/30/2015	48.09	49.54	18.20	-63.82	21.34	66.06	-0.49	5.54	7.60	-1.98	1.68
		2016												
Resilient REIT Ltd	FY 2016	Q2	06/30/2016	31.23	-37.21	22.39	11.42	19.63	35.70	6.45	7.08	6.40	6.20	0.79
		2015												
Accelerate Property Fund Ltd	FY 2015	Q1	03/31/2015	31.88	-60.82	127.36	-19.71	19.85	39.78	-7.30	5.34	2.30	4.65	8.83
		2016												
Accelerate Property Fund Ltd	FY 2016	Q1	03/31/2016	-11.46	-4.41	8.68	-0.30	-19.32	4.22	15.46	7.28	8.70	1.13	0.13
		2015												
Attacq Ltd	FY 2015	Q2	06/30/2015	22.54	-12.85	-13.76	15.46	1.31	26.64	-0.49	5.54	7.60	-1.98	1.68
		2016												
Attacq Ltd	FY 2016	Q2	06/30/2016	-16.57	38.97	32.91	3.17	-21.68	-16.52	6.45	7.08	6.40	6.20	0.79

		2013												
Arrowhead Properties Ltd	FY 2013	Q3	09/30/2013	6.12	-17.54	11.65	-70.96	-76.07	50.58	8.15	9.01	5.90	-4.00	20.81
		2014												
Arrowhead Properties Ltd	FY 2014	Q3	09/30/2014	12.75	-10.96	16.47	-181.49	25.26	75.56	9.49	6.75	4.90	3.61	11.37
		2015												
Arrowhead Properties Ltd	FY 2015	Q3	09/30/2015	20.12	-7.59	12.05	-36.53	-176.77	34.03	1.44	4.52	5.40	0.39	1.51
		2016												
Arrowhead Properties Ltd	FY 2016	Q2	09/30/2016	-10.42	-60.73	-59.92	-63.82	-13.18	5.73	6.45	7.08	6.40	6.20	0.79
		2015												
Delta Property Fund Ltd	FY 2015	Q1	02/28/2015	11.92	-19.58	14.54	14.79	-112.97	18.43	-7.30	5.34	2.30	4.65	8.83
		2016												
Delta Property Fund Ltd	FY 2016	Q1	02/29/2016	-31.42	-48.66	7.69	2.94	-36.55	-16.33	15.46	7.28	8.70	1.13	0.13
		2005												
Emira Property Fund Ltd	FY 2005	Q2	06/30/2005	32.54	153.22	68.65	1.38	15.59	33.08	-24.61	10.19	3.80	-1.47	33.67
		2006												
Emira Property Fund Ltd	FY 2006	Q2	06/30/2006	16.60	91.81	9.79	-12.76	-16.21	16.60	7.82	10.21	4.80	-1.05	40.57
		2007												
Emira Property Fund Ltd	FY 2007	Q2	06/30/2007	24.87	14.63	10.02	14.61	-3.32	76.74	-2.96	14.31	9.00	-23.97	28.84
		2008												
Emira Property Fund Ltd	FY 2008	Q2	06/30/2008	-28.58	-68.86	11.12	-0.18	-30.42	-26.33	24.21	13.41	16.30	13.44	7.07
		2009												
Emira Property Fund Ltd	FY 2009	Q2	06/30/2009	21.46	-41.75	9.54	14.38	24.38	21.46	-17.91	5.03	7.70	2.14	-32.16
		2010												
Emira Property Fund Ltd	FY 2010	Q2	06/30/2010	20.34	59.84	6.53	13.17	18.76	19.33	-1.05	10.84	3.10	6.56	17.47
		2011												
Emira Property Fund Ltd	FY 2011	Q2	06/30/2011	6.91	2.07	4.91	21.62	7.31	10.96	-4.75	8.10	6.30	1.96	19.35

		2012												
Emira Property Fund Ltd	FY 2012	Q2	06/30/2012	-4.45	6.40	-2.53	25.80	-4.78	-4.78	-11.93	8.43	5.00	-3.16	5.63
		2013												
Emira Property Fund Ltd	FY 2013	Q2	06/30/2013	15.98	152.29	3.47	-4.18	1.99	14.18	1.09	8.29	4.00	1.59	16.05
		2014												
Emira Property Fund Ltd	FY 2014	Q2	06/30/2014	-1.75	-15.30	7.23	21.54	-14.86	-4.49	9.41	6.65	5.90	0.79	25.25
		2015												
Emira Property Fund Ltd	FY 2015	Q2	06/30/2015	14.42	53.56	8.62	-6.93	-0.36	19.78	-0.49	5.54	7.60	-1.98	1.68
		2016												
Emira Property Fund Ltd	FY 2016	Q2	06/30/2016	-22.64	-66.58	8.44	10.81	-21.65	-22.64	6.45	7.08	6.40	6.20	0.79
		2011												
Fortress Income Fund Ltd A	FY 2011	Q2	06/30/2011	26.24	52.58	36.00	-69.74	-4.73	24.31	-4.75	8.10	6.30	1.96	19.35
		2012												
Fortress Income Fund Ltd A	FY 2012	Q2	06/30/2012	64.75	26.73	9.72	-52.41	-47.20	41.52	-11.93	8.43	5.00	-3.16	5.63
		2013												
Fortress Income Fund Ltd A	FY 2013	Q2	06/30/2013	31.39	52.96	11.08	-36.56	-67.57	16.83	1.09	8.29	4.00	1.59	16.05
		2014												
Fortress Income Fund Ltd A	FY 2014	Q2	06/30/2014	16.25	-16.30	13.42	-26.72	12.79	37.05	9.41	6.65	5.90	0.79	25.25
		2015												
Fortress Income Fund Ltd A	FY 2015	Q2	06/30/2015	93.61	7.30	18.47	-181.92	-79.49	6.88	-0.49	5.54	7.60	-1.98	1.68
		2016												
Fortress Income Fund Ltd A	FY 2016	Q2	06/30/2016	34.04	16.38	32.05	40.55	-34.68	89.46	6.45	7.08	6.40	6.20	0.79
		2014												
Fortress Income Fund Ltd B	FY 2014	Q2	06/30/2014	9.01	-27.05	6.01	-25.25	-21.15	42.19	9.41	6.65	5.90	0.79	25.25
		2015												
Fortress Income Fund Ltd B	FY 2015	Q2	06/30/2015	-2.55	92.10	4.58	-139.14	-77.40	55.36	-0.49	5.54	7.60	-1.98	1.68

		2016												
Fortress Income Fund Ltd B	FY 2016	Q2	06/30/2016	1.85	-216.38	4.79	-0.35	-26.89	103.90	6.45	7.08	6.40	6.20	0.79
		2003												
Growthpoint Properties Ltd	FY 2003	Q2	06/30/2003	22.10	-99.91	-25.24	112.74	-8.36	55.30	-24.01	8.05	1.60	6.76	-24.38
		2006												
Growthpoint Properties Ltd	FY 2006	Q2	06/30/2006	16.73	-46.82	10.50	-13.01	16.32	33.15	7.82	10.21	4.80	-1.05	40.57
		2007												
Growthpoint Properties Ltd	FY 2007	Q2	06/30/2007	32.68	139.95	13.55	-16.58	-10.90	64.91	-2.96	14.31	9.00	-23.97	28.84
		2008												
Growthpoint Properties Ltd	FY 2008	Q2	06/30/2008	-29.11	13.47	13.45	-28.22	48.28	-11.50	24.21	13.41	16.30	13.44	7.07
		2009												
Growthpoint Properties Ltd	FY 2009	Q2	06/30/2009	15.80	-89.71	7.33	-4.45	-23.89	25.33	-17.91	5.03	7.70	2.14	-32.16
		2010												
Growthpoint Properties Ltd	FY 2010	Q2	06/30/2010	17.72	-77.53	5.60	16.52	-1.96	27.09	-1.05	10.84	3.10	6.56	17.47
		2011												
Growthpoint Properties Ltd	FY 2011	Q2	06/30/2011	16.53	-924.80	7.78	33.88	8.60	18.07	-4.75	8.10	6.30	1.96	19.35
		2012												
Growthpoint Properties Ltd	FY 2012	Q2	06/30/2012	22.80	160.42	5.93	-12.15	18.16	33.17	-11.93	8.43	5.00	-3.16	5.63
		2013												
Growthpoint Properties Ltd	FY 2013	Q2	06/30/2013	13.75	0.64	6.95	-24.72	-3.34	21.92	1.09	8.29	4.00	1.59	16.05
		2014												
Growthpoint Properties Ltd	FY 2014	Q2	06/30/2014	-6.50	-625.35	7.93	-7.78	-19.63	12.40	9.41	6.65	5.90	0.79	25.25
		2015												
Growthpoint Properties Ltd	FY 2015	Q2	06/30/2015	6.76	5.50	7.23	6.64	0.25	23.86	-0.49	5.54	7.60	-1.98	1.68
		2016												
Growthpoint Properties Ltd	FY 2016	Q2	06/30/2016	-2.99	-35.44	5.82	-8.03	-7.64	-0.26	6.45	7.08	6.40	6.20	0.79

		2003												
Hyprop Investments Ltd	FY 2003	Q4	12/31/2003	17.87	27.73	86.77	141.10	-13.59	49.74	-16.43	7.64	-2.50	-1.10	11.30
		2004												
Hyprop Investments Ltd	FY 2004	Q4	12/31/2004	36.21	233.81	10.82	-71.78	-4.27	50.63	-11.64	12.14	4.90	-3.92	19.76
		2005												
Hyprop Investments Ltd	FY 2005	Q4	12/31/2005	41.47	27.53	19.72	-35.67	-0.99	74.55	-8.24	10.87	4.00	-4.55	35.75
		2006												
Hyprop Investments Ltd	FY 2006	Q4	12/31/2006	25.28	4.45	16.91	-24.12	0.75	26.14	3.45	12.16	5.50	-3.48	31.98
		2007												
Hyprop Investments Ltd	FY 2007	Q4	12/31/2007	15.60	8.36	18.23	-60.61	8.86	29.63	8.30	13.47	11.30	-4.33	15.04
		2008												
Hyprop Investments Ltd	FY 2008	Q4	12/31/2008	-6.90	-49.92	13.17	8.00	10.82	-6.90	-13.86	8.80	2.30	-2.68	-29.74
		2009												
Hyprop Investments Ltd	FY 2009	Q4	12/31/2009	8.77	27.03	-57.10	37.95	6.51	8.77	22.57	6.41	4.40	9.99	25.17
		2010												
Hyprop Investments Ltd	FY 2010	Q4	12/31/2010	21.77	9.04	71.87	-5.41	-15.05	21.77	-11.67	9.89	4.30	-0.83	14.92
		2011												
Hyprop Investments Ltd	FY 2011	Q4	12/31/2011	-6.81	-52.44	-6.36	91.63	5.53	31.28	0.59	9.56	6.60	-0.42	-0.42
		2012												
Hyprop Investments Ltd	FY 2012	Q4	12/31/2012	31.55	140.03	23.56	-6.90	96.05	31.55	-18.93	6.47	8.70	2.48	20.47
		2013												
Hyprop Investments Ltd	FY 2013	Q2	06/30/2013	6.62	-29.06	10.72	-4.88	-35.82	6.62	1.09	8.29	4.00	1.59	16.05
		2014												
Hyprop Investments Ltd	FY 2014	Q2	06/30/2014	2.43	118.32	-	40.40	-14.21	2.43	9.41	6.65	5.90	0.79	25.25
		2015												
Hyprop Investments Ltd	FY 2015	Q2	06/30/2015	41.48	22.05	14.01	-66.22	-11.34	41.54	-0.49	5.54	7.60	-1.98	1.68

		2016												
Hyprop Investments Ltd	FY 2016	Q2	06/30/2016	7.09	-27.12	13.24	32.90	1.03	7.09	6.45	7.08	6.40	6.20	0.79
		2015												
Investec Property Fund Ltd	FY 2015	Q1	03/31/2015	16.04	47.34	9.65	58.73	8.04	35.76	-7.30	5.34	2.30	4.65	8.83
		2016												
Investec Property Fund Ltd	FY 2016	Q1	03/31/2016	-16.94	-4.70	4.95	36.97	-21.86	29.94	15.46	7.28	8.70	1.13	0.13

