
# AN ANALYSIS OF THE RISK ADJUSTED RETURNS OF ACTIVE VERSUS PASSIVE SOUTH AFRICAN GENERAL EQUITY UNIT TRUSTS DURING VARYING ECONOMIC PERIODS: AN INDIVIDUAL INVESTOR'S PERSPECTIVE.

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Throughout the two years it took me to write this thesis, I received a lot of support and encouragement along the way.

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## ABSTRACT

This thesis used the events of the 2007 financial crisis as a means of being able to add to the research already done on South African unit trusts. The objective was to study the risk-adjusted performance of South African general equity unit trusts against the market during the period between 2005 and 2014. This period took into account the bull market preceding the financial crisis, the market crash of 2007 and the subsequent market recovery that followed. Data was obtained online through the I-Net BFA data base and included 161 general equity unit trusts that contained a full data set. In addition to the general equity unit trusts, the Satrix40 was studied to compare a passive unit trust against those that are actively managed. The 10 year Government bond was also used as a risk-free rate to add to the comparisons of performance results. The Sharpe, Treynor and Jensen measures were applied to the data with the results adding more support to the opinions that markets are fairly efficient and active investment strategies are being challenged by consistently well performing passive investments. Throughout the duration of the study, taking into account the varying economic cycles, the Satrix40 passive investment showed the best average overall return on simple return calculations as well as during the risk-adjusted measurements. In support of active investment management, unit trusts showed their best relative performance figures during the period of the financial crisis. This suggested that active financial managers were able to make the active calls necessary to weather the storm of the financial crisis. While the study did have its limitations, the results it produced are intended to offer investors further knowledge in enabling them to make more educated investment decisions in the future.

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# 1. INTRODUCTION

The unit trust industry in South Africa is one of the fastest growing industries in the country with various papers being written on its growth and importance to investors. The following section aims to inform investors on the history of the industry in South Africa to where it stands today with assets under management reaching around R1.6 trillion. (Campher 2014: 1) Further introductions will be made into the forthcoming chapters including the objectives of the study.

The very first unit trust was introduced by Sage on June 14, 1965 when its founder, Louis Shill identified a new market segment that he believed would appeal to the previously stock market shy, smaller investor population. At the time of the launch of the Sage fund, many investors were uneducated as to how the stock market operated and were unwilling to invest their funds for a fear of losing their money. However, with the creation of the first unit trust, many of those investors who had avoided the stock market began to venture into the new industry because of the various benefits and attributes of unit trusts. Investors were now offered professional management of their money by someone who understood how the markets worked; their risk was greatly reduced due to the diversification of the shares held by the unit trust. Unit trusts were liquid investments meaning that investors had constant access to their money should they require it, there were various tax benefits associated with unit trusts and lastly, probably the most appealing to investors was the relatively low cost of owning shares in a unit trust and thus being a part of the stock market. (Oldert, 2014: 42)

Currently, economies are becoming more interlinked and with the continuous possibility of financial distress, there is a growing need for sound financial advice for individual investors (Madubeko, 2010: 1). Before taking an in-depth look at the local unit trust industry, it is important to compare the South African industry with that of the United States. Comparing the South African industry to the US is relevant due to the vast amount of research and information available from the United States that can be applied to the local industry in which there has been far less research completed in the past.

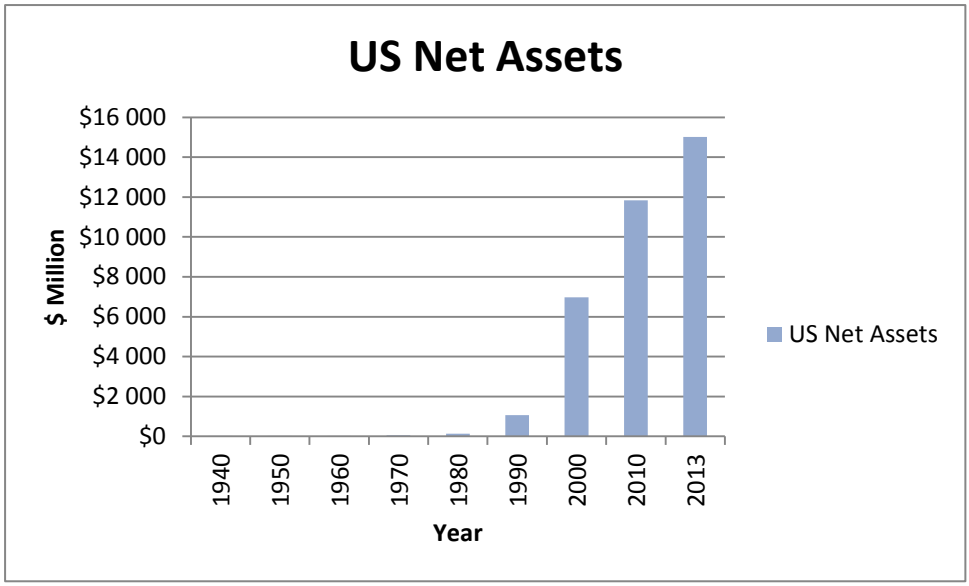
The study of unit trusts offers an array of different issues or areas that can be addressed. As the various unit trust industries expand and evolve all over the world, the need and desire for updated and improved upon knowledge is needed. Investors seek new information to assist them in their decision making and asset management companies use that information to

evaluate and reward their fund managers, through remuneration and tighter restrictions, where necessary. The growing need for financial advice is also due to the vast number of complicated investment vehicles available to investors today. It is widely known that unit trusts, also known as mutual funds internationally, are traditionally comparatively safer investments that are not too complex in nature (Oldert, 2012: 33).

## 1.1 US mutual fund industry

While the South African unit trust industry has grown into a substantial sector, in a global context it is still relatively young and fails in comparison in size and value to the United States industry. The United States mutual industry at the end of 2012 stood at a staggering $13 trillion, with Assets under control increasing by about ten times the size of the South African industry or $1.4 trillion (ICI, 2014). In 2013, the US mutual fund industry had grown to an estimated $15 trillion compared to the R1.5 trillion the South African unit trust industry is today. (ICI, 2014) In addition to these differences, the United States industry has been around a lot longer and naturally, there are many more research papers on its mutual funds. From an academic point of view, the difference in size has led to a major gap in published research and knowledge on the local industry compared to the US mutual fund industry. For this reason, the researcher thought it would be a good idea to first investigate some of those studies in order to have a comparison once the South African industry had been studied. As the South African unit trust industry grows, research papers would have larger data bases to use and longer performance histories to take into account that would lead to more up to date and significant research being published.

The graph on the following page has its input data sourced from the ICI (2014). The graph shows the exponential growth experienced by the US mutual fund industry in more recent years. Starting in 1945 with a total value of $0.45 billion, the industry has grown to control some $15 trillion.

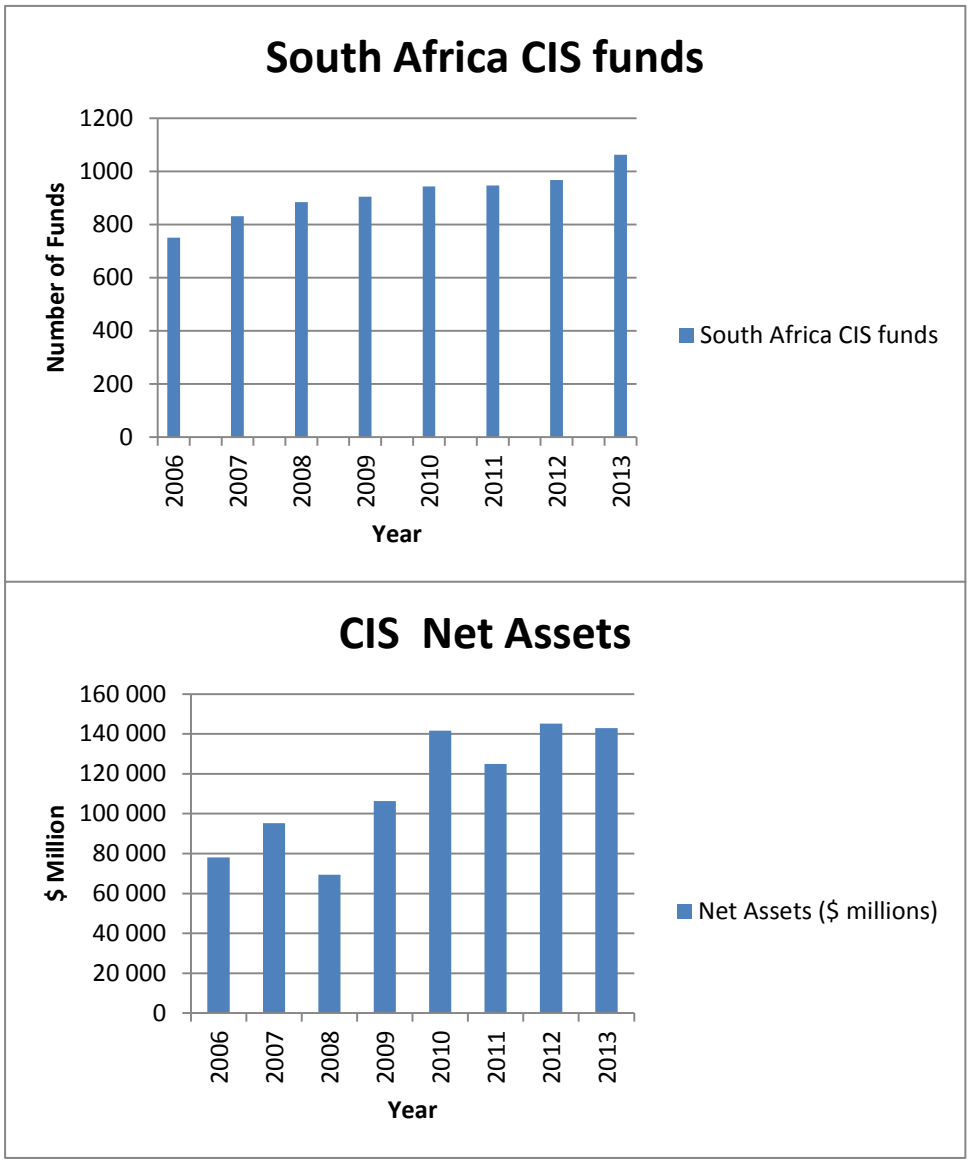



(Source: ICI, 2014)

## 1.2 South African unit trust industry

With assets of the first fund totalling R600 000, the Collective Investment Scheme industry (CIS) has grown exponentially to control assets worth around R1.6 trillion today. Of this total, South African funds make up 91% or R1.475 trillion. It is now estimated that within the CIS, 1120 funds are available to investors with 956 of those funds being classified as South African. According to the Association for Savings and Investments South Africa (ASISA) there are around 2 736 312 people invested in CIS's proving that the industry has grown into one of the most important investment vehicles for South Africans (ASISA, 2014: 1). In the year ending June 2014, the Collective Investment Industry had experienced a net inflow of R151 billion into its various funds. Of the R1.6 trillion today, an estimated 22% is invested in South African equity portfolios. Of those various equity portfolios, the general equity class that is the subject to this study has grown into an industry with assets totalling around R280 billion under management with 187 funds in operation. (Campher, 2014; 1)

The two graphs on the following page represent the number of CIS funds in South Africa as well as the net value of assets those funds hold.




(Source: ICI, 2014)

Through the decades, the industry has seen periods of rapid growth as well as periods of very limited growth attributable to market crashes and a decline in investor confidence (ASISA, 2014; Oldert, 2012). More recently the industry has caught the attention of many individual investors who are attracted to the many benefits of unit trusts (Oldert, 2012: 33). With so many South Africans invested in this industry combined with the many different options available to them, understanding what a unit trust is, the industry itself and the performance of the various unit trusts becomes an important research area so as to further educate investors into making the most appropriate investment decision. (Oldert, 2012: 24)

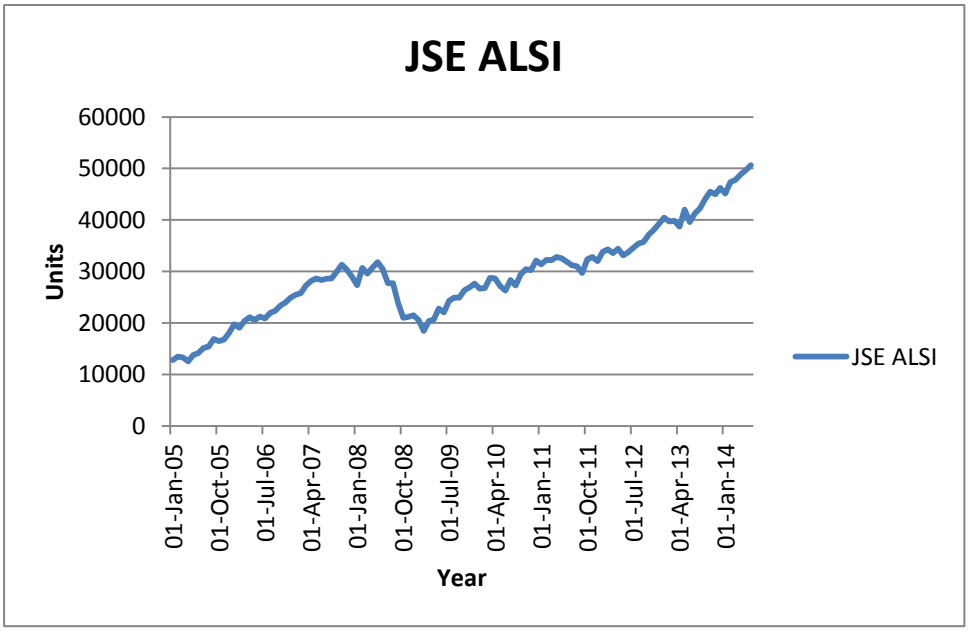
By the year 1969, assets under management within the unit trust industry had reached nearly R1 billion. During this year, the market suffered a significant crash that took 14 years for the markets to recover before the value of the industry surpassed previous levels (Oldert, 2012:

25). Various points were taking from the crash of 1969 and many would be relevant for this study. One fact was that, while it did take a few years to recover, the market did recover and eventually surpassed previous levels. It will be of interest to follow the recent financial crisis and the recovery of the market again to determine whether or not markets recovered as they did in the past, and whether or not that recovery would be more efficient this time around due to the maturity of the market today. In addition to the discussion on the recovery of markets following a market crash, Oldert (2012: 26) highlights some of the beneficial lessons that were learnt following the crash of 1969. Firstly, the notion of market bubbles was highlighted and the need for advisors and investors to be aware of their causes and effects. Having an understanding of what causes market bubbles and realising they are not sustainable would lead to better preventative measures being able to be taken by investors concerned with the wellbeing of their investments. One such cautionary measure would be the staggering of contributions into the investment making use of the rand cost averaging principle that would reduce the effects of a dip in market prices on the investment. The second positive effect of the market crash was the realisation that equity investments need to be seen as long term investments which would become an important piece of information for individual investors. This information, coupled with the acceptance that markets would eventually reach previous levels before the crash would alleviate some of the negative aspects of the crash on investor portfolios.

The periods following the crash of 1969 saw the markets slowly recover with only a handful of funds being formed in the next 10 years. By the end of 1989, 31 funds were in operation collectively managing assets to the value of R4.8 billion. The next 10 years showed phenomenal growth for the industry with assets under management growing to R112.8 billion from 271 funds at the end of 1999. By the end of 2002, the number of funds had grown to 460 with assets under management totalling R179.8 billion. (Oldert, 2012: 26)

Following the market crash of 1969, the JSE suffered another market bubble and subsequent bursting of that bubble in in 1987. The effects of this crash were far less significant as the JSE was able to recover in less than a year with the unit trust industry being able to manage the market collapse a lot better this time around. The major difference in the two crashes and the reason for the quick market recovery in 1987 is that investors had been invested in unit trusts for a significant period of time before the crash. In 1969, investors had invested into unit trusts when the market was at its peak leading to significant losses whereas in 1987, the crash of the market was less severe as investors had been in the market for a considerable

period of time. The same response was observed during the financial crisis in 2008 that saw global and local markets suffer when the US market crashed following the subprime mortgage crisis. The unit trust industry in South Africa proved to be resilient by still showing a positive growth of 1% in 2008. What these crashes have proved is that time in the market is an important concept of investing and has proved to be imperative when dealing with market crashes. Patience is needed to ride out the storm and let the markets recover to their previous levels as they have shown to do in the past. (Oldert, 2014: 37-41)




(Source: Adapted from I-Net BFA, 2014)

The above graph shows the growth of the JSE ALSI depicting the market crash of the financial crisis and the subsequent recovery of the market.

By June 2005 the South African unit trust industry had grown to comprise of 567 unit trusts totalling assets of R345 billion. By then, the industry had expanded to not only contain general equity funds, but also included funds such as money market funds, gilt funds, international funds, specialist funds as well as index funds. According to Oldert (2005: 33) there were two main factors that contributed to this boom in available funds to investors. The first was that consumers had started demanding more complicated investment products to suit their growing needs and then secondly was the response of asset management companies to provide differentiated products to investors. To understand the growth of the industry the following is a good comparison. In the final six months of 2005, 50 new funds were started

with assets under management increasing by R70 billion while by the end of 1989, there were only 31 funds managing R4.8 billion in total.

Today, the unit trust industry in South Africa is highly competitive and differentiated with a vast array of options available to investors. The issue with this is that many investors lack the financial understanding or capabilities to disseminate the volumes of information pertaining to these unit trusts and their performance. Many investors rely on the published reports and performance figures and make their decisions based on who the perceived top performers are. On the other hand, some investors have become better informed as to unit trusts and these investors have started demanding more innovative funds to meet their needs. This has led to the further growth of the industry and the supply of more complex funds adding to the need for more market information regarding those funds. As the funds have needed to become more complex, so has the decisions needed to carry out the objectives of the funds. The unit trust industry is now a specialist industry requiring intricate knowledge in order to offer investors the products they seek. It is clear, within the literature, that past performance studies have proved inconclusive with regards to past performance being an accurate indicator on future performance, however, unit trusts are still marketing their results in an effort to attract further investment.

The fundamentals regarding investing are the same for all investment decisions; to generate as high a return as possible for a given level of risk. With this in mind, investors will instinctively look towards return figures as a means of judging performance. This leaves investors vulnerable to the marketing ploys of asset management companies who, whether intentional or not, seek to exploit the uneducated into parting with their money.

Many studies that will be investigated in the coming chapters have been completed on the performance of unit trusts, not only in South Africa but around the world. There have been varying conclusions as to whether or not unit trust managers are in fact able to outperform their respective benchmarks or not and justify the fees they charge investors. This study intends to add to that knowledge base and debate by taking a more recent time period and analysing the performance results of various unit trusts. While the debate has been based on unit trusts outperforming benchmarks, they have been conducted in generally normal economic climates. The aim of this study hopes to shed light on the debate in the context of a period of economic turmoil, namely the financial crisis, and to deduce whether or not unit

trust managers had the skill to successfully manage their funds during the different economic cycles.

There are various factors that need to be taken into account when analysing unit trust performance, such as the holding period, the type of unit trust and the benchmark being used as a comparison. What has been documented is the support that after expenses have been taken into account, unit trust managers, on average, underperform passively managed portfolios of similar risk. What this study believes to be an important angle within this debate, will be whether or not unit trust managers would have been able to take the necessary steps, during the different cycles within the economic crisis, to try and outperform the markets. In other words, when the markets were experiencing a bull market prior to the crash, were active managers achieving superior returns based on the market's gains, and when the markets were in a bear phase, were those active managers able to make the appropriate changes to their portfolios and still produce positive returns or in turn suffer losses less than the market was experiencing.

One of the questions that is prevalent today and that could possibly be answered at the conclusion of this study is as follows: "Given that there are sufficient index funds to span most investors' risk choices, that the index funds are available at low cost, and that the low cost of index funds means that a combination of index funds is likely to outperform an active fund of similar risk, the question is, why select an actively managed fund?"

## 1.3 Competition and performance

Unit trust managers are judged on their performance record. Historical performances are usually used to attract further investment into the unit trust as this is an active unit trust manager's best proof of ability. With there being so many unit trusts available to investors, marketing and trying to differentiate each fund becomes a highly competitive arena. Unit trust managers do their best to outperform their market benchmark, as their first priority. In doing so, they are competing with various other managers who set out to outperform the same benchmark. Unit trust performance results are compiled and ranked on a regular basis affording a vast amount of information to unit trust investors. When the results are published, unit trust managers are ranked according to their achieved returns. Unit trust companies that have funds that have performed well will make this prominently known within their advertising while those funds that have not performed relatively well will have their results

portrayed in a manner that best represents the unit trust. Now, conventional wisdom according to Kahn and Rudd (1995) is that when looking to invest in unit trusts, the first place to look at would be the performance track record of the various managers as past performance must surely be an informant of future performance. On the other hand Hendricks, Patel and Zeckhauser (1992) found this to be the choices made by investors who lacked the financial knowledge to have a deeper understanding of the unit trust or the information presented in the reports. While these two views are 20 years old, this study believes them to still be relevant today and does not feel the level of education of investors has significantly improved in recent times.

## 1.4 The financial crisis

Unit trust performance is linked to the performance of the South African economy and the performance of the investments within its portfolio. It is therefore important to have an understanding of the causes and the subsequent effects of the financial crisis when analysing the risk adjusted returns of South African unit trusts during the period of economic turmoil.

Since the financial crisis began in 2007, many papers have been published on its causes and subsequent outcomes. Shiller (2008) whose research on the subprime crisis in the United States that led to the global recession has provided a great amount of insight into the research foundation on which this topic of private investments is based.

The 2007 global financial crisis that originated in the United States has been described as the worst financial crisis since the great depression (Shiller, 2008: 1). With the United States being the economic powerhouse that it is and with a world economy becoming even more interconnected, the effects of the crisis were felt all over the world (Madubeko, 2010: 1) (Mladjan, 2011). While the South African economy did not feel the full force of the crisis, the economy did suffer with the JSE slipping into a recession that affected many South Africans as well as their investment portfolios (Padayachee, 2011:1-4).

The financial crisis had its roots in the US real-estate bubble and sub-prime mortgages that began in 2006 (Shiller, 2008: 2). Two major factors that contributed to this crisis according to the RSA National Treasury Policy Document (2011: 9) were “the twin problems of global macroeconomic imbalances and inadequate financial sector regulation”.

This view was also noted by Blundell-Wignall, Atkinson and Lee (2008: 2), who noted the global macro policies that were affecting liquidity, as well as the poor regulatory framework that should have been in place to prevent such a crisis from occurring but which in fact helped contribute to the bursting of the real estate bubble. Prior to the crisis, there was an explosion in lending in the United States, often to households that were not credit worthy. This caused household debt levels to rise to new heights that could not be maintained. The subsequent bursting of that bubble had major effects on the United States economy as well as its ripple effects into other affected countries (Shiller, 2008).

Padayachee (2011) researched the effects of the global financial crisis on South Africa and its future implications. Padayachee (2011) discussed the economic considerations the financial crisis had on the South African economy such as the recession the economy entered as a result of the ripple effects of the crisis, the drop in GDP growth rate and the various sectors of the economy that had a contraction in output and a large loss of jobs that added to the country's already high unemployment rate.

The following papers expand on this foundation by analysing the financial crisis at a more intricate level, detailing its causes and effects and what those effects ultimately had on the South African economy.

Buckley (2011) details the financial crisis as well as the failure of the United States banking system while also looking at the consequences of the crisis. He compares this to the great depression in an attempt to determine if any similarities occur. While Buckley's (2011) work focuses on the financial crisis from a United States perspective, it does provide the framework upon which the effects on the South African economy can be analysed.

The dissertation written by Madubeko (2010) on the Global Financial Crisis and its impact on the South African Economy is also a valuable source of information and guidance in this study. His dissertation outlines past financial crises as well as doing extensive economic research into the effects of the crisis on South Africa. Madubeko's (2010) dissertation is similar to the work done by Buckley (2011) by analysing the financial crisis from the South African perspective showing the impact of the ripple effects from the United States economy. The crisis's effect on the South African economy will have a direct impact on the analysis of the performance of unit trusts during the crisis.

## 1.5 The need for studies on unit trust performance and persistence

As the unit trust industry has grown in South Africa, so has the number of funds as well as their complexity. In addition to this, investors have become more demanding in what they aim to get out of their investments. With the added level of complexity of products, greater and more in depth information is needed to ensure that investors have the necessary knowledge at their disposal to make the best investment decisions. Not only are the investment products becoming more complex, but the number of asset management companies has also been growing. With the increased options of asset managers to choose from, the different investment styles of those various asset managers have also grown. In order to meet investor needs, investment vehicles have become more specialised/specific and in turn, more complex.

Unit trusts are grouped into the various strategies, goals or sectors they invest in; however, those funds within the same sectors might have completely different styles of investing that could affect the time frames they are invested in various companies, the types of companies they invest in as well as the number of shares they invest in those companies. All these factors influence the expected returns of those unit trusts. Individual investors need to be sure that they are matching their individual needs with the goals of the unit trust. Failing to correctly choose the best fund could result in underperformance in relation to expected return. By having the appropriate information regarding the unit trust's performance as well as more information on the industry being invested in, individual investors would have a better understanding of the risks and potential returns on their investments.

Not only are investment funds becoming more complex but different factors relating to the investment decision are also changing. The different costs associated with different unit trusts, the time period relating to the investment decision as well as the benefits of unit trusts need to be understood by investors. If investors have a specific need and are investing in unit trusts for that need, the varying time lengths become important. General equity unit trusts are seen as long term investments and an investor, who is looking to withdraw his capital in the short term, would need to look at other options that would provide a safer option that would limit its exposure to market volatility. These are some of the aspects of the investment decision that need to be understood by the investor before they make their decision. Having

more information relating to these decisions and factors can greatly reduce the risk of the investor making the wrong decision.

As Madubeko (2010) mentions, global economies are becoming increasingly interconnected and therefore there is an ongoing need to understand how the performance of global economies and foreign companies could impact the performance of local companies and the JSE. As this study is focused on general equity unit trusts, it is important for investors to understand the causes and effects of global as well as local market situations that would have an effect on the volatility of their equity investments. As seen with the financial crisis in 2007, happenings in the US spilled over and negatively impacted the local equity markets. Improved information is constantly needed for future reference in order to understand why the local economy was affected, as a means of being vigilant so as to be prepared for the next economic downturn, and to make the corrective actions to regulatory and operational issues that may have risen during the crisis. Due to the financial crisis, investors had lost a lot of money invested in the equity markets of the JSE. This then lead to a shift in thinking and perception about the markets and investing and the need and desire for more information relating to their investments. Following the events of the financial crisis, investors are seeking more predictability in the returns from their investments and due to their structure and with continuous further improvements and developments; unit trusts are positioned to offer investors those characteristics.

A simple need for greater knowledge and understanding is down purely to the size and importance of the unit trust industry in South Africa. South Africa is notorious for having a poor saving rate and unit trusts could be a potential solution due to the many benefits they offer investors. Unit trusts can become an important part of the saving culture within the country and having more knowledge allows the industry to grow and affords investors the information to make the decisions that best suit their own personal needs. The more information there is, the greater the number of funds out there that meet the demands of investors will continue to grow and on the other hand, there is a greater chance of underperforming funds that may be risking investor money from continuing to operate or attract new investments.

While this study is looking at unit trust performance from an individual investor's perspective, it can be mentioned that a lot of these investors make their decisions based on the advice given to them by financial advisors. These advisors are constantly being contacted

by asset management companies in an attempt to put their funds forwards to attract new money. With individual investors having a greater understanding of their investments, these financial advisors will be required to offer more explanation as to why they have suggested the various funds to their investors. Having more information will reduce the knowledge gap between individual investors and their advisors and allow for better transparency within the industry.

What will be discussed in the forthcoming chapters is the misguided notion that past performance is an indicator of future performance. It is widely accepted that the past performance of a unit trust gives an indication of what the fund will be returning in the future. While this is debated in depth in the coming chapters, it is also noted that past performance is the best measure of a fund manager and therefore research into the industry is important from that perspective. Not only are fund managers judged on their performance but the various asset management companies use their results as a marketing tool for attracting new money into the unit trusts. Mutual fund performance rankings are compiled on a regular and timely basis and are widely followed. Mutual funds that do relatively well tout their performance prominently in their advertising. Those that do not do too well look for the measure that will put them in the best possible light. (Collinet and Firer, 2003; Meyer, 1998) From an investor perspective, when investing into a unit trust, they are seeking a manager with a proven track record who can offer them constant performance returns that they deem suitable for the level of risk they are willing to take on. Investors who lack the financial knowledge to study the fund or have a deeper understanding of the information use that information as the basis for their unit trust selection. This is identified by Hendricks *et al.* (1992) who found that investors put their money into funds that have recently performed well as opposed to those that did not. Further studies on unit trust performance will add to the accuracy of the judgements made on the various investment vehicles in South Africa.

As the general equity unit trusts are compared to the market within this study, a passively managed unit trust has also been added as another form of measure against actively managed unit trust performance. The passive investment industry is growing and many investors are turning to these funds as an alternative to actively managed unit trusts. (Alexander and Dimitriu, 2004: 1; Conradie, 2013: 1) As these funds grow and attract further investment, so the need for further information and research is needed to compare and contrast the investment funds against one another. In the coming chapters, the debate between active

versus passive funds is expanded on with the results of the study presenting the outcome of the debate in the context of this particular research.

## 1.6 Survivorship bias

One issue that was fairly prevalent during the review of historical studies was that of survivorship bias. This issue arises when data is removed from the sample due to the funds either closing down or merging within the timeframe of the study. This omission tends to alter the results of the study in favour of the surviving unit trust giving inaccurate results as to the performance of unit trusts as a whole. For the purpose of this study, all funds identified to fall within the scope of the sample of unit trusts will be used to ensure no survivorship bias will be present within the results. This issue is further discussed within the methodology chapter as it is an issue that directly impacts on the results of the study.

## 1.7 Summary

The research will be conducted from the perspective of an individual investor who is concerned with the ability of active investment managers to outperform the markets after considering the fees they charge to manage their funds. Therefore this thesis will aim to determine whether or not the fees charged by active investment managers are justified in terms of being able to outperform the market during normal to good financial times as well as being able to minimise losses during a downturn. Unit trusts are actively managed for which asset managers receive fees. These funds should, in theory, outperform the markets and passive funds as the asset manager should be able to actively adjust the construction of the portfolio to achieve greater returns and in turn earn the fees charged.

## 1.8 Research objectives

The objective of the study will be to determine, from an individual investor's perspective, whether or not actively managed unit trusts were able to outperform the market during the various economic climates brought about by the global financial crisis between 2007 and 2009. To achieve this objective the study will:

- analyse the risk adjusted returns of actively managed unit trusts compared to the market and passive investments for the periods preceding, during and after the financial crisis of 2007;
- determine whether unit trust costs are justified based on the benefit of their performance in comparison to passive investments over the study period; and
- attempt to provide a theoretical construct for periods of financial turmoil upon which financial advisors could base their advice relating to the investment of their clients in unit trusts and passive investments.

According to Friedrich (2013: 1) a theoretical construct "is a set of interrelated concepts, definitions, and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining, predicting, and controlling the phenomena".

# 2. LITERATURE REVIEW

## 2.1 UNIT TRUST INFORMATION

### 2.1.1 Mutual fund

This is the United States term for a unit trust. According to Oldert (2005: 30), mutual fund simply refers to an open-ended investment company that offers redeemable shares to the public, similar to the unit trusts discussed in this study. When this term is used in the context of an American study, it simply refers to a unit trust.

### 2.1.2 Unit trust

A unit trust is the name given to a collective investment scheme that allows a large number of small investors the opportunity to invest on the JSE in shares that would normally be too expensive or risky to invest in alone. When an asset management company forms a unit trust, they sell units to the public with the proceeds of that sale being invested in a diversified portfolio of securities in line with the regulations set out by ASISA. (Brink, 2004: 2; Knight and Firer, 1989; Marx, Mpofu, De Beer, Nortjie, and Van De Venter, 2010: 13) With regards to those regulations, limits are in place to ensure that unit trust managers do not invest more than 5% of the unit trust's money in any one security. This regulations helps managers ensure that their unit trusts are sufficiently diversified. The asset management company receives investors' money, pools those resources and purchases securities. (Mayo, 2011: 190) A unit trust according to Levy and Post (2005: 114) "is an investment company that buys and holds a fixed portfolio of stocks, bonds, or other securities. 'Units' in the trust are sold to investors, who receive a proportionate share of dividends or interest received by the unit trust". Each unit that an investor purchases represents a proportionate value of the portfolio of securities the unit trust has invested in. The portfolio of securities invested in is determined by the investment strategies decided upon by the asset management company. Different unit trusts are often invested in varying classes of assets as noted by Brink (2004: 2), who listed those assets as common stock, bonds or money market instruments.

Different unit trusts are set up and designed to follow a particular strategy in order to achieve an end objective. This study is examining the performance of general equity unit trust and has

excluded the other classes of unit trusts such as income funds, value or growth funds as well as funds that focus of particular sectors or industries.

### 2.1.3 Passive unit trust

These funds are set up the same way as a conventional unit trust; the only difference is that they are passively managed. By being passively managed, they are structured to produce the returns of a specific market index and no active calls are made. (Marx *et al.* 2010: 276) They are lower in fees and offer investors the same benefits of a conventional unit trust just without the potential benefits of active unit trust managers and the decisions they can make. Passively managed unit trusts offer investors the returns of the index they are tracking less the amount of their costs. As the costs are very low with these funds, they offer investors a cost effective way of pursuing a passive investment strategy. (Brink, 2004: 2; Levy and Post, 2005)

Investing in a passive unit trust that mimics an index is regarded as the most common form of a passive investing strategy. When investing in a passive unit trust, shares are purchased as you would with a normal unit trust. The only difference is that that investment goes into a predetermined portfolio of shares that have been purchased to mimic a market index. That composition does not change and the benefits of a passive strategy are enjoyed by the investor. (Marx *et al.* 2010: 276) In the debate between active and passive strategies, passive trusts have an advantage over actively managed unit trusts in that they undergo very little analysis and no active calls are made on the composition therefore trading costs are minimal. These two factors largely decrease the costs incurred by investors. A downside, however, is that a passive unit trust can at best produce results of that of the index. Once the small costs have been taken into account, investors will receive returns just below that of the index. (Marx *et al.* 2010: 276)

Arnold (2009: 318) defined a passive unit trust as "an investment fund which is intended to replicate the return of a market index. It is also called an index fund". This study aims to analyse and compare the performance of these two types of funds against each other over the period of the financial crisis to determine whether the actively managed funds outperformed passively managed funds.

Due to index funds being relatively new to the South African markets, only the Satrix40 fund has the available data spanning the entire sample period and thus it will be the only index fund included in the study. While this study is looking at unit trust performance against the

returns of the market, it was decided that this passive unit trust was included in order to depict where a passive investment would have fitted in with regards to the unit trusts. It must be noted, however, that the Satrix40 tracks the performance of the top 40 shares listed on the JSE and is not a general equity investment vehicle and its results will not be included in the comparisons of actively managed unit trusts versus the market. As it is impossible to invest in the market index directly, the Satrix40's returns will be included within the analysis so show investors what their returns would be if that had made a passive investment decision.

### 2.1.4 Benefits of unit trusts

Unit trusts have been growing in popularity due to the many benefits they offer investors. Simplicity, cost transparency, eases of valuing the investment and liquidity in both purchasing and selling the investment are some of the attractive characteristics that are pulling in investors. (Knight and Firer, 1989; Oldert, 2012: 33) Investors receive the professional management of their invested money within a well regulated industry, investment into a diversified investment vehicle, reduced costs of investment due to benefiting from the large asset management companies economies of scale as well as reduced administrative fees. (Marx *et al.* 2010: 13; Mayo, 2011: 190; Morningstar, 2012: 1) In addition to these benefits lies the power of compounding interest which has been proven to be one of the most important features of successful long-term investments. Compounding interest is further enhanced by the reinvestment of dividends should the investor take up the option. Another benefit of unit trust and the foundation of investment decisions is diversification. Unit trusts offer investors instant diversification across asset classes as well as industries and different types of companies reducing the overall risk associated with investing. (Oldert, 2012: 39) What also attracts investors is that unit trusts do not require large up-front investments and investors can decide upon making a once off lump-sum investment or monthly contributions, referred to as the rand cost averaging principle, depending on their financial situation. (Morningstar, 2012: 1)

### 2.1.5 Rand cost averaging principle

The Rand cost averaging principle is a very simple method that aids in ensuring maximum wealth building and protection. What this principle entails is investing a fixed amount at a predetermined date into the unit trust over the duration of the investment. This means that when unit price share price is low, the investor receives more units within the fund. When the

share price is high, investors receive fewer units in the fund. This ensures that the investors receive an average share price/number of units over the duration of their investment. This saves investors the time of monitoring the markets and deciding on when the best time to invest is. (ASISA, 2007: 1; Cohen, 2013: 1)

The researcher believes the benefits of unit trusts outweigh the negatives associated with the funds; however, they do need to be mentioned. The most obvious negative is that within South Africa alone, there are over 1000 collective investment schemes (ASISA, 2014) and passive investment options available to investors and making the correct decision can be overwhelming. In addition to the large number of funds available, not all of the manager's abilities or the funds individual qualities are equal. Many of the unit trusts on offer charge different fees and in different ways so choosing a unit trust based on individual needs can, at times, be a challenge. (Morningstar, 2012: 1)

### 2.1.6 Benchmarks and the use of the ALSI

Unit trust managers select the benchmark based on its composition and investment style so as to provide the manager with a realistic, achievable performance standard. This is done to provide the managers with a means of judging performance as any differences in the returns achieved could be claimed by the manager to be their active calls on the market. (Marx *et al.* 2010: 288)

### 2.1.7 Index

Throughout this study, referrals will be made to unit trusts out or underperforming the market. This is referring to the country's stock index which in turns serves as the benchmark of the unit trusts throughout this study. An index is defined by the JSE (2014: 1) as "a statistical measure of the changes in a portfolio of stocks representing a portion of the overall market." An index is also referred to as "a quantitative measure of the total returns that have been earned by the underlying group of securities over a fixed period". (Brink, 2004: 12) The benefits of having a market index as a benchmark is that an index depicts the aggregate movement of a market during the various periods of reporting with the percentage change being the important value upon which to judge unit trust returns. This allows investors to have a basis upon which to measure the performance of their investments as the results

claimed by unit trusts are meaningless unless they are measured against a suitable performance benchmark.

The use of the JSE All-Share Index (ALSI) as an appropriate benchmark was made after considerable consideration to past literature and the objectives of this study. While the ALSI comprises all of the available equity shares on offer to unit trusts, it is also a published index and is therefore a suitable benchmark when assessing the performance of general equity unit trusts in relation to how the market performed.

The reason why the ALSI was chosen was because in the end, this study intends to evaluate the performance of actively managed general equity unit trusts during the cyclical economic conditions of the financial crisis. The ALSI best represents the market as a whole, as agreed to by Meyer (1998) who used the ALSI for the same reasons, and those changes that occurred during the crisis. This study is aware that some unit trusts use other benchmarks to promote their performance. For simplicity in reporting and having an equal base from which the unit trusts can be judged, it was decided that the funds all be judged against the ALSI. Asset managers choose their own benchmarks and their funds might be designed in such a way as to aim to beat that benchmark as opposed to achieving the best results for their investors or outperforming the market as a whole. For the purpose of this study, it was felt that simplifying the study to one benchmark for all would make sense in line with the objectives of the study.

Some of the issues that were raised with the use of benchmarks in previous studies are mentioned where applicable throughout the literature. In brief, the following were the concerns that were raised. In 1989, Knight and Firer (1989) performed a similar study to this one within South Africa and also made use of the ALSI as the market benchmark, also for it being the most comprehensive measure of market performance in South Africa. Doubts were raised over its legitimacy as the most accurate measure of performance. For this reason and those to follow, it will be mentioned that while every effort has been taken to ensure the most accurate results, there are a number of issues that could affect each study and their results should be taken with this in mind.

In 1993, Grinblatt and Titman (1993) decided to use portfolio holdings as an alternative to a benchmark. The issue they tried to avoid here is something that could potentially be an issue with this study. While the unit trusts in this study are general equity and are able to invest in any company they wish, it may arise that some of those funds are more heavily weighted in a

certain sector or industry. This would skew the results of their performance in favour of the dominating placement of their shares. As the ALSI represents all the shares within the market, it would not have such an issue and therefore the results of the unit trusts may be down to the lack of appropriateness of the market benchmark as a proxy for their returns. With the use of the ALSI as a benchmark, some unit trust managers may argue that they use more specific benchmarks to judge performance. While this is a valid argument, the basis of this study is not on peer to peer performance but rather unit trusts against the market.

### 2.1.8 Risk versus Return

Different unit trusts have differing risk profiles and in turn, aim to achieve different returns. This decision affects the composition of the unit trust share allocation as well its potential returns and losses should the market suffer. When selecting a unit trust, investors would have to decide on a unit trust that satisfies their risk appetite and desire for certain returns. Should investors be more risk averse, then index unit trusts could provide them with an investment option as they would be satisfied with market returns and no possibility of excess return achieved by unit trust managers taking more risky positions within the market. (Marx *et al.* 2010: 284)

While deciding to take less risk might seem like a safe option, there is still the risk that the conservative investment might not produce a real return against inflation. So while different assets carry different risk profiles, selecting the correct investment vehicle or group of investments is a very important decision for investors to ensure they get the best possible real return in terms of the risk they took.

### 2.1.9 Costs and performance

A critical aspect investors need to be wary of is the costs involved with their investments into unit trusts. Attention needs to be paid to the expenses quoted, and often those not quoted, as they can play a major role in the return earned by the investor.

Throughout this study, the costs involved with unit trusts have proved to be the greatest factor effecting performance results and this topic has become the burning question passive investment advocates are asking: “Why pay more for a unit trust that cannot outperform the market when a passive unit trust can give you greater returns at much smaller costs?” As Jones (2010: 72) documents it, estimates by John Bogle, an advocate for passive unit trusts

and the founder of Vanguard showed that when all costs are properly accounted for, investors are losing out on 2.5 percentage points of performance from actively managed unit trusts.

While not studying the persistence of unit trust performance in South Africa, Meyer-Pretorius and Wolmarans (2006) give an insightful view of the industry up until 2005. A few noteworthy points are raised concerning the issues of unit trust costs as well as the investment strategies of the trusts as well as the investors.

In contradiction, unit trusts are not seen as short term investments due to the initial costs and are generally advised to be seen as long term, sometimes 5 years or longer. However, in order to attract new funds into the unit trusts, unit trust companies are advertising their past returns in an attempt to entice investors to either invest in their unit trust or to switch from their current trust. Obviously this switching attracts costs which end up adding to underperformance for the investor.

What will become apparent in the literature is that unit trust costs, when an active buy and sell strategy is used, have a direct negative impact on unit trust performance and as a result, investors should adopt a buy-and-hold strategy if they wish to benefit from superior returns over the long term. While the long term philosophy surrounding unit trust performance being more important that short term performance, Meyer-Pretorius and Wolmarans (2006) believes that "many investors may be responding to short-term fluctuations in performance, perhaps due to marketing strategies, which focus on these fluctuations".

Meyer-Pretorius and Wolmarans (2006) offer advice that could be used to try and improve the value investors receive from investing in unit trusts. On the part of unit trust managers, they could reduce the costs involved with investing in unit trusts as the cost structure, from the literature in this study, has a direct impact on the returns investors receive. Such an example could be the removal of management fees with the introduction of a performance fee. In this way, investors would only pay a fee if their unit trusts generated a superior return compared to a predetermined benchmark and unit trust managers would in a way, earn their fees. Secondly, Meyer-Pretorius and Wolmarans (2006) urge South African investors to alter their investment strategies to focus on long term returns with their unit trusts and not to make quick-fire decisions into selling their investments when facing marketing strategies or new information. This would be possible if the third suggestion was taken up of educating South African investors. This would be an important job for financial advisors to ensure their clients

are fully aware of the pros and cons of the particular unit trust and the facts associated with unit trust investing.

Under current regulations that govern actively managed unit trusts, namely the Collective Investment Schemes Control Act (CISCA), fund managers are allowed to charge investors any amount as long as it is fully disclosed. These charges include initial fees, annual service fees as well as compulsory fees that, together, are referred to as the TER (Total Expense Ratio) of the unit trust that would need to be included in the various calculations to determine the mean monthly returns net of expenses. Passive investments, such as the Satrix40 ETF, charge much lower fees that would affect the net returns to a much lesser extent. As the passive investments do not make use of the same magnitude of analysis and research that the active unit trusts undertake, it is easy to see why they charge a much lower fee. In addition to the TER is the so called ‘trading costs’ that would need to be paid to the broker or advisor or any intermediary that acted as the purchasing agent on behalf of the individual investor. With these combined costs, and the knowledge that on average active unit trusts have higher expenses than passive investments, the effects of the costs would negative impact the performance of both funds with active funds suffering even more.

## 2.2 EFFICIENT MARKET HYPOTHESIS, THE GROSSMAN-STIGLITZ PARADOX AND ACTIVE V PASSIVE MANAGEMENT

### 2.2.1 Efficient Market Hypothesis

One of the foundations of modern day investment management is the Efficient Market Hypothesis (EMH). The EMH was introduced into the world of finance by Professor Eugene Fama in the early 1960's and went largely uncontested for many of it earlier years. In more recent times, there has been many debates on whether or not the theory still stands as valid with regards to modern financial markets being efficient or not. We will now briefly consider this hypothesis.

Some of those more recent authors on the debate have been Bodie, Kane and Marcus (2009: 384) who noted that the EMH is not widely accepted on Wall Street or in modern finance and the debate continues today on the degree to which security analysis can improve investment performance.

Bodie *et al.* (2009: 384) provide three factors that together provide arguments that the debate probably will never be settled.

- The magnitude issue: the more you have invested the greater the reward of a 0.1% increase which would allow for analyst work to be done. If you invest less it becomes too costly to analyse markets for a small increase in return.
- The selection bias issue: only investors who find that their investment scheme can generate abnormal returns will be willing to report their findings to the whole world. The outcomes that we are able to observe have been preselected in favour of failed attempts. Therefore, we cannot fairly evaluate the true ability of portfolio managers to generate winning stock market strategies.
- The lucky event issue: under the EMH, any stock is fairly priced given all available information; therefore, any bet on a stock is simply a coin toss.

The EMH is integral to the literature that was reviewed in the paper as the outcomes of any study that investigates the performance of unit trusts and their persistence is directly testing whether or not markets are efficient or whether there is an exploitable gap in the market with regards to information and the speed and way it is incorporated into asset prices. Unit trust performance is an important test of the EMH and is needed to be measured due to the ever

increasing number of unit trusts available to investors as well as the growing competitiveness amongst those funds. The results of those tests serve as an important tool for investors and asset managers to evaluate the market as well as for the debate on the efficiency of the market.

Mayo (2011: 9) explains that if a market is deemed to be efficient by investors, they cannot, on average, expect to outperform that market on a regular basis. It is logical to think that if an investor cannot consistently outperform the market, then they should also consistently not underperform the market as well. The EMH implies that if an investor constructs a well-diversified portfolio, they should be able to generate on average, average returns relating to market returns. (Mayo, 2011: 9) What this means is that during the review of the historical studies done on the performance of unit trusts, it becomes evident that some unit trust managers display superior and inferior skills during the time periods under review. While the persistence of that performance is weak if there is persistence at all, it shows how unit trust managers have deviated away from a well-diversified portfolio and have made active management decisions in an attempt to outperform the market.

A fund manager's primary goal with regard to their unit trust is to generate a return higher than that of its designated benchmark and to offer investors a value adding service for the fees they command. This intended investment outcome rests on the theory of efficient markets being either true or untrue which will be further explained below:

The definition for the EMH has been extensively documented by a number of Journal articles and educational textbooks including Grinold and Kahn (1999), Marx *et al.* (2010), Jones (2010), Mayo (2011), Gitman, Joehnk and Smart (2011), Knight and Firer (1989) with the seminal author being Fama (1970). Countless papers since 1970 have been published all documenting the same theory. For the purpose of this modern paper, more recent publications have been included in this section.

The globally accepted definition for the EMH is that a market is deemed efficient when asset prices fully reflect all relevant, available information. If this is the case then assets that the unit trusts invest in are all trading at their fair value and no investor or investment manager can generate a return in excess of those returns being generated by a passively managed unit trust that merely tracks the performance of the market or specific benchmark.

However, different asset managers will have access to different information that will lead to them having a different opinion on which assets are undervalued or overvalued. This will lead to discrepancies with regards to the assets included in their unit trust portfolios. While these differing valuations of assets can occur, information is so readily incorporated into asset prices that it is unlikely that unit trust managers would be able to use this information in their decision making. It seems a lot more likely that through seeking these mis-priced assets, the competition among investors would result in assets trading at their fair values. (Jones, 2010: 301)

The EMH according to Fama (1970) and the above mentioned authors' is based on a number of assumptions upon which the definition and various forms were based on. These assumptions include:

- The market is comprised of a large number of rational, profit-maximising participants who analyse and value assets independently from each other.
- Markets are rational with no transaction costs
- New information regarding assets arises randomly and is costless
- Asset prices adjust rapidly due to the market participants reacting quickly to the new information

A market generally consists of a vast number of analysts who scan the markets looking for information that either has not yet been incorporated into asset prices or that has been misinterpreted leading to assets being mispriced. If such assets are found, asset managers will trade those assets accordingly forcing asset prices to move towards their fair value. As new information enters the market, asset prices change continuously to reflect the assimilation of the information. Bodie *et al.* (2009: 372) further back this up by incorporating the EMH's notion on information being incorporated into asset prices and what might occur if information provides investment opportunities: "One might say that any information that could be used to predict stock performance should already be reflected in stock prices. As soon as there is any information indicating that a stock is underpriced and therefore offers a profit opportunity, investors flock to buy the stock and immediately bid up its price to a fair level, where only ordinary rates of return can be expected."

If the market is inefficient, there will be an array of mispriced assets that would allow asset managers the possibility of generating excess returns over merely tracking the returns of the market. If the markets are efficient however, assets are fairly priced and the best asset managers could expect to perform is the same as the market return.

Bodie *et al.* (2009: 38) also discuss the opposite side of efficiency and the implications of markets being inefficient: If markets did not consist of these analysts constantly analysing information and asset prices, it is logical to assume that the prices that assets trade for within the market would eventually move away from their fair value at the same time creating opportunities for investors to capitalize on those mis-priced assets. What this means is that even in the competitive markets of today, there may be times where information is not incorporated effectively leading to discrepancies on prices amongst investors. This could create opportunities for diligent investors always on the lookout for innovative ways of generating superior performance results. When exploring market inefficiency and looking at today's global markets, it is safe to assume that price discrepancies and profit opportunities would more likely be in developing or underdeveloped countries where market governance and information assimilation might not be as advanced as seen in more developed countries. This could be down to the lack of information relating to the various industries or the lack of communication paths allowing for information to be incorporated timeously.

There are various methods that analysts use when searching for information that can be used as part of an active management strategy. One of those according to Bodie *et al.* (2009: 376) is technical analysis which is the search of patterns or asset price information from historical prices. As seen earlier with the definition of the EMH and its implications with regards to an active management strategy, technical analysis is deemed to be of no use to analysts as the weak-form of the EMH states that current asset prices reflect all past price information and no abnormal returns can be generated using this information. Information acquired via technical analysis is publicly available and obtainable at minimal cost therefore if the EMH is taken as true, then all information is already incorporated into current asset prices.

The other method used by analysts is that of fundamental analysis. Fundamental analysis, according to Bodie *et al.* (2009: 377) "uses earnings and dividend prospects of the firm, expectations of future interest rates, and risk evaluation of the firm to determine proper stock prices". This method is a lot more complicated than technical analysis as personal views become a part of the analysis as the various methods calculate the present value of the future

discounted value of the assets price. There are different methods of calculating these asset prices and the selection often comes down to the preference of the analyst or unit trust manager. If analysts come to differing valuations of asset prices, this would lead to apparent profit opportunities as the asset price would be seen as valued differently to its interpreted fair value.

Fundamental analysis begins with technical analysis and the study of historical prices but then also incorporates a more detailed study of the assets past earnings, its balance sheet, the management of the asset and its position within its industry and that industry's projected prospects. This is performed in an attempt to gather any information as to the future of the asset and its industry to determine whether or not its future prospects are positive or negative and whether current prices reflect the current situation and the projected prospects. (Bodie *et al.* 2009: 377)

This type of analysis seems the most likely to uncover information about the asset, however, the EMH still believes this form of information gathering serves no point to investors as the information they use to come to their conclusion is based on publicly available information that the EMH disputes is currently incorporated within the asset's price. If the EMH's assumptions hold that the market is full of people seeking above average return, then it is fair according to Bodie *et al.* (2009: 378), to assume that those investors would have duly performed those same evaluations and projections and come to a very similar value of the asset price. It would only be those investors with a unique view or insight into the asset and its information that would possibly come to a different valuation of the asset.

There are 3 forms of market efficiency that are again documented by the previously mentioned authors within the theory and are described as follows:

Weak form of the EMH

- The weak form states that today's stock prices reflect all historical price information, and therefore historical stock prices are not useful for investment decisions. Under this weak form, stock prices are said to take a 'random walk' when their historical prices are analysed. A 'random walk' is a statistical concept, popularized by Fama (1965) and Malkiel (1973), which is based around future prices being independent of past prices. Investors would not be able to outperform the market based on the analysis of past asset prices.

(Correia, Flynn, Uliana and Wormald, 2007: 27; Dupernex, 2007: 169; Megginson, Smart and Graham, 2010: 357)

Semi-strong form of the EMH

- The semi-strong form states that today's stock prices reflect all historical stock price information as well as all relevant publicly available information. If an investor deems a market to be semi-strong efficient, studying a company's financial statements would be of no added value in the investment decision and no abnormal returns would be earned using this strategy. The rationale behind this theory is that investors react instantaneously to any new publicly available information and drive the stock price to its fair value. Some investors practice fundamental analysis by studying a company's financial statements in an attempt to find a mispriced stock and capitalise on it. (Correia *et al.* 2007: 27; Dupernex, 2007: 169; Megginson *et al.* 2010: 357)

Strong form of the EMH

- The strong form states that stock prices reflect all historical stock price information, all relevant publicly available information as well as privately available information known only to a select few individuals. Market prices reflect all relevant available information. If an investor believed the strong form of the EMH to be true, then no abnormal returns could be earned, regardless of the information they have access to. (Correia *et al.* 2007: 27; Dupernex, 2007: 169; Megginson *et al.* 2010: 357)

While the three forms of the EMH are described above, there are a number of tests available that are there to validate the claims of the EMH in a more practical way.

Weak-form tests are designed to seek any patterns in asset returns. As mentioned already, technical analysis makes use of historical data to try and determine future asset prices and returns. A weak-form test sets out to identify any predictability in asset returns. (Megginson *et al.* 2010: 359) According to Bodie *et al.* (2009: 388) such a test would, for example, "measure the serial correlation of stock market returns". The correlation of returns means the trend related to historical asset returns being related to future returns.

Semi-strong tests incorporate market anomalies and their impact of generating above average returns. Such a test could be analysing the speed at which prices adjust given a particular piece of information entering the market. Fundamental analysis seeks out any market anomalies that could be taken advantage of to generate superior returns. When studying fundamental analysis, testing its successfulness means trying to identify whether or not any publicly available information, over and above the historical data on the asset, can be effectively used to generate above average returns. (Bodie *et al.* 2009: 388; Megginson *et al.* 2010: 360)

Strong-form tests of the EMH are based on the use of insider information. It is accepted that trades made by people with access to inside information are able to generate superior returns. It is because of this that those trades are regulated, with those trades having to be registered before being made public. If markets are strong-form efficient, then once that information becomes public, the asset prices will change accordingly and no investor should be able to profit from following this information. (Bodie *et al.* 2009: 388; Megginson *et al.* 2010: 360)

When unit trust managers are deciding upon the composition of their portfolios, they have to be mindful of their interpretation of the efficiency of the market. They need to take into account their efforts of analysing the market, its outcomes and its information so as to ensure they are aware of the implications if their analysis does not uncover all the information or if that information is misleading. This analysis of the market is in direct contradiction of the EMH which implies that technical analysis of the market will not lead to uncovering new information or lead to superior returns. The EMH suggests that if a unit trust manager does pursue technical analysis of the market, then that analysis would just lead to increased costs including higher trading costs. (Mayo, 2011: 411) This argument has been further strengthened by Bessembinder and Chan (1998) who further investigated the study and findings of Brock, Lakonishok and LeBaron (1992) who claimed that some forms of technical analysis "contain significant forecast power of U.S equity index returns". Brock *et al.* (1992) identified patterns in their study that directly contradicted the EMH and further fuelled the debate on the efficiency of markets. Previous studies such as Fama and Blume (1966) and Jensen and Benington (1970) had concluded that technical analysis was of no use. In contradiction of those studies, Bessembinder and Chan (1995), Sweeny (1986) and Neely, Waller and Dittmar (1997) experienced positive outcomes when testing technical analysis and superior returns. In the same manner that the active versus passive debate has various studies backing either argument, technical analysis follows the same pattern.

Identifying new information that is seen as important to asset prices and unit trust managers is costly and takes a lot of time to gather. It is reasonable then to expect that those expenses be less than the increased return generated from the information. (Bodie *et al.* 2009: 373) Because of the transaction costs involved with acting on this information and the costs incurred in gathering the information, this analysis does not seem feasible on a small scale. It has been argued by Bodie *et al.* (2009: 384) that on a large scale, where a large sum of money is involved and a small higher return is magnified through the larger sum of money invested, it does become more feasible to use analysis measures in an attempt to seek out any information that would result in even a small increase in return. This is the same issue mentioned at the beginning of this section when the magnitude issue was presented as a reason for the debate on active management strategies being one that would continue for the foreseeable future.

A different take on the implications of the EMH is proposed by Mayo (2011: 705-706) who warns unit trust managers on the effects of over complicating their portfolios. Mayo adds that if unit trust managers adopting an active strategy, in an attempt to make active decisions to generate higher returns, incorporate too many of these active decisions, they will be further diversifying their portfolios to be more in line with the EMH and away from the potential benefits of those active decisions. What this would in turn lead to would be a well-diversified unit trust portfolio that would form a mirror of the market and lead to the actively managed unit trust becoming a closet index fund.

There is another hypothesis that supports the views of the EMH, that was briefly mentioned earlier, and that is the Random walk hypothesis that is best explained by Gitman *et al.* (2011: 324) as the following: "Price movements are unpredictable and therefore security analysis will not help to predict future market behaviour". This hypothesis suggests that the historical prices of assets listed on the market are random in nature with there being no pattern involved. This means that any unit trust manager making use of technical analysis to try and predict future price movements would prove to be a waste of time and energy.

The EMH is relevant to the study of unit trusts due to the implications of whether or not a market is efficient or not. The strong form of the EMH is the most applicable to unit trusts because if a unit trust is able to achieve constant superior returns in excess of that of the market, then the markets would be classified as inefficient. What this study found to be the most prevalent from the literature studied is that the weak and semi-strong cases of the EMH

seem to be the most realistic forms of efficiency both in the United States and South Africa with a few studies providing evidence for an efficient market in both countries. (Biger and Page, 1993; Elton, Gruber and Blake, 1996; Garvin, 1995; Kjetsaa, 2004; Oldham and Kroeger, 2005; Treynor and Mazuy, 1966) What could be argued is that for the earlier studies done in South Africa, such as (Biger and Page, 1993; Garvin, 1995; Gilbertson and Vermaak, 1982; Knight and Firer, 1989), the JSE was a relatively small and new market and information assimilation could still have had issues leading to the mispricing of some assets. In my opinion this new study on more up to date information and prices could prove that theory correct and provide evidence that the JSE has improved on its efficiency.

### 2.2.2 Unit trust analysis and performance with regards to the EMH

The issue of the EMH and whether or not markets are efficient has been based on literature and educational readings. For an individual investor and the nature of this study, the issue of markets being efficient or not comes down to whether or not unit trust managers are able to generate superior returns, to that of passive investment strategies, for their investors or not. It is for this reason that this study has studied the past performance of unit trusts within the literature and will study South African unit trusts during the period of the financial crisis to determine whether or not the issue of the efficient markets affected their returns.

So, for the individual investor looking to invest their modest amount of money, are the markets efficient? From what has been brought up earlier, investing a small amount of money would probably not justify an active strategy due to the costs involved in following a buy and sell strategy when attempting to benefit from the various market anomalies. However, one of the benefits of unit trusts is that it pools investor money so that unit trust managers have a larger sum to invest with. Oldert (2014: 42) What this means to the individual investor is that they can start to experience the benefits of economies of scale and this unit trust investment would provide a stronger case for adopting an active management strategy. This is because unit trust managers could afford to adopt more costly analytical measures to try uncover information that would lead to positive returns as the benefit of that information, while potentially only being a small percentage benefit, could be magnified over the entire value of funds invested in the unit trust leading to a magnified return for investors that would outweigh the costs of obtaining that information.

Looking too deeply into the issue of efficiency would probably not lead to any investment decisions being made at all. From the literature studied, it seems as though there is probably a greater chance of the unit trust invested in making under-achieving returns. One could analyse the studies that showed superior returns looking for models of investing or how to make decisions but based on the EMH and the literature, that would be of no use to investors. (Meyer, 1998; Oldham and Kroeger, 2005)

One can argue that markets are generally very efficient but there is always the possibility that some unit trust managers have the necessary skill, patience and creativity to award investors with superior returns. Choosing those unit trust managers is another issue in itself but more of a reasoning to be simplistic with investing in unit trusts and to not be too optimistic with an active management strategy.

## 2.3 Grossman-Stiglitz paradox

"If competitive equilibrium is defined as a situation in which prices are such that all arbitrage profits are eliminated is it possible that a competitive economy always be in equilibrium?" (Grossman and Stiglitz, 1980: 393)

When dealing with market efficiency and its implications on the working of the securities markets, one needs to also take into consideration the Grossman-Stiglitz Paradox (GSP) which offers another angle on market efficiency. The GSP was first introduced in 1980 by Sanford Grossman and Joseph Stiglitz and it offers an alternative view point on the debate on the EMH. This new angle is exactly how the name describes it, a paradox. While it offers an explanation on what an efficient market is, it also contradicts an inefficient market.

Compared to the EMH, the GSP offers a more realistic understanding of modern market efficiency and what a more realistic efficient or inefficient market would operate like.

"The Grossman-Stiglitz paradox says that if a market were informationally efficient, that is, all relevant information is already reflected in market prices, and that no single agent would have sufficient incentive to acquire the information on which prices are based." (Desranges and Heineman, 2008: 3) Investors would only have an incentive to analyse information if that would lead to higher returns and as Bodie *et al.* (2009: 374) put it; this is stressed by the GSP and forms one side of the argument on market efficiency.

This paradox is further explained as follows. If the market is deemed by investors to be informationally efficient, as is the case with the strong form of the EMH, then rational investors would have no incentive to analyse market data and information as the prices are already fully reflected. A passive investment strategy would be the logical investment decision if this was the case, as spending time and money on analysis and trading would be futile.

If this market situation were to hold, after a certain period of time, new information would arise that would possibly not be reflected in market prices due to the lack of market analysis being adopted by investment managers. (Bailey, 2005: 72) Thus if all participants in the market believe it is efficient, inefficiency will arise as the market prices do not fully reflect all the information applicable to the various assets. While this paradox is clearly evident, it also has some limitations to its real world application. Clearly with all the actively managed unit trusts available to investors, the market is deemed to not be efficient and investors are spending vast amounts of time and money in order to find the little bit of information that will set their fund apart from the rest.

This study believes that the argument goes both ways, however, as it is possible that all investors are irrational and believe the markets are inefficient. They will continue to spend time and money analysing every piece of information that enters that market in an attempt to uncover undervalued assets. If this occurs, soon enough all the information will be incorporated into the asset prices by these investors and the prices will reach their fair value and all excess return opportunities will be eradicated from the market. Thus markets will be driven from a state of inefficiency to efficient and the entire situation will be where it started.

What seems to be the most logical application of the GSP would be if rational investors and irrational investors were both players in the market. Rational investors would allow irrational investors to spend time and money on market analysis keeping asset prices at their fair value while they adopted a passive strategy due to their beliefs in market efficiency. Through this belief, their passive strategy would not experience excessive losses or gains as the prices of the assets in their portfolio would always be at or near to their fair value.

## 2.4 Active versus Passive

Active versus passive management of unit trusts follows the section on the EMH as well as the Grossman-Stiglitz paradox as the level of efficiency within a market will play a major

role in the returns that unit trust managers would hope to achieve in a given period. Active unit trust managers are judged on their abilities to outperform the market and passively managed unit trust. Active unit trust managers are constantly judged and selected by investors based on their past results which makes studying those results against the performance of passively managed funds an important aspect of investor information.

Kahn and Rudd (1995) were some of the many authors that conveyed the common deduction that in order for an investor to make a decision on which fund manager to invest in, studying the past results of the investment manager is the logical step in trying to decide who will provide the best returns in the future.

In a market congested with so many unit trusts and asset managers, the primary goal of the fund manager is to prove that they are the best in the business through their performance history. Bodie *et al.* (2009: 37) make reference to the competitiveness of the markets and how there are thousands of analysts adopting various measures in search of the best assets to include in their unit trust portfolios. One of the tasks of analysts is to perform a technical analysis of asset information. Many hours are spent each year by investors, the media and asset management companies, studying these historical performance figures with the wisdom mentioned by Kahn and Rudd (1995) that these figures would indicate who the future top performers would be. What will become evident through the literature, however, is that the consistency of performance is not strong enough to come to a legitimate conclusion that past performance is an indicator of future performance. Of the papers studied, there is too much dispersion of the results with consistent performance not normally lasting more than a year. These results indicate that selecting a fund based on past performance is not a sure bet that the fund will continue to perform as well in the coming years.

On top of the results of the studies, when the EMH is analysed based on those assumptions, it is clear that historical performance cannot guarantee future performance and that on average; actively managed funds would not be able to outperform the market due to the strong form of the EMH. The EMH describes superior performance as an outcome of luck rather than skill of the fund manager. Akinjolire and Smit (2003) add further emphasis on unit trust managers being unable to outperform the market as "this is contrary to the efficient market hypothesis that implies that past performance is no guide to future performance after adjusting for risk and other pricing factors. If the hypothesis is true, not only can the average manager not be

expected to beat passive management, but managers with good track records are not expected to keep this up in the future".

As the EMH is just a theory, it would be fascinating to analyse the data of this study and try to come up with a more up to date analysis of the unit trust industry and its interaction with the EMH. This, however, does not fall within the scope of the study but would be an interesting further point to analyse in later studies.

The entire debate on whether actively or passively managed unit trusts are the better option for investors has been a hot topic ever since the first passive funds were launched. The debate is a fairly controversial topic as the basis for any arguments lie on the foundations of the EMH and whether or not they hold true. If the market is efficient, then actively managed unit trusts should prove futile as no fund manager would have the information necessary to outperform the market. However, as identified in the literature, some studies both in South Africa and the United States do find some evidence that actively managed unit trusts were in fact able to outperform the market. While persistence in this superior performance was at most times very weak if not non-existent, the studies have lead researchers and interested parties to question whether or not skilled fund managers would have the ability to beat the market on a more regular basis. (Firer, Beale, Edwards, Hendrie and Scheppening, 2001; Grinblatt and Titman, 1992; Malkiel, 1995; Meyer, 1998; Petajisto, 2013)

Another view of active managers being able to outperform passive unit trusts was raised by Garvin (1995), who put forward two reasons how this could happen. The first was that of Micro-forecasting skills which, in its basic form, is the ability to identify undervalued shares, i.e. stock selection. The second is that of Macro-forecasting skills, explained as being able to anticipate and move on changes in the market, i.e. factor timing. These two methods, without going into any detail of their effects on the funds risk profile, do offer fund managers options through which to manipulate their asset holdings in an attempt to generate returns in excess of the market or passive fund.

With Macro-forecasting, the active manager is able to change the composition of the assets held in the fund. (Garvin, 1995) In basic terms relating to the financial crisis of this study, if the fund manager predicted a boom and upturn in the market, he/she would be able to take a more risky approach by moving the funds away from cash type holdings into more equity based assets. If the fund manager was anticipating a downturn in the market such as the financial crisis, they could move to a more risk averse position by moving away from equities

into more cash type holdings or assets that would not be as affected by the downturn or who if possible would benefit from a downturn in the market or segment of a market. Again, these are active decisions that do carry the downturn of affecting the cost of the investment for investors. If any of these decisions are made, the costs of executing them are passed onto investors. (Carhart, 1997; Wermers, 2000)

### 2.4.1 Active investment management

The differences between active and passive investment strategies have been researched extensively by various authors. The most simplistic explanation of what active strategies are based on has been well documented by Marx *et al.* (2010: 275) who described an active strategy as being based on one or more of the three fundamental principles that have been incorporated for this study on general equity unit trusts:

1) Market timing: This is the process of actively moving funds in and out of the equity market at certain times in an effort to gain above average returns. This is also referred to as an asset allocation strategy as when the investment manager decides to move funds out of the equity markets for whatever reason, the funds are moved into different markets such as bonds or cash.
2) Theme selection: This is a strategy of focusing on a specific equity area such as small capitalization shares, a specific industry or sector, or even investing in the equity market of a specific country. This is usually described in the overview of the unit trust so that investors have an understanding of where their funds will primarily be invested.
3) Share selection: This process is usually based on some form of valuation model that suggests the most appropriate shares to select based on the theme selected for the unit trust. The shares selected in a unit trust have the ability to be altered at the decision of the unit trust manager should he/she make an active decision in an attempt to outperform the market.

An active management strategy involves taking the necessary measures deemed fit in an attempt to generate superior returns and offer investors an above market return. This is achieved by incorporating one or more of the three active management principles discussed above. With regards to selecting what shares to be include in the unit trust, active managers can adopt an aggressive buy and sell strategy. Initially, shares are evaluated to compare their

intrinsic values and market values with undervalued shares being included in the portfolio. The buying and selling of shares takes place every time a mispriced investment opportunity becomes identified with shares being bought or sold depending of their valuation. (Marx *et al.* 2010: 275)

Incorporating the three principles and adopting an active strategy comes at a higher cost than a passive buy and hold strategy. Unit trust managers who adopt an active strategy believe the benefits of the strategy will be greater than the costs involved and so by raising the cost of the unit trust, investors should expect a higher return than a passively managed unit trust. (Bodie *et al.* 2009: 208; Jones, 2010: 285)

Unit trust managers adopt these principles and an active approach because they believe they have a superior advantage over other unit trust managers, whether this be through greater judgemental skills when coming to market forecasting, information on the markets and shares available to them and within their portfolio or their ability to take risks that other investors are unwilling to take. (Jones, 2010: 286) This is all undertaken in an attempt to outperform the market.

Active management according to Bodie *et al.* (2009: 38) is "the attempt to improve performance either by identifying mispriced securities or by timing the performance of broad asset classes – for example, increasing one's commitment to stocks when one is bullish on the stock market". An active investment strategy allows the fund managers the option to alter the assets within the fund and their proportions based on the view of the fund manager with regards to the market conditions and predicted performance.

In one of the earlier studies on unit trust performance, Jensen (1968) was one of the first authors who were able to conclude, due to their study, that actively managed mutual funds showed inferior returns compared to randomly selected funds with the same risk profile after expenses were taken into account between the period of 1945 and 1964.

So in the most basic explanation, an active management strategy involves a unit trust manager trying to outperform the market by means of the various measures at his disposal which raises the overall cost of the investment.

### 2.4.2 Passive investment management

Marx *et al.* (2010) previously described the three principles that are incorporated into an active management strategy. Marx *et al.* (2010) then further discusses the opposite side of the argument and that of passive management strategies. In relation to his description of an active strategy Marx *et al.* (2010:275) describes a passive investment strategy as one "that does not entail market timing or theme and share selection. Passive portfolio management is a strategy of constructing and holding a portfolio of high quality pre-selected shares without endeavouring to constantly outperform the market in the short term through superior forecasting or finding undervalued shares."

Investors, according to Marx *et al.* (2010: 276), who adopt a passive investment strategy, believe that markets are efficient and that active unit trust managers are wasting their time and money on trying to outperform the market due to the understanding being that asset values are correctly priced and contain all available information pertaining to them. This belief of efficient markets is additionally mentioned by Jones (2010: 282) who says that if the markets are taken as being informationally efficient and all stocks contain all the information available relating to them, then no active strategy should be able to generate excess performance above that of the market on a risk-adjusted basis.

The major benefit of passively managed unit trusts for investors is their significantly lower costs that they are charge to invest in the unit trust. This is because passive unit trust managers do not spend time and money analysing the market like active managers and by buying and selling assets. As Jones (2010: 282) puts it, "The emphasis is on minimizing transaction costs and the time spent in managing the portfolio". Every trade that a unit trust manager makes incurs a cost that is passed on to the investor whereas with a buy and hold strategy, there are no such costs and the investor pays a minimal fee for a market return without the added risk that the active decisions made by some unit trust managers might not pay off. (Marx *et al.* 2010: 276)

Because the EMH indicates that stock prices are at fair levels, given all available information, it makes no sense to buy and sell securities frequently, which generates large brokerage fees without increasing expected performance. (Bodie *et al.* 2009: 379)

Passive managers believe the costs involved with active decisions are likely to be more than the expected benefits. It was mentioned that active managers make use of various methods to

find undervalued stocks to include within their portfolios which comes at a cost. This does not occur with passive management as this strategy does not try and value stocks nor does it analyse the market and attempt to time it with and buy and sell strategies. With all these understandings put into one phrase; "passive investing is concerned with achieving the returns available in various market sectors at minimum costs" (Jones, 2010: 282).

Bodie *et al.* (2009: 38, 207, 378) further support the explanation of a passive investment strategy. Firstly, security analysis is avoided as a highly diversified portfolio is selected and held until the maturity date is met. This results in fewer expenses incurred by investors as no attempt is made to outsmart the market that is deemed to be efficient.

### 2.4.3 Index funds

Index funds and a passive investment strategy are based on a very simple principle. Managers who believe markets are efficient prefer to not spend time and money on trying to beat the market but rather on replicating the market. This leads to market returns at a far lower cost than actively managed unit trusts. Passive managers, according to Gitman *et al.* (2011: 329**)** believe that "that any time and energy spent researching individual securities will merely serve to increase the fund's expenses, which will drag down investors' returns".

The two most general passive investment strategies are those of a buy and hold strategy that was mentioned earlier that is basically when a unit trust manager buys stocks and holds them until some future time in order to meet the objective of the unit trust. The emphasis is on avoiding transaction costs, additional search costs, and so forth. (Jones, 2010: 282) The second most common strategy is called indexing. Indexing is an approach to passive investing whereby a unit trust company would establish a unit trust that replicates a decided upon index or benchmark, replicating its risk and reward, such at the JSE Top 40, the JSE ASI or a specific sector benchmark. Marx *et al.* (2010: 276) describe the purpose of indexing to "mirror the actual performance of the selected equity benchmarked index".

Index funds have relatively low costs due to the lack of analysing and trading associated with them. Because of this, they only offer investors a market return which means if the market does well, investors earn a higher return and if markets perform poorly, investors suffer the same fate. (Marx *et al.* 2010: 276) This offers a dilemma to investors and forms an integral part of this study's objectives. Because no active trading is done, investors cannot expect to outperform the market. That poses a series of questions. What if the markets enter a boom

phase whereby the markets are growing at a rapid pace due to a specific sector or group of assets? The passive indexed investor would miss out on this potential growth and excess returns if those assets were not included in the index whereas an actively managed unit trust would be able to manipulate its portfolio to accommodate those assets in place of poorer performing assets. On the other hand, if the market entered a bust phase such as that experienced by world economies during the 2007 financial crisis, index investors would suffer the same fate as that of the market without being in a position to alter that decline in returns. If an investor had their funds in an actively managed unit trust, there is still the option for a skilled unit trust manager to be able to make use of the underlying principles of active management in an attempt to lessen the poor results or in turn be able to still offer market beating results even in times of economic distress.

### 2.4.4 Benchmark Portfolios

A benchmark is used by a unit trust manager as a realistic target return that their unit trust should be trying to at least achieve and ideally outperforming. Benchmarks are chosen to be as similar in risk style to that of the managed unit trust. This is done so that if there is a difference in returns between the benchmark and the managed unit trust, the difference whether it is positive or negative can be attributed to the decisions made by the active manager. Benchmarks are selected to be as representative as the unit trusts themselves meaning they comprise of the same types of assets or instruments. In most cases a published market index is used so that information relating to its performance and what it is comprised of is easily and readily available to unit trust managers. (Jones, 2010: 283; Marx *et al.* 2010: 288)

The selection of the benchmark has many implications for the unit trust. Unit trusts are obviously judged by their performance so their performance relative to their benchmark is vital for gaining the money of potential investors. When a unit trust is able to outperform its benchmark, it is often used by the unit trust company to advertise their fund as being superior to its competitors and that they have a manger that is skilled at making the correct active decisions.

In this section I have spoken about the differences between actively and passively managed unit trusts and the benchmarks they are compared against. Both have valid reasoning and justification for them being the dominant investment tool with regards to unit trusts. But what

has been mentioned before in the literature is that neither of these investment strategies produced compelling results to back up their claims. The studies looked at for this study provides contradictory results leading to the debate remaining ongoing until definitive studies can be proved in either favour. For this reason, index funds have risen in prominence due to the contradictory results allowing for those investors who seek a safe return without the added costs of active management to also be a part of the investment world.

## 2.5 BEHAVIOURAL FINANCE

With the context of this study being on whether or not active managers can outperform passive investments, it would be futile to continue the debate without briefly mentioning behavioural finance and its contradictions and opposing views to modern economic thinking. Behavioural finance has grown into a large and intricate topic of debate when analysing modern finance theory and thus this study will briefly introduce the concept to the reader and some of the concepts that relate to unit trusts, investments and why unit trust managers might underperform passive investments.

Modern economics, financial theory and the EMH is based on rationalism among other assumptions with the idea that a person's psychology cannot hinder their investment decisions. (Nofsinger, 2011: 2) However, through the decades, various anomalies have arisen that contradict this rational viewpoint and has opened the debate to a point where economists and psychologists identified certain gaps in the theory that could not be explained by modern financial thought. Jones (2010: 311) defines market anomalies as being "in contrast to what would be expected in a totally efficient market, and constitute exceptions to market efficiency. To date, most of them have not been explained away and until that happens, they remain anomalies or exceptions to market efficiency." This has led to the growth of behavioural finance that employs psychological and sociological views and phenomena in an attempt to bridge the gap between theory and real life outcomes.

A simple example of an anomaly which is extensively used within educational literature is that of an average person who does not have insurance but then also purchases lotto tickets. The risk averse and logical option would be to purchase insurance in order to provide safety for one's family and property whereas many people find this an unnecessary expenditure and would rather take a risk and purchase a lotto ticket in search of instant fortune. This example highlights the mismatch between modern finance that believes people make rational decisions and are risk averse with behavioural finance who acknowledges that people undergo a more intricate mental process when making financial decisions that often contradict those assumptions. Another example that better relates to this study is highlighted by Nofsinger (2011) who pointed out that while the financial markets in the US during the financial crisis was at its lowest point, US investors within the mutual fund industry, sold more than $150 billion worth of their investments. In addition to that, those same investors purchased $11

billion worth of mutual funds during the one month the markets were at their peak. Clearly this goes completely against modern financial thinking and illustrates that certain behavioural characteristics do play a role in financial decision making.

Behavioural finance is simply the study of the psychological and sociological impacts that form a part of the financial decisions made by individuals, groups and organizations. (Ricciardi and Simon, 2000: 1) Behavioural finance came about due to the anomalies found within modern finance. So, behavioural finance in a way has integrated itself with the central study of modern finance by incorporating psychology and sociology in an attempt to answer some of the anomalies left unanswered by modern financial theory. (Ricciardi and Simon, 2000: 2) What makes this such a fascinating field of study is that it houses many different schools of thought, ideas and fields of study whereas modern finance has been very one dimensional in its train of thought. As Barber and Odean (1999: 41) state it, "behavioural finance enriches economic understanding by incorporating these aspects of human nature into financial models."

William Forbes (2009) in his educational literature on behavioural finance makes two statements at the beginning of his work that perfectly summarises and simply puts forward the argument for behavioural finance as an important field of study. Firstly, Forbes (2009: 1) states that "the only difference between behavioural and traditional approaches to finance lies in the explicit recognition of the need to ground theoretical innovations of financial decision making in an understanding of how decisions are actually made". In addition to this, Forbes (2009: 1) goes onto support the views of Ricciardi and Simon (2000: 2) that behavioural finance is taking a more modern approach to the initial views of traditional finance. Behavioural finance appreciates the models of traditional finance, however, it "argues that the assumptions made in theoretical economic models are inconsistent with real world variants and that a new understanding needs to be taken when making investment decisions".

It is widely understood that Daniel Kahneman and Amos Tversky are regarded as the fathers of behavioural finance and their work that began in the late 1960's and early 1970's [(Tversky and Kahneman, 1971, 1974) (Kahneman and Tversky, 1972, 1973, 1979)] set the platform for further economists and psychologists to expand on their research and continue to offer insight into the gaps on modern financial theory. Another important figure in behavioural finance is that of Richard Thaler who was one of the first economist' to expand on the work by Kahneman and Tversky. It was Thaler, through a number of papers first

published in 1980, who first idealised that psychological theory could be the answer to the many questions surrounding the irrational behaviour of people that modern economic theory could not explain. Since Thaler, behavioural finance has advanced to where it now seeks to understand the thinking process of investors as well as how much of an impact those thought processes effect their decisions in relation to what modern finance suggests.

As the theories of behavioural finance have grown, so have the different concepts and ideas as to why markets do not act rationally. Below are a few of the concepts that relates to this study on unit trust performance. They offer their views as to why markets might not be as efficient as modern economic theory suggests. Due to this thesis not examining the question of why unit trust's might underperform the market, it was decided that these concepts not be explained in detail but will be briefly defined so that the reader has a simple understanding of the causes of market anomalies and why their investments may not be earning the return they had been expecting.

### 2.5.1 Anchoring

Anchoring occurs when investors are unsure about the information they are dealing with and end up making estimates based on a known initial value or reference point. (Ackert and Deaves, 2010: 97-102) From the unit trust manager's perspective, this would be related to the decisions of which shares to invest into when basing that decision on a limited scope of information.

### 2.5.2 Gambler's Fallacy

Gamblers Fallacy is the mental process that occurs when investors believe a certain outcome is going to occur based on previous outcomes. It is similar in concept to the law of averages and that bad results will cancel themselves out. This is the case, however, over only the long term and in the short-term, investors could stand to lose out significantly if they base their decisions on this fallacy. (Ackert and Deaves, 2010: 95; Forbes, 2009: 33)

### 2.5.3 Herd Behaviour

Herding can occur with both unit trust managers as well as individual investors. Herding occurs when both parties make investment decisions based on what their peers are deciding. This could be down to a variety of reasons however the most pertinent reason is the lack of information and wanting to conform to the herd with the idea that if failure occurs, at least it was not suffered alone. (Ackert and Deaves, 2010: 208; Forbes, 2009: 222; Jones, 2010: 319; Nofsinger, 2011: 95; Ricciardi and Simon, 2000: 8)

### 2.5.4 Overconfidence

Overconfidence is a trait that occurs in both unit trust managers as well as individual investors. "Overconfidence causes people to overestimate their knowledge, underestimate risks, and exaggerate their ability to control events." (Nofsinger, 2011: 11) Individual investors could put too much faith in their own abilities when selecting which unit trust to invest in. Unit trust managers could think that their abilities with regards to share selection or other decisions are above average leading them to dismiss certain important information. (Ackert and Deaves, 2010: 106; Forbes, 2009: 141; Gitman *et al.* 2011: 329; Jones, 2010: 319; Mahajan, 1992: 330; Ricciardi and Simon, 2000: 8)

### 2.5.5 Overreaction

Overreaction according to Nofsinger (2011: 77) occurs when too much emphasis is placed on past results leading to prices becoming higher due to optimism. Once it has been discovered that the price is too high and has not been backed by anything substantial, the share price falls. Overreaction is similar to herding in that individual investors and/or unit trust managers would aid in the rising and falling of the share price.

### 2.5.6 Prospect Theory

Prospect theory deals with the idea that people do not always behave in a rational manner. Schwartz (1998: 82) articulates that "investors tend to evaluate prospects or possible outcomes in terms of gains and losses relative to some reference point rather than the final states of wealth." When faced with a decision regarding the possibility of losing money, people would make risky decisions aimed at loss aversion. Ricciardi and Simon (2000: 8)

define prospect theory as being "how investors assess and calculate the chance of a profit or loss in comparison to the perceptible risk of the specific stock or mutual fund". Prospect theory describes how people frame and value a decision involving uncertainty. (Ackert and Deaves, 2010: 38; Forbes, 2009: 165; Nofsinger, 2011: 6)

### 2.5.7 Loss Aversion

Loss aversion is the behavioural characteristic that people possess that assigns more importance on losses than they do on gains. An investor, according to loss aversion, would suffer more from a loss than enjoy the pleasure from a gain and would therefore struggle to part ways with a losing investment. (Ackert and Deaves, 2010: 45; Jones, 2010: 319; Nofsinger, 2011: 28; Ricciardi and Simon, 2000: 8; Subrahmanyam, 2007: 5)

One of the many benefits of unit trusts is that they offer a means of mitigating against these various behavioural anomalies that effect investors decisions, market prices and market movements. By passing on the investment analysis and decision making onto a professional investment manager, individual investors remove the chance of making decisions based on their own behavioural characteristics.

### 2.5.8 Behavioural Finance and unit trust performance

When discussing behavioural finance in relation to unit trust performance, there are two sides that need to be discussed. The first is from the investor perspective. What studies have discovered in the past is that many investors do not have the correct mind set when investing in unit trusts. At the beginning of this study it was explained how unit trusts are long-term investments and that in order to potentially realise its full return potential, funds invested into the unit trust need to be left alone until the set maturity has been reached. With them being long term, there is room for human behavioural characteristics to come into play. Behavioural finance becomes an important player in unit trust investments when investors start experiencing turns in the market or if their unit trusts are not living up to long-term expectations in the short-term. Investors, due to some of the above concepts such as loss aversion and prospect theory, begin making irrational decisions such as withdrawing their funds during periods when their investments are doing poorly or deciding to switch their funds to unit trusts that might be performing better during the specific period. During the review of past literature, it was found that the costs involved with these decisions had a

devastating effect on investor returns and put them in a position that would be a struggle to recover from. (Bollen and Busse, 2005; Carhart, 1997; Grinblatt and Titman, 1989; Meyer-Pretorius and Wolmarans, 2006) With regards to share investments which could include equity unit trusts, Ricciardi and Simon (2000: 6) suggest that a way to eliminate these human errors discussed above could be for investors to initially determine their investment strategy for various durations and to stick to them, even in times where performance results are not what were to be expected.

On the other hand, unit trust's offer investors an attractive means of being involved in the stock market, while having their funds looked after by an independent manager which greatly reduces the potential for behavioural characteristics to become involved in the decision making process as the unit trusts are governed by a set of laws as well as a specific investment strategy. It would be naïve to assume that because unit trusts have certain laws, guidelines an investment strategy to conform to, that the unit trust managers are immune to behavioural finance becoming a part of their running of the fund. Once money has been invested into a unit trust, it is down to the unit trust manager to perform his duties, to the best of his ability while making sure the decisions made are rational, wealth maximising and in the best interest of the investors.

A quote by Wood (1995: 1) points out a few issues facing investment managers in today's markets. "Evidence is prolific that money managers rarely live up to expectations. In the search for reasons, academics and practitioners alike are turning to behavioural finance for clues. It is the study of us…. After all, we are human, and we are not always rational in the way equilibrium models would like us to be. Rather we play games that indulge self-interest…. Financial markets are a real game. They are the arena of fear and greed. Our apprehensions and aspirations are acted out every day in the market place…. So, perhaps prices are not always rational and efficiency may be a textbook hoax."

## 2.6 EMPIRICAL STUDIES

Research into the unit trust industry in South Africa is critical as the industry has grown to be a large, important financial sector of the economy and an extremely popular area for individual investors who do not have the technical knowledge to trade on the market themselves.

Many studies have analysed the persistence of unit trusts. Persistence is defined by Wessels and Krige (2005: 71) as 'the consistency of performance' however the researcher has not come across a study that analyses the performance of unit trusts during the financial crisis in South Africa to determine how they were affected and to expand on past studies that tried to determine whether or not unit trusts were able to outperform the market or not.

The section below will review previous studies on the persistence and performance of both foreign mutual funds as well as local unit trusts. This study first intends to understand the unit trust industry in South Africa and deduce, holistically, whether or not unit trusts have been able to outperform the market or not. The paper will then conduct its own analysis on its sample of unit trusts to conclude independently whether or not, during the financial crisis, unit trusts were able to outperform the market during the period of economic turmoil. By analysing the returns during different economic periods, this study hopes to understand if actively managed unit trusts were able to outperform passively managed unit trusts and in turn deduce whether or not fund managers were able to justify the fees they charge investors or whether it is less costly to invest in a passively manage fund while not accepting lower returns.

### 2.6.1 The financial crisis

The financial crisis had its roots in the US real-estate bubble and sub-prime mortgages that began in 2006. (Shiller, 2008:2) Two major factors that contributed to this crisis according to the RSA National Treasury Policy Document (2011:9) were "the twin problems of global macroeconomic imbalances and inadequate financial sector regulation". This view was also noted by Blundell-Wignall *et al.* (2008:2), who mentioned the global macro policies that were affecting liquidity, as well as the poor regulatory framework that should have been in line to prevent such a crisis from occurring but which in fact helped contribute to the bursting of the real estate bubble.

In the US, there was an explosion in lending often to households that were not credit worthy; this caused debt levels to rise to new heights that in the end were defaulted on. This led to the growth of the sub-prime mortgage market that targeted households that would only be able to repay their mortgages on the assumption that their house prices would be increasing (RSA National Treasury Policy Document, 2011:10). On top of offering credit to people who would not be able to repay the mortgages, credit extension was offered when requested due to the creation of sophisticated financial products and poor regulation of both risk and the financial system (RSA National Treasury Policy Document, 2011:10). Reinhart and Rogoff (2008:12), in their analysis of the financial crisis, discovered that "over a trillion dollars was channelled into the sub-prime mortgage market, which is comprised of the poorest and least credit worthy borrowers within the United States".

The reason why the crash of the US housing bubble lead to a global financial crisis was due to sub-prime mortgages being bundled and repackaged into securities that were sold to investors all over the world. This meant that when the bubble burst in the US, all investors who had purchased these securities around the world were affected by the defaults, with exposure running into the trillions of dollars, with further effects affecting credit globally and its subsequent constriction. (RSA National Treasury Policy Document, 2011:10; Shiller 2008:2).

In 2007, the US started experiencing a contraction in wealth, increased risks and the worsening of its credit market functioning. US house prices were falling fast which was leading to increased defaults on home loans from less credit-worthy borrowers. These defaults were attributed to the rise in interest rates from 1% in 2004 to 5.35% in 2006 (IMF, 2009) The effects that these defaults had on the US financial sector had been enlarged due to the creation of the complex financial products that failed to spread risk suitably. (IMF, 2009; Reinhart and Rogoff, 2008:4)

In summary, the financial turmoil that affected global markets was based on a series of problems. These include the housing bubble, the access to credit of sub-prime borrowers, over-valuation of securitization bundles, lack of adequate capital structures in the banking sector and short term deal emphasis. (IMF, 2009) The IMF (2009) went on to extrapolate that these issues lead to a bank solvency crisis, the lack of credit availability and a serious lack of and damage to investor confidence.

### 2.6.2 How the financial crisis affected world markets

As noted earlier, today's economic and financial markets are linked due to various factors. Not only did the rest of the world feel the effects of the financial crisis due to the purchasing of the sub-prime mortgage securities, but also through the effects of the down turn of the US economy (RSA National Treasury Policy Document, 2009:2). As the US economy suffered, lending dried up slowing down investments, individuals lost their jobs causing household expenditure to drop which resulted in a decrease in demand for both local and imported goods. The suppliers of the imported goods therefore had less of a market and their profits and revenue decreased causing further negative effects in their home markets (Padayachee, 2011:1-3).

Since these sub-prime securities had been bought up globally, once the US market crashed, stock markets according to the RSA National Treasury Policy Document (2011:10) collapsed around the world, household wealth was wiped out leading to a decrease in consumption causing organizations to suffer financially with no option of borrowing money. This then lead to the biggest global recession since the great depression of the 1930's.

### 2.6.3 What protected the South African financial sector?

According to the RSA National Treasury Policy Document (2011:13) and Donohoe (2008) the South African financial sector did not suffer the effects of the financial crisis to the same magnitude that some developed and more advanced economies did. With the results being that although some effects were felt, South Africa was in a strong position to see out the recession and emerge a stronger economy than before. One argument as to why South Africa was able to ease some of the pressures of the global financial crisis was possibly due to the fact that this was not the first of its kind in history.

The RSA National Treasury Policy Document (2011:13) explains the Country's policy components that helped to ease the pressures of the financial crisis and protect the economy from disaster.

- A sound framework for financial regulation and well regulated institutions
- Appropriate and conservative risk management practices at domestic banks
- Limited exposure to foreign assets
- Subsidiary structure and listing requirements

- A robust monetary policy framework
- Countercyclical monetary policy
- Countercyclical fiscal policy
- A proactive approach to dealing with bank credit risks
- A focus on reducing household vulnerability

Donohoe (2008) further explained how the South African banking sector performed relatively well during the crisis due to the regulatory environment and exchange controls that were in place that protected South African from excessive exposure to global markets.

### 2.6.4 How the financial crisis affected the South African markets

Although there were policies in place that aided the South African economy during the financial crisis, effects were still felt locally. This sections aims to highlight those outcomes which will in turn lead into the next sections of portfolio diversification and retirement funds. The effects of the financial crisis felt by South Africa highlight the need for proper portfolio structuring to reduce the risk of individuals losing their savings and this is achieved through adequate diversification.

While the financial crisis did have some direct impact on the financial sector of the economy, Padayachee (2011:1) states that "the main channel for this negative effect had been via the recession-induced slow-down in foreign financial flows of all types into Sub-Saharan Africa and the region's dependency on commodity based export growth".

As the crisis began to worsen, South Africa started to feel the effects. In the fourth quarter of 2008, South Africa's GDP growth rate declined to 1.8% and deteriorated to -6.4% during the first quarter of 2009, improving slightly to -3.2% the following quarter. Technically, the country had slipped into a recession. Not only had the financial sector suffered, but manufacturing output had declined by 6.8% during the first quarter of 2009. Mining declined as well by 12.8% over the same period (Padayachee, 2011:4).

Looking at a more macroeconomic perspective, the financial crisis forced inflation to exceed the 3% - 6% target range, the current account deficit reached a distressing 5.8% in 2008 and a frightening 7% in early 2009, falling a further 3% going into the second quarter of 2009. These issues forced the Reserve Bank to cut its Repo rate to its lowest rate in 27 years of 7% in a bid to encourage the economy to fight the recession (Padayachee, 2011:5).

As can be seen from the above effects of the crisis, all aspects of the economy were affected. This leads us onto the next section. As jobs in South Africa are scarce and the possibility of future financial turmoil is a reality, the need for effective retirement planning is imperative. As jobs are not guaranteed, it is of the upmost importance to begin retirement saving and investment as early as possible.

### 2.6.5 The historical performance and persistence of unit trusts

The section below reviews previous studies on the persistence and performance of both foreign mutual funds as well as local unit trusts. The literature is presented in such a way as to make a case for the performance and persistence of international unit trusts and then for South African unit trusts. This hopes to identify any similarities or discrepancies between the two markets and will form a platform from which this study will begin its own studies on equity unit trusts in South Africa. Through the studies of past literature on the South African market, an understanding of the more current situation of unit trusts and their performance hopes to be formalised. The paper will then conduct its own analysis on its sample of unit trusts to conclude independently whether or not, during the financial crisis, unit trusts were able to outperform the market during the period of economic turmoil. By analysing the returns during different economic periods, this study hopes to understand if actively managed unit trusts were able to outperform passively managed unit trusts and in turn deduce whether or not fund managers were able to justify the fees they charge investors.

Since the early studies on the performance of unit trusts (Sharpe, 1966; Treynor, 1965; Jensen, 1968), countless studies have been produced that further the knowledge and understanding from those past studies into more recent data. These studies originated in the US and covered the early mutual funds and, as the South African unit trust market grew, so did the research into that industry. With regards to the studies in both markets, there have been varying conclusions drawn up as to whether or not actively managed funds were in fact able to outperform their respective benchmarks and justify their management fees as opposed to less costly passive management strategies. As the studies of unit trust performance are of a complex nature, the measures used will be explained in detail at a later stage. The hope of the researcher of this next section is to build up an understanding of the historical views on unit trust performance and what the general rational was on the active versus passive debate.

### 2.6.6 Why persistence studies are done

The most logical place for investors to seek out unit trusts is their past performance figures. As no one can predict the future, the past performance of unit trusts is often the first place an investor will look when trying to identify a new investment. For this reason, asset management companies spend a large sum of their management costs on the advertising of their funds past performance as a means of attracting new investors and capital. (Collinet and Firer, 2003) Although this is the most common method used by new investors, Meyer (1998:100) states that although it is useful and quite common to judge a unit trust using past performance as a measure, many academics do not agree on this method. Academics generally disapprove of this method due to the implications of the Efficient Market Hypothesis. (Meyer, 1998; Oldham and Kruger, 2005)

### 2.6.7 Why international studies are looked at as well

While the South African market is the focus of this study, it would be foolish to exclude the literature and understanding researchers have gathered from the US mutual fund industry. The US industry started in 1924, around 40 years before the first unit trust was launched in South Africa. With so many more years of growth and experience, there is a wealth of knowledge on the literature that offers guidance throughout this study. As the US industry dwarfs the local industry in size and by the number of funds available, the research obtained has proved to be very useful. The smaller number of funds available and the shorter time period able to be reviewed has made past studies on the South African industry more difficult. It is the hope of this thesis that with data available and with a sufficient time period to be used; this study will offer some stimulating feedback to the local unit trust industry. (Firer *et al.* 2001)

### 2.6.8 International studies supporting persistence

One of the questions Jenson (1969) set out to answer was whether or not open-end mutual funds were able to select portfolios that would be able to earn abnormal returns given their level of risk versus the returns that could have been earned by a market fund. Jensen (1969) studied the performance of 56 mutual funds over a 20 year period and attempted to analyse the funds returns as either inferior or superior to the market. The outcome of the study

concluded that due to too many expenses being incurred by the mutual funds, persistence of performance was encountered but this was more for negative performance as opposed to positive performance over the 20 year period. Mutual funds were well diversified but suffered as a result of the costs incurred. With regards to the results obtained in the study, Jensen noted that when all expenses were added back to the portfolios, the returns were deemed average and thus the resources spent on active strategies by trying to forecast stock prices were futile and did not result in superior returns being earned by the market portfolio.

In their 1992 study, Grinblatt and Titman (1992) set out to analyse how mutual fund performance relates to past performance. They studied a sample of 279 mutual funds over the 10 year period of 1974 to 1984. During this period, they used an 8 portfolio benchmark and concluded that persistence in performance did occur and that it was most significant for a 5 year period. While the data did contain elements of survivorship bias, Grinblatt and Titman (1992) stated that it was negligible to the sample. During the study, the information identified gave further evidence leading to the conclusion that it was down to the ability of the fund managers to consistently earn abnormal returns over time. Without paying attention to the source of persistence, Grinblatt and Titman (1992) concluded that past performance of mutual funds served as a good indication of future performances and would serve as a useful investment tool to investors.

In a further study together, Grinblatt and Titman (1993) set out to overcome the issues surrounding measuring mutual fund performance without having to deal with inaccurate benchmarks that were causing controversy with the results of their studies. Benchmarks have been criticized due to their inability to correctly act as a useful measure of mutual fund performance. Grinblatt and Titman (1993) thus employed portfolio holdings as an alternative to a benchmark. This new portfolio holding measure was applied to the quarterly results of 155 mutual funds, the same funds as studied by Grinblatt and Titman (1989), between 1975 and 1984. When the mutual fund returns were studied, it was found that not all mutual funds produced returns deemed to be superior. Funds with an aggressive growth strategy were found to produce the most excessive returns which were consistent with an earlier Grinblatt and Titman (1989) study. Some levels of persistent performance were found when past winners were analysed in the following period. While not all of the mutual funds showed persistence, on average, past superior performing mutual funds were able to perform well in the following period. In contrast, negative performing funds tended to remain poor performers in the following period. As was also mentioned in Grinblatt and Titman (1989),

investors would not be able to use this information as an investment strategy due to the negative effects of management fees and transaction costs which would erode the positive performance figures.

Hendricks, Patel and Zeckhauser (1993) studied the persistence of 165 open-end, no-load, growth-orientated, equity funds between 1974 and 1988. The funds were constructed in such a way as to remove the possibility of survivorship bias and the data was analysed on a quarterly basis, net of management fees. Hendricks *et al.* (1993) identified the "hot hands" phenomenon which is described by them as "funds that deliver sustained short-run superior performance". In addition, the opposite "icy hands" phenomenon was also identified and noted to be more significant in the study than superior performance. Throughout the study, the following outcomes were identified. Firstly, superior performance was seen in a number of funds and was seen as significant although this was over a short period of time, at around 4 quarters. Inferior performance was also identified but was found to be far more significant with inferior performance being far greater than superior performance. At the conclusion of the study, an ex-ante investment strategy was suggested whereby selecting funds with 'hot hands' correctly could lead to an increase of 6% per annum risk adjusted returns. This is marginally greater than the 3 to 4% superior performance in relation to traditional benchmarks. In conclusion, mutual funds that were deemed poor performers performed significantly worse than the benchmarks adopted, whereas mutual funds that were classified as superior performers were able to outperform the benchmarks although not very significantly.

Jegadeesh and Titman (1993) studied various investment strategies relating to mutual funds, in addition they attempted to uncover the efficiency of the market by analysing whether or not stock prices over-react or under-react to the information it receives. The strategy that relates to this study is that of purchasing the previous year's well performing stocks and selling those stocks that underperformed in an attempt to generate significant excess returns. While this strategy is found to produce profitable results, these results only last 1 year and disappear within the next 2 years. During the period of 1965 to 1989, Jegadeesh and Titman's (1993) study realised significant excess returns when purchasing past winners and selling recent losers. With regards to the excess returns disappearing within the following 2 years, Jegadeesh and Titman (1993) give their views on the efficiency of the market: "it is possible that the market underreacts to information about the short-term prospects of firms but overreacts to information about their long-term prospects. This is plausible given that the

nature of the information available about a firm's short-term prospects, such as earnings forecasts, is different from the nature of the more ambiguous information that is used by investors to assess a firm's longer-term prospects".

Goetzmann and Ibbotson (1994) focused their study on open ended mutual funds and sought to determine whether or not managers who performed well in the past were likely to be the top performing managers again in the future. The topic of the EMH was brought to the forefront with this study as Goetzmann and Ibbotson's (1994) challenged the theory that past performance is not related to future performance and as the hypothesis implies, any excess returns by fund managers would be a result of luck and not skill. Goetzmann and Ibbotson's (1994) data included 728 mutual funds however; only 275 funds were studied as they were the only surviving funds at the end of the study. Results from this study would need to be viewed with caution due to the implications of survivorship bias being present within the study data. The period under review was the 13 year period between 1976 through to 1988. The mutual funds were studied over varying lengths of 1 year, 2 year and monthly periods. Not only were the raw returns studied but the Jensen alpha measure was also adopted to validate the raw return outcomes. The raw returns were taken as reported, net of management fees but did not take into account taxes or front-end and back-end load fees. As has been the case with similar studies such as Grinblatt and Titman (1993), Brown and Goetzmann (1995), Phelps and Detzel (1997), Meyer (1998), Firer *et al.* (2001) and Collinet and Firer (2003) winners and losers were ranked according to whether or not the mutual funds outperformed the median fund. For raw returns, Goetzmann and Ibbotson (1994) discovered that in the 1970's the repeat winner phenomenon occurred during 4 of the 5 sub periods which subsequently reversed in the 1980's. When looking at the risk adjusted returns, the repeat winner hypothesis was supported with 3 of the 5 periods showing statistically significant persistence of performance. Upon the conclusion of their study, Goetzmann and Ibbotson (1994) stated that: "while the repeat-winner pattern may not be a guide to beating the market, it does appear to be a guide to beating the pack over the long term." Thus investors who were entering the market or were unsure of which mutual fund to invest in, could use historical performance figures as guide to selecting funds that had a greater chance of performing well in the future.

Malkiel (1995) further extended the study done by Goetzmann and Ibbotson (1994) and looked at the returns of general equity mutual funds between 1971 through to 1991. The study used a unique set of data that included the returns from all mutual funds existing each

year to analyse the effect of survivorship bias on mutual fund performance. Again, quarterly returns were studied as was seen in Hendricks *et al.* (1993) and all dividends and capital gains were assumed to be reinvested in the funds. During the 1970's, persistence in performance was identified with the hot hands phenomena occurring more prevalently than a mutual fund experiencing a win followed by a loss. Persistence in performance was found to occur in all but two of the years studied with the icy hands phenomena also occurring regularly. Over the duration of the study, winning funds were found to be persistent/repeat winners nearly two thirds of the time. During the 1980's the results for persistence were weaker. With regards to the individual years of the study, 4 of the 12 years showed statistically significant positive persistence whereas 3 of the year's studies indicated statistically significant negative persistence. In conclusion it was found that as a whole, mutual funds generally underperformed the market after the deduction of management fees as well as all other reported expenses with the exception of load fees. Another important finding which, although outdated, that applies to this study is that Malkiel (1995) found that mutual fund investors did not get their money's worth from the expenditure incurred in the management of mutual funds, even when the expenditure was on mutual fund advice.

Volkman and Wohar (1995) undertook a study on 332 mutual funds, net of transaction costs, fees and operating expenses, in an attempt to determine whether certain systematic factors played a role in the persistence of mutual fund performance. The factors studied included the size of the fund, the funds stated goal as well as load and management fees applicable to the fund. Volkman and Wohar (1995) studied past literature and discovered that no literature covered what the effects of controlling various systematic factors would have on the ability of past performance being able to predict future performance. Volkman and Wohar (1995) sought to investigate those outcomes. With regards to the size of the fund, medium sized funds demonstrated statistically significant positive persistence whereas small and large funds indicated statistically significant negative fund persistence. When analysing the goals of the funds, funds which adopted a goal of maximum capital gains showed strong statistically significant positive performance in excess returns. Funds that attempted to provide an income for its investors as the goal of the fund showed significant negative persistence in mutual fund performance. Lastly, funds with lower management fees showed stronger positive persistence than funds that had relatively higher management fees which supports the hypothesis that high management fees offset any excess returns earned by active fund managers.

Brown and Goetzmann (1995) took a slightly different approach in their study of mutual fund persistence. They studied a sample of mutual fund ranging between 372 and 829 funds and analysed their year on year returns, between 1976 and 1988, ranking them as either winners or losers with regards to whether or not the mutual funds were able to outperform the median or not in addition to using the S&P 500 benchmark. Brown and Goetzmann (1995) took into account the issue of survivorship bias and therefore chose to use the same methods used by Brown, Goetzmann, Ibbotson and Ross (1992) that designed to control the effects of survivorship bias. Positive persistence in mutual fund performance was found to occur but the results further supported Malkiel's study that purported that mutual fund performance is largely related to the time period being studied. This was identified by analysing the mutual fund data on a year by year basis. While the initial studies performed by Brown and Goetzmann (1995) were based on non-risk adjusted returns, adjusting the data for risk did not affect the persistence results previously identified. While persistence was identified, the strongest persistence was that of losing mutual funds and not funds that were able to outperform the S&P 500 benchmark. In conclusion, Brown and Goetzmann (1995) discussed how the results of the study provide investors with an indicator of which funds to avoid with regards to the persistence phenomena, however, if investors were seeking a pattern that could be used to outperform the market benchmark, those results were weak and of no significant help to the investor.

Kahn and Rudd (1995) studied the performance of 300 equity and fixed income mutual funds over 3 year periods between 1988 and 1993. Kahn and Rudd (1995) set out to investigate the persistence of mutual fund performance and comment on whether or not investors could base their future investment decisions on the historical performance of mutual funds. In order to analyse the returns of the different types of mutual funds, the study was separated to study equity and fixed income mutual funds individually. In their findings, Kahn and Rudd (1995) found persistence to be present in the fixed income funds, albeit loser-loser persistence, but no persistence was found in the equity mutual funds. With regards to investment advice, Kahn and Rudd (1995) advised investors to adopt a passive investment strategy when it came to equity mutual funds and no persistence in those funds was found. Index funds were suggested due to their low costs, low selection risk as well as their returns which would achieve at least average return with low risk.

In a study performed by Grinblatt, Titman and Wermers (1995), the persistence of mutual funds was not studied but rather how its performance was affected by a trading strategy of

purchasing stocks of past winners to include in their portfolio. 155 mutual funds were studied between 1975 and 1984 with their quarterly holdings analysed to determine their composition. Of the 155 mutual funds in the sample data, 77% were found to follow a 'momentum' strategy of purchasing past winning stock for their portfolios in an attempt to increase their mutual fund returns. Grinblatt *et al.* (1995) found a very high relation between mutual funds who bought stock that were past winners and superior excess performance. This study while not directly studying performance persistence does relate to this thesis's research by suggesting that the efforts of mutual fund managers and their analysts could aid a fund in achieving superior performance. Whether performance is superior enough to justify the management fee is another issue all together.

Elton *et al.* (1996) analysed the performance of 188 mutual funds, free from survivorship bias during the period of 1977 to 1993. The returns for funds were calculated on a monthly basis with dividends assumed to be reinvested by purchasing more mutual fund shares. Studies were performed on both 1 and 3 year periods. When analysing the mutual funds on their stated returns, the persistence tests showed very weak results, however, when those returns were adjusted for risk, persistence was found to be statistically significant. An investment strategy was formed, on the basis that past information is useful in predicting future performance, whereby superior performance could be attained. This could be achieved by a momentum strategy whereby funds from the top performing decile were selected each year. This was found for the 3 year period with results being more profound during 1 year intervals. Through the analysis of the mutual funds in this study, the hot hands phenomena, as a short-run phenomenon, was further confirmed. When the returns were adjusted for risk, it was found that past performance was a precursor for future performance over the longer, 3 year period. When analysing the outcomes of the study and what might have been the contributing reason for certain funds occupying the lowest decile of performers, Elton *et al.* (1996) discovered that the majority of the worst performing funds all contained very high expense ratios.

Carhart (1997) studied the monthly performance of 1892 diversified equity funds between January 1962 and December 1993. The data was selected so as to ensure the sample studied was free from survivorship bias. Carhart (1997) attempted to study the reasons for mutual fund persistence and concluded in demonstrating that there were common factors that played a role in persistence as well as how mutual fund expenses and transaction costs almost completely explained the persistent risk-adjusted returns of mutual funds. While Hendricks *et*

*al.* (1993) study discovered the hot hands phenomenon was present in their study during 1 year periods, Carhart (1997) stated that "individual funds do not earn higher returns from following the momentum strategy in stocks". The hot hand funds identified by Carhart (1997) were found to infrequently repeat their past superior performance when studied for longer time periods. In addition to their superior returns being observed infrequently, those funds adopting the one-year momentum strategy that was responsible for the hot hands phenomena, saw a significant drop in their excess returns once expenses were deducted. As has already been discovered by Jensen (1969), Hendricks *et al.* (1993) and Brown and Goetzmann (1995) the most significant persistence found by Carhart (1997) was that of underperformance by mutual funds ranked in the lowest decile. Grinblatt *et al.* (1995) study also identified evidence in favour of the hot hands phenomena and explained how mutual funds that followed a momentum strategy of selecting the previous year's top performers realised significant superior performance while mutual funds that did not adopt this strategy realised normal performance.

Carhart (1997) described how his results further voted against the notion that there were mutual fund portfolio managers who possessed the skills and knowledge to actively manage their portfolios and outperform a market benchmark. Carhart (1997) further suggested that "funds that earn higher one year returns do so because some mutual funds just happen by chance to hold relatively larger positions in last year's winning stocks."

With the costs of mutual funds being a thought-provoking part of this study paper, it is thought-provoking to note that Carhart (1997) finds load fees and mutual fund performance to be strongly and negatively related due to the high costs of load funds resulting in load funds earning around 80 basis points less per year than no-load funds.

As an investment strategy, Carhart (1997) demonstrated that if investors purchased the previous year's top decile mutual funds and sold the funds in the bottom decile, they could earn a return of 8% per year. What is important to note in Carhart's (1997) study is that while the top performing mutual funds earn back the money invested in research, most of those same funds still underperform to the degree of their investment expenses. With regards to the worse performing funds, Carhart (1997) states they underperform by up to twice their investment costs.

Phelps and Detzel (1997) used a multi-index Jensen alpha measure to study the performance of 77 mutual funds during the period 1983 to 1994. Monthly returns were gathered and

studied over various 1, 2 and 3 year periods. Phelps and Detzel (1997), throughout their study, make reference to the study performed by Goetzmann and Ibbotson (1994). They adopted a similar ranking measure by studying how well past 2 year alphas predict future 2 year alphas and ranked funds as either winners or losers depending on whether or not the funds alpha was above the median fund. Positive persistence was found during some of the periods but this disappeared during longer periods of study and was deemed to not be significant. Phelps and Detzel (1997) believed that "the positive persistence found by others is the result of persistence in broad equity classes (macro-persistence) rather than sustainable managerial ability (micro-persistence)" At the conclusion of their study, Phelps and Detzel (1997) summed up their study by noting that many mutual fund managers were unable to outperform their market benchmark, and that many managers in fact lost in comparison to the benchmark. No persistence of performance was found when more complete risk-adjustment measures were used that would be deemed reliable and an investment strategy for investors. While no strategy was deduced, Phelps and Detzel (1997) did warn investors to be wary of mutual funds with high expense ratios and to avoid those due to their relation to the poor performing funds in the study.

Bollen and Busse (2005) attempt to add economic value by studying the stock selection and market timing abilities of mutual fund managers to determine whether or not persistence occurs over the short term. The daily returns of 230, survivorship bias free, mutual funds were gathered so that the mutual funds could be ranked quarterly, after being adjusted for risk, and measured over 3 month periods. Mutual funds that performed the best over the previous quarter were found to remain the top performer in the following quarter signifying very short term persistence. Bollen and Busse (2005) found that this persistence weakened when the test was stretched over longer periods. In conclusion, Bollen and Busse (2005) proposed the following to investors: "After taking into account transaction costs and taxes, investors may generate superior returns by following a naive buy-and-hold approach rather than a performance-chasing strategy, even if short-term performance is predictable".

Petajisto's (2013) study provided a different analysis of active versus passive mutual fund management. Petajisto (2013) broke down each mutual fund within the sample data and applied a statistical analysis to each of them to determine whether or not the mutual fund managers were actively seeking superior returns or whether mutual fund managers were in fact closet indexers and mimicking the benchmark while still charging active management fees. Mutual funds were divided up into 5 categories based on active share and tracking error

analysis. Over the duration of the study from January 1990 to December 2009, mutual fund managers described as active stock pickers outperformed the benchmark net of expenses by 1.26% whereas closet indexers underperformed the benchmark. Interestingly enough, the results prior to the financial crisis of 2008 remained the same throughout the crisis showing that actively managed mutual funds were a good investment during the crisis as they still allowed investors to beat the market, even in a period of economic turmoil. Mutual fund managers on average offered weak performance according to Petajisto (2013) who found their returns to be 0.41% less than the benchmark. Petajisto (2013) claim closet indexing is a rising trend in the field of mutual funds and special care must be made by investors to ensure they do not end up paying active management fees for mutual funds that simply resemble the benchmark, offer very average returns (often underperforming the benchmark by the magnitude of their costs), and fail to offer active management ability if future periods of financial distress arise such as the financial crisis of 2007. Another observation by Petajisto (2013) is that the results from the study do not support the EMH and that active mutual fund managers are able to exploit mispriced stocks and generate superior returns.

What this study is looking to uncover is whether active fund managers have been able to outperform the benchmark before, during and after the financial crisis in South Africa. Petajisto (2013) found that in the United States, mutual funds underperformed during 2008 but showed a strong recovery in 2009 and it will be interesting to see how local unit trust managers fared over the same period.

### 2.6.9 International studies opposing persistence

Treynor and Mazuy (1966) performed one of the initial studies on the persistence of mutual fund performance and set out to determine whether or not mutual fund managers were able to outguess the market or not. Their data set included 57 mutual funds that were analysed during the 10 year period 1953 to 1962. In order to conclude whether or not a manager was able to outguess the market or not, Treynor and Mazuy (1966) set out to measure the volatility of the market and determine whether or not that had an impact on the mutual funds' performance. It was found that no managers had the ability to outguess the market and that perhaps no investor would have the ability to do so either.

Jensen's (1968) study on mutual fund performance was one of the first few studies of its kind. Jensen (1968) took the knowledge of previous studies performed by Sharpe and

Treynor and constructed his own measure of analysing mutual fund performance. Within this measure, Jensen (1968) studied the monthly data returns for 115 mutual funds during the period between 1945 and 1964. Upon completion of the study, Jensen (1968) found evidence to suggest that on average, the mutual funds in the study were unable to successfully achieve an active strategy of predicting stock prices that outperforms a passive strategy of achieving general market returns. In comparing mutual fund return compared to that of a random fund selection, Jensen (1968) found that no individual fund had enough supporting evidence to suggest it would be able to outperform the random fund selected. While these studies were performed net of management costs, the same conclusions were found to be true when the same studies were performed gross of management costs. This part of Jensen's (1968) study will be of interest to look at again once this study has been concluded to determine whether or not the mutual funds in this study were also unable to cover the expenses involved in their research and trading activities. Jensen (1968) does make reference to the importance of mutual funds to investors by mentioning that the study he performed was purely on mutual fund performance and not on the worthy service they offer to investors. Jensen (1968) did however recommend that mutual fund managers should revaluate the costs and benefits involved in their research and trading activities so as to reduce costs and maximise the returns for the given of risk associated with the fund.

Bogle (1992), during a 10 year period between 1980 and 1990, attempted to see how easy it would be to pick a winning mutual fund as opposed to a group or decile of winning funds. Bogle (1992) analysed the raw returns of 309 funds during that period. The results he interpreted showed that a winning fund in 1 year had no systematic relationship to the ranking it received the following year and concluded that for an investor, picking the winning fund is virtually impossible. This view was confirmed over the long term when the data was looked at over longer periods. When studying the data as a whole, Bogle (1992) did conclude that past mutual fund performance was of no help in predicting the future performance and investors should be weary of making historical performance their factor of choice. Bogle (1992) suggested to investors that they consider index funds as an alternative investment option or at least as the core portion of their equity holdings.

Elton *et al.* (1996) studied the performance of bond mutual funds over a 10 year period. They performed the study on 2 samples, with the first being a smaller sample free of survivorship bias that contained 41 surviving funds as well as a larger sample that contained up to 361 funds that did contain survivorship bias. Elton *et al.* (1996) determined that overall; bond

mutual funds underperformed the relevant benchmarks within the study. The underperformance of the bond funds showed many similarities to equity mutual funds in that the underperformance was roughly the same amount as the management fees incurred. Throughout the literature it has been found that mutual funds generally generate returns that are very similar to that of the market benchmarks but end up underperforming once management costs have been deducted. Elton *et al*. (1996) found no evidence within the smaller, unbiased sample of data to suggest there was any persistent performance in bond mutual funds. When the larger, based sample was studied, some weak evidence of persistence was found.

Brown and Goetzmann (1995), as mentioned earlier in the literature, did find mutual fund persistence, however the persistence found was for funds that underperformed the S&P 500 benchmark. Upon further analysis, Brown and Goetzmann (1995) found the economic significance of the performance persistence to be eliminated once the worst performing funds were removed from the sample data. So while performance persistence was found for poor performing funds, this would obviously not be an investment strategy used by investors and thus the study could be argued to be against the notion that mutual funds are persistent and outperform their relative benchmarks.

Kahn and Rudd (1995) had mixed results from their study on the performance of 300 equity and fixed income mutual funds between 1988 and 1993. While already documented that loser-loser persistence was found to be present in the fixed income mutual funds, no persistence in performance was found when the equity mutual funds were analysed. What is interesting to note is that the time period studied and the length of that study might play an important role in the outcome of the study. This is due to the results of Grinblatt and Titman (1992) being contrary to those of Kahn and Rudd (1995) who performed a very similar study over a similar time period.

Brown and Goetzmann (1995) studied a sample of mutual fund ranging between 372 and 829 funds and analysed their year on year returns, between 1976 and 1988, ranking them as either winners or losers with regards to whether or not the mutual funds were able to outperform the median or not in addition to using the S&P 500 benchmark. Positive persistence in mutual fund performance was found to occur but the results further supported Malkiel's (1995) study that purported that mutual fund performance is largely related to the time period being studied. Malkiel (1995) had extended the study performed by Goetzmann and Ibbotson

(1994) and looked at the returns of general equity mutual funds between 1971 through to 1991. Malkiel (1995) found that the results of persistence found by Goetzmann and Ibbotson (1994) became weaker as the time period studied became longer.

Porter and Trifts (1998) took a different approach to studying the persistence of mutual fund performance and decided to analyse the mutual fund managers themselves. Porter and Trifts (1998) identified 93 mutual fund managers who had been managing the same fund for the 10 year period between 1986 and 1995. Two 5 year periods were reviewed with the monthly compounded returns used to evaluate yearly performance. The mutual funds were benchmarked against each other based on them having the same investment objective. Porter and Trifts (1998) found that on average, the more experienced fund managers did not outperform the less experienced managers during the 10 years. When trying to identify positive persistence, Porter and Trifts (1998) found that superior performance within the first 5 year period, did not lead to superior performance in the following 5 year period for the experienced managers. Inferior persistence was found to persist in the study however the results were not largely significant. While it can be argued that the ranking procedure of superior or inferior performance was not the only and most appropriate measure, it was found by Porter and Trifts (1998) that managers who were deemed poor performers, were able to improve their ranking in the subsequent period however their performance was still below that of the managers deemed to be superior. Porter and Trifts (1998) were also intrigued as to what the effects of the funds expense ratios would be on their performance and subsequent ranking. It was found that the expense ratios of the funds were inversely proportionate to their performance and funds with low expense ratios showed signs of positive persistence while funds with high expense rations showed inferior persistence.

Kjetsaa (2004) studied the performance of mutual fund relative to a broad benchmark as well as specific categorized benchmarks. There is a large amount of literature already on the actively managed mutual funds versus passively managed index funds, and Kjetsaa (2004) set out to perform a more in depth analysis on not only whether or not mutual funds could outperform a broad diversified benchmark, but also whether mutual funds could outperform specific benchmarks bases on the categories specific to their investment strategies. Mutual funds were studied over five different time periods of 12- month, 3-year, 5-year, and 15-years. When mutual funds were studied against a broad benchmark, more or less half of the mutual funds were found by Kjetsaa (2004) to either outperform the benchmark or generate inferior returns. These results support the notion that active mutual fund managers are, on

average, unable to outperform the market. When studied more closely, Kjetsaa (2004) found that a few seasoned mutual fund managers were in fact able to outperform not only the broad benchmark, but also their category specific benchmark and peer groups over differing time periods. As a suggestion to investors, Kjetsaa (2004) described the benefits of investing in index funds as the base of a portfolio and supplementing that decision with actively managed mutual fund investments.

The review of the United States studies offered the opportunity to analyse a market much larger than the South African market with the hope that due to the larger sample data and time periods studied, the results would be in favour of a particular management strategy. What was found was that the United States mutual fund market was still contradictory with studies being both for and against performance persistence and on either side of the proverbial active versus passive fence. Some studies found persistence; however, this was short term of around a year with results disappearing when looked at over longer periods. In addition to this, the majority of superior performance was lost when costs and fees were taken into account. So while the results were contradictory, it is in my opinion that the costs involved with active management proved to be rather obstructing as they negatively affected performance and did not provide investors with a consistent market or benchmark beating performance that would have justified the cost and hours spent on market analysis by the unit trust companies.

Interestingly enough, in many of the studies, the persistent performance was for underperforming funds. This is one of the issues investors often have to look out for: putting their money into funds that for some or other reason are still being advertised to less educated investors and producing poor results year on year.

The hot and icy hands phenomena was an interesting investment strategy identified within the studies. Both were fairly prominent in their respective studies with the hot hands argued as an investment strategy that active managers could adopt to try and achieve superior excess performance. The author believes this would only be a viable strategy if costs relating to switching or exiting funds could somehow be controlled or removed and the active managers were only rewarded on their performance. The various types of costs involved with unit trusts will be addressed later but this method should not be written off to quickly.

The author is expecting to find similar results within the South African market. What this means is that as long as there are contradicting studies as to whether unit trust performance is

persistent or whether or not unit trust managers are able to more often than not outperform their benchmarks, the debate between active and passive management will continue.

### 2.6.10 South African studies supporting persistence

Knight and Firer (1989) studied both the risk and non-risk adjusted performance of 10 South African unit trusts over the 10 year period between January 1977 and December 1986. One month and 1 year data intervals were analysed in the study with the objective being to review unit trust performance in South Africa while providing additional information on the efficiency of the South African market. During the study, Knight and Firer (1989) made use of the Jensen, Treynor and Sharpe measures of performance to validate the results obtained. While the JSE ASI was used as the market benchmark due to it being the most comprehensive measure of market performance in South Africa, its use as a benchmark was used with caution due to the issues surrounding appropriate benchmarks. Readers of the study were urged to accept the following results with caution. The results obtained by Knight and Firer (1989) provided a strong case for arguing that the South African market was not strong form efficient. This was due to the results showing that 5 of the 10 unit trusts were found to significantly outperform the market on a risk-adjusted measure. When the unit trusts were looked at as a whole, they were found, on average, to produce returns of 1.8% less than the market on a non-risk adjusted measure. However, when adjusted for risk, Knight and Firer (1989) found that no fund performed significantly worse than the market during the 10 year period. While not directly studying for unit trust persistence, Knight and Firer (1989) did find results that suggest that the unit trusts in the study showed returns that proved they either performed persistently well or persistently poorly. This was however, found only when the non-risk adjusted returns were studied and therefore no conclusion can be based on these results as the risk profile of each unit trust was not taken into account. One criticism of this study is that the returns used in the study did not take transaction costs and management fees into account. It has been found in many studies that taking into account management and transaction costs greatly alters the results in a negative way. I believe that if those costs were taken into account in this study, the results would not have been as positive as they are and unit trusts would have struggled to outperform the market benchmark

Meyer (1998), in her study between July 1985 and June 1995, studied the monthly performance of 13 unit trusts to determine whether or not there was any persistence of performance in the South African unit trust industry during that 10 year period. Meyer (1998)

based her study around the theory of the EMH that, if taken as valid, would mean that the past performance of unit trusts, adjusted for risk, would have no impact on their future performance. Meyer (1998) set out to focus her study on the performance of the top performing unit trusts to determine whether or not their persisted in their performance and would therefore offer investors useful information regarding their investment decisions in the future. Within the 10 year period of the study, various sub periods were studied for a more detailed analysis of the performance of the unit trusts. Meyer (1998) studied 1, 2 and 4 year periods and found performance persistence to exist in the South African market. While positive performance was identified, it was the loser phenomenon that was more significant throughout the study. Meyer (1998) used the JSE All Share Index (ASI) as the benchmark for her study, for the calculation of the risk adjusted returns, as it is the most comprehensive market benchmark in South Africa. Unit trusts were classed as winner or loser depending on if they had positive or negative alphas and they were also classed as either winners or losers depending on whether or not they outperformed the median unit trust return. The benchmark was not used to rank fund due to the issues surrounding the effectiveness of benchmarks at the time. Meyer (1998) concluded that the South African unit trust industry was very similar to those of larger markets with regards to the persistence of performance studies completed. There are results that conclude that within the South African environment, persistence of performance does exist albeit not statistically significant. Meyer (1998) identified the 2 year period as having the most significant results for the repeat winner phenomenon when based on the median unit trust return. When the risk adjusted returns were calculated, unit trusts displayed the most significant alphas over the 4 year period. Where Meyer (1998) differs from the international studies is that in the US, performance persistence was found to be more significant during shorter period whereas in South Africa, the repeat winner phenomenon was stronger during longer periods. Interestingly, in line with the studies previously mentioned in this study, the repeat loser phenomenon was found to be more significant that the winner phenomenon with results proving significant in the 1, 2 and 4 year periods.

During January 1988 and December 1997, the persistence of performance was studied of all general equity unit trusts and all unit trusts that traded in South Africa by Von Wielligh and Smit (2000). In order to conduct the study and generate the most accurate results, 3 risk-adjusted performance measures were used; namely the CAPM, 2 factor APT model as well as a new 3 factor APT model designed by Von Wielligh and Smit (2000). Von Wielligh and Smit (2000) set out to study 3 different hypotheses. Firstly, short term persistence was studied

followed by long term persistence and thirdly, the performance of past winners. For the requirements of the study, the unit trusts with the sample were divided 3 different samples based on their historical returns and studied over a 5 and 10 year period. Some management costs were taken into account due to the units selling price being used to calculate the returns. The initial fees and commissions regarding the unit trusts would have had a negative impact on the performance returns. For the portfolios containing general equity unit trusts, short term persistence was found by Von Wielligh and Smit (2000) to be present however this was not evident for the portfolios containing all unit trusts. When long term persistence was studied, again, the general equity unit trusts proved to be persistent while the all unit trust portfolio showed signs of persistence although to a lesser extent than the general equity unit trusts. Possibly the hypothesis that most relates to this study was that of the study of the past performers. As investors always seek the highest returns and select those funds with the best track record, it was interesting to see that in Von Wielligh and Smit (2000), the worst performing unit trusts remained the worst performing over the long term whereas the best and average unit trusts converged to one another. Von Wielligh and Smit (2000) suggest, as a long term investment strategy to investors seeking to invest in unit trusts, historical returns are useful in consulting when make the decision of what fund to invest in. They suggest that unit trusts with above average historical returns, that in not in the top category, within the past year should be selected to achieve the best returns over 5 years. As predicted, the unit trusts were the worst performers in the previous year should be avoided. The results of this study were in line with those of Meyer (1998) and more evidence has been brought forward to persistence being present in South African unit trusts over a longer period.

The aim of Firer *et al.* (2001) was to investigate the persistence of South African unit trusts during varying time periods. Unit trusts would be ranked as either winners or losers with Firer *et al*. (2001) attempting to uncover any patterns of superior of inferior performance. The data set included all general equity and fixed income funds that were in existence throughout the duration of the study period between January 1989 and December 1999. Firer *et al*. (2001) used varying time periods from 1 quarter to 2 year periods in an attempt to generate the most positive investment strategy for investors seeking excess returns over the market. Most of the different time periods showed results suggesting significant positive persistence with the general equity unit trusts. Strong persistence according to Firer *et al*. (2001) was visible during 6 month formation periods and 1 quarter holding periods which is a relatively short yielding persistence. When studying longer periods of 2 year formation and 2 year

holding periods, Firer *et al*. (2001) found 35.8% of general equity unit trusts to show positive, winner – winner persistence which was superior to the 26% found for the shorter, 6 months formation and 1 quarter holding periods. According to the results, the 2 year strategy was identified as the most significant results and the most appropriate strategy investors could use to achieve significant excess returns. Fixed income unit trust results were far less significant and positive than the general equity unit trusts with quarterly formation and quarterly holding periods showing performance persistence for about half of the unit trusts.

Throughout the literature of this study, the debate on the persistence of unit trusts has had varying conclusions. Within the South African context, researchers have been on the fence when it comes to classifying persistence as either there or not. Firer *et al*. (2001) provide the most compelling evidence due the size of their data base whereas previous South African studies analysed much smaller data sets. Firer *et al*. (2001) study looked at 43 general equity unit trusts and 35 fixed income unit trusts whereas past studies such as Gilbertson and Vermaak (1982), Knight and Firer (1989) and Meyer (1998) only studied 11, 10 and 13 unit trusts respectively.

In one of the more recent South African studies, Bradfield and Swartz (2001) studied the performance persistence of general equity unit trusts over the 7 year period between 1995 and 2001. Bradfield and Swartz (2001) hoped to offer more information in line with the study completed by Meyer (1998). Thirty-two unit trusts were ranked according to their average absolute annual returns, which included reinvested dividends, with ranking being based on their quartile positions over the 7 years. The persistence of the unit trusts was based on relativity to other funds and not to a market benchmark or performance standard. Once ranked, the unit trusts were grouped together based on the quartiles in which they were ranked and the movements they made throughout the study. This was done in order to study the movements of unit trusts and to determine whether top performers remained in the top quartiles or whether they failed to perform as well in the following period. Results varied for the different periods but Bradfield and Swartz (2001) found that 32% of unit trusts remained in the same quartile year on year. To add credibility to the findings, Bradfield and Swartz (2001) studied the persistence by implementing the Spearmans rank correlation measure for the 6 periods. Five of the periods showed positive correlation suggesting that previous winners remained winning unit trusts in the following period. The most persistence was found to occur with unit trusts in the first quartile suggesting that persistence was due to skill rather than continuous luck. Based on this, Bradfield and Swartz (2001) set out to study the

returns on an investment strategy of investing in each year's top, second, third and fourth quartile fund. At the end of the 7 year period, the top quartile funds reported a cumulative return of 96% with far outperformed the benchmark portfolio by 38%. Interestingly, the second quartile unit trusts were the worst performers returning a combined 34% over the 7 years. Bradfield and Swartz (2001) concluded that persistence was in fact present in South African unit trusts and due to positive performance and not the generally accepted inferior persistence.

Collinet and Firer (2003) analysed the performance results of equity unit trusts during the 20 year period between 1980 and 1999. Their data base of 47 unit trusts was constructed so as to ensure no survivorship bias was present. They set out to perform this study due to all the conflicting studies available regarding the persistence of performance of unit trusts and the causes of those conflicting results. Varying periods of 6 months, 1, 2 and 3 years were studied to obtain results for both short and long term persistence. Collinet and Firer (2003) followed the methodologies used by Brown and Goetzmann (1995) as well as Kahn and Rudd (1995) and the unit trusts were ranked on their raw returns with the Sharpe ratio being used in conjunction. Unit trusts were ranked as either winners or losers depending on their results relative to the mean rate of return for the data. Collinet and Firer (2003) found the short term persistence of performance of the unit trusts to be weak with the results becoming more sensitive to the starting and ending date of the study as the period under review got longer. The most significant results for both winning and losing funds were obtained when the unit trusts were studied over a 6 month period. Results obtained over longer periods of time were found to be less convincing. Collinet and Firer (2003) attempted to construct an investment strategy that could be implemented by investors. They discovered that purchasing the top performing unit trust of the past 6 months and holding it for a further 6 months would provide the investor, over a 5 year period, a return that outperforms the average equity unit trust, by 1.4%, even after taking switching costs into account. Interestingly, Collinet and Firer (2003) did observe non-random behaviour in a few of the unit trusts studied but these funds would have been impossible to identify in advance, further indicating that investors would struggle to adopt a strategy of selecting past good performers in hope of achieving excess returns in the future; unless their 6 month strategy was adopted.

The measurement of mutual fund performance has been studied at great length for many years with varying degrees of results. Some have found that persistence does exist while others have found persistence to be weak with more often than not, researchers stating that

mutual fund costs erode any such positive performance. In most studies an index fund has been deemed the best option when investing in unit trusts. Akinjolire and Smit (2003) moved away from the traditional approaches to measuring mutual funds, namely the Treynor, Jensen and Sharpe models and used a conditional performance evaluation measure. Different market variables are introduced into the measure with the performance results being conditional to these variables. This new, conditional performance evaluation measure was applied to the monthly return data of 7 general equity unit trusts between 1989 and 2002. The JSE ALSI was again, as in most South African studies, used at the market benchmark. While not studying performance persistence, Akinjolire and Smit (2003) did identify that unit trusts alter their risk exposure when certain market conditions change. This is important for the study of performance persistence as those results previously identified do not take changing risk exposure into account and therefore produce inaccurate results. Results from the Jensen measure identified funds as performing poorly when in fact their performance is shown to be improved when the conditional performance evaluation measure is used.

In a more recent study on the persistence of South African unit trusts, Wessels and Krige (2005) analysed the performance of equity unit trusts, net of costs, against the JSE ASLI during the period 1988 and 2003. Persistence was judged by ranking unit trusts in each period under review so as to establish how they performed in the subsequent periods. By ranking unit trusts in such a way allowed the authors the evaluate persistence over different periods, i.e. short-term, long-term or specific periods such as the 3, 5 and 10 year period in the study. Wessels and Krige (2005) found short term persistence to be present however this persistence failed to hold over the long term. In line with other studies, some funds were found to be positive performers, outperforming the benchmark more often than not, while some funds were opposite in that they constantly underperformed the benchmark. When comparing the results of the actively managed unit trusts against the benchmark, Wessels and Krige (2005) concluded that index investing "yields better-than average results over time". As a note to investors, Wessels and Krige (2005) suggest studying the investment philosophies, processes and styles of active unit trust managers rather than their past results when deciding on a unit trust to invest in.

### 2.6.11 South African studies opposing persistence

During the 8 year period between 1974 and 1981, there were 11 mutual funds that were in existence throughout the period. Gilbertson and Vermaak (1982) set out to measure the

performance of those funds relative to each other as well as to 3 different market benchmarks, namely the All Share, Industrial and RDM-100 Index. Both the risk and non-risk adjusted returns were analysed to compare the different results. Firstly the non-risk adjusted returns were looked at and only a few funds were able to outperform the 3 benchmarks during the 8 year period, with returns ranging from 15.9% pa to 22.5% pa. As a whole the unit trusts underperformed the South African market which would signal that the JSE was an efficient market with regards to the EMH. As different unit trusts have varying risk profiles, it makes sense to judge their performance of a risk adjusted basis. For this, Gilbertson and Vermaak (1982) incorporated the Sharpe, Treynor and Jensen measures. On a risk adjusted basis, there was a reversal in results and most of the unit trusts outperformed the 3 benchmarks over the 8 year period regardless of which risk measurement used. On the assumptions of the EMH, the JSE would appear to be inconsistent with the strong form hypothesis and a degree of inefficiency would be present in the market. Upon analysing table 3 and the ranking of performance of the unit trusts on page 39 of Gilbertson and Vermaak (1982), it is clear that there was very little, if any, performance persistence year on year throughout the period. When the Sharpe index ranking are viewed in table 5 on page 41, the same outcome is visible during the two, 4 year periods.

Biger and Page (1993) studied 25 unit trusts that were in existence during the 4 year period between February 1988 and March 1992. In their study, Biger and Page (1993) adopted the Arbitrage Pricing Theory (APT) and set about to study the returns of the unit trusts using a one-parameter, risk adjusted performance appraisal methodology in the multi-factor APT framework. A relative benchmark was constructed by using an equally weighted index of 244 securities within the market. The returns used had been adjusted for stock splits as well as capitalisation issues. Through this analysis, Biger and Page (1993) set out to question whether or not actively managed unit trusts could outperform a passive investment strategy. Biger and Page (1993) found evidence that contradicts Knight and Firer (1989) as most of the 25 unit trusts had negative alphas proving that the unit trusts did not generate excess returns over and above the benchmark.

While not specifically studying unit trust persistence, Garvin (1995) used the Portfolio Change Measure initially constructed by Grinblatt and Titman (1993), to identify whether or not portfolio managers were able to generate excess returns over ‘uninformed’ manager’s or investors. The use of this measure was due to the conflicting problems associated with choosing an appropriate benchmark for these types of studies. Garvin (1995) used 1 month

and 4 month lagged return data for the Portfolio Change Measure and applied it to 32 equity unit trusts with data ranging from June 1970 to December 1992 as some of the unit trusts did not have the required data available for the beginning years of their existence. Garvin (1995) found through the analysis of the data that in general, unit trust managers in South Africa were unable to consistently outperform the market. Using the 1 quarter lagged data, only 1 out of the 32 funds in the sample was found to outperform the market consistently. When using the 4 quarter lagged data that contained 9 unit trusts within the sample, only 2 were found to outperform the market consistently. These conclusions, identified by Garvin (1995), lead him into making the overall conclusion that unit trusts in South Africa were unable to offer investors significant levels of superior performance and that active management did out significantly outperform passive management. Persistence of the performance identified was found to be very weak and not significant enough to base an investment strategy on the results of historical performance. While not generating significantly superior returns for investors, Garvin (1995) does praise the service unit trust managers offer investors by ensure their investments are satisfactory in that they at least receive returns the same as what the market has received.

In a more recent South African study, Oldham and Kroeger (2005) attempted to discover whether or not a sample of unit trusts had been able to outperform their respective benchmark and offer their investors superior persistent performance over the 5 year period between 1998 and 2002. In the study, 20 unit trusts, free from any significant survivorship bias, were studied by way of the Jensen measure that uses the CAPM and a 3 factor APT model. As Oldham and Kroeger (2005) wanted to identify if any unit trusts were able to outperform the market, the JSE ASI was used as the benchmark as it was the most comprehensive measure of the South African securities market. The weekly closing prices of the unit trusts were used however transaction costs, neither management fees nor the dividend yield have been taken into account. The results of the Jensen measure as well as the APT model identified only 4 of the 20 unit trusts as having outperformed the benchmark in 1 or more years within the study period with the remaining 16 funds being unable to outperform the benchmark. Six of the unit trust's results showed negative, inferior performance for either of the models used. What is interesting is that those 4 funds that outperformed the benchmark were not general equity funds but rather diversified extensively while still focusing on specific sectors. When testing for persistence of unit trust performance, only weak evidence of short-run persistence was found that was short-lived according to the CAPM and ATP models.

The studies analysed for the South African market are inconclusive at best. Varying results were identified often with those results based on some factor being the predominant reason for the outcome such as the time period under review or the method that was used to calculate the returns. In the South African context, very little to no long term superior performance and persistence was found however, a very weak short term persistence of performance was found. While this weak relationship between past and future results occurs, it would be foolish for an investor to adopt this as an investment strategy as the relationship disappeared whenever the long term period was evaluated. (Collinet and Firer, 2003: 529) These views were also identified by Oldham and Kroeger (2005: 83) who found the results of South African studies to be inconclusive.

### 2.6.12 Empirical Studies summary

From the evidence presented in this section, both US studies and those conducted in South Africa prove to be fairly inconclusive as to a definite answer in the active versus passive debate. Long term studies tend to be in favour of passive strategies as an extremely low amount of unit trusts exhibit superior performance over a long period of time and even those fund results have been put down to more luck than manager skill. Short term studies hold a more positive argument for active strategies as more superior performance is exhibited in them however that link between past and future performance is weak and more often than not disappears in the long term. The contradicting results could be due to a number of various factors that have become apparent throughout the compiling of the literature. These factors include the samples used, the time periods under review, the methodology used in the study as well as the issue of survivorship bias. Due to the contradicting results, there is an argument for both active and passive management philosophies as both strategies have their benefits and weaknesses. It is in my opinion that forming an investment portfolio comprising of the two strategies would be beneficial to investors as they would be getting the best of both practices.

It seems as though the overwhelming opinion of researchers is that once expenses have been taken into account, unit trust managers on average seem to underperform passively managed unit trusts/benchmarks. From my understanding of the literature reviewed, more often than not, the costs involved with an active management strategy consume the excess return generated by portfolio managers. Portfolio managers benefit from these transactions due to

the cost structure of the funds whereas the investors end up paying for generally average returns.

Costs have been extensively mentioned, as in Carhart (1997), Grinblatt and Titman (1989, 1993) and Jensen (1969), to be detrimental to investor results. This in turn led to the argument and case for the use of index funds as the backbone of any investment portfolio. Index funds were found to offer average returns at a fraction of the cost of actively managed unit trusts that more often than not tended to also produce average returns with a large number of funds underperforming index funds or the intended benchmark.

It is to the best of my knowledge that there have been no recent studies undertaken on the performance of unit trusts and their persistence in maintaining that performance. From the literature this study has already gathered, it is in my opinion that had any studies been performed, their results would further add to the inconclusiveness of the historical studies. As there is no normality to the sample size used, the methods of evaluation used or the time periods under study, the results of these studies would, in my opinion, all offer differing results. Due to the various factors that play a role in the outcomes of these various studies, this study will replicate a similar study performed by Kassim and Kamil (2012) on Malaysian unit trusts also during the period of the financial crisis. The hope is that by following a set of guidelines with regards to the methodology used, this study would be able to generate results that would offer a more legitimate reasoning for its particular outcome and have a study upon which to compare its results.

# 3. METHODOLOGY

Before the start of this chapter, it must be mentioned that the format and work previously done by Kassim and Kamil (2012) provide the guidelines and approaches used within this section. Kassim and Kamil (2012) performed a very similar study on Islamic unit trusts during the financial crisis with their area of focus being the Malaysian markets. Their study set out to achieve the same outcome as this study and thus their work serves as the ideal guideline. Their study will be adapted to suit the South African market.

The Sharpe, Treynor and Jensen measures have been used in the financial industry for the past 50 odd years and have thus been extensively documented in a plethora of Journal papers, internet discussions and articles as well as educational textbooks. Apart from the original papers Sharpe (1966), Treynor (1965) and Jensen (1968), the risk-adjusted measures have been documented by Reilly and Brown (2012), Marx *et al.* (2010) as well as Bodie *et al.* (2009) to name a few of the more recent publications.

The purpose of this section is to introduce and discuss the data that will form the basis of the study as well as the measures that will be used to assess that data in order to present on the results. Definitions will be provided on the various tools of the study. In addition, an explanation of the time periods will be given as they put this study into context.

The research paradigm of this study is based on the positivistic view due to the fact that this study will conduct quantitative research through the gathering of data that is available through financial databases and by analysing those returns against the returns of the market and passive investment. A positivistic view can be described, according to Saunders, Lewis and Thornhill (2009: 598) as "The epistemological position that advocates working with an observable social reality. The emphasis is on highly structured methodology to facilitate replication, and the end product can be law-like generalisations similar to those produced by the physical and natural scientists."

The unit trusts chosen in the sample will be analysed by calculating the risk adjusted returns between 2005 and 2014, by means of the precedent set by Gilbertson and Vermaak (1982), Kassim and Kamil (2012) as well as the methods used by Brink (2004). The period of 2007 to 2009 of the financial crisis is adopted from the work of Kassim and Kamil (2012) who defined the period for the purpose of their own research. This study will adopt those same

time periods used. The set precedent methods include using risk adjusted measures as a means of calculating the risk adjusted returns. These methods are intended to combine risk and performance figures into a single value (Reilly and Brown, 2012: 935).

If actively managed unit trusts outperformed passive investments during the financial crisis then it can be concluded that the fees charged by actively managed funds can be justified in comparison to paying less for passively managed funds and receiving less returns.

The results from the analysis will enable a theoretical construct to be compiled that would provide information on whether or not to invest a client's money in unit trusts or a tracker fund during periods of economic turmoil. This information would be based on whether or not unit trusts were able to outperform tracker funds and the market during normal to good economic times and suffer less loss during an economic downturn.

## 3.1 Data

### 3.1.1 Number of unit trusts

A total of 161 unit trusts were evaluated through the entire sample period with each period being made up by the total number of general equity unit trusts that were in existence at the time. The bull market period comprised of 74 unit trusts, the crisis period saw that figure increase to 143 with the recovery period following with 160 unit trusts. In addition to the unit trusts, the Satrix40 and a risk-free rate were also studied to form part of the comparison.

### 3.1.2 Data selection

For the purpose of this study, only general equity unit trusts were evaluated. This decision was made due to the objective of trying to determine whether or not active unit trust managers could outperform the market during different economic periods. With general equity unit trusts being the most volatile class, it was thought that they would be the ideal class of unit trusts to evaluate against the market. The funds were selected from the I-Net BFA data base under the classification of general equity. It must be noted that five funds that fell into the general equity category did not have complete data sets and due to the missing figures, were removed from the study.

### 3.1.3 Benchmark used

In order to evenly evaluate all of the unit trusts, it was decided that the JSE ALSI would be used as the benchmark for the study. This decision has been previously discussed as to the suitability of the ALSI in relation to the sample of unit trusts.

In addition to the ALSI as a benchmark, a risk-free rate is used as well as this would allow for the comparison of the performance of South African unit trusts against equity markets and the risk-free rate performances of the 10 year Government Bond.

### 3.1.4 Selection of sample period

The aim of this study is to conduct research based on specific periods and it is not intended to be a long term study. In order to add further significance onto the results and for them to be as up to date as possible, the researcher has decided to break the entire sample period of January 2005 – June 2014 into smaller periods that reflect the economic periods of the past. The initial period from January 2005 – June 2007 is described as the boom period that saw market growth up until the start of the following period, the crisis period. This period took place from July 2007 to December 2009 and is noted as being the period during which the financial crisis occurred. The final sub-period is from January 2010 up until July 2014 and is referred to as the recovery period following on from the crisis.

The specific context of my study is comparing performance results between active and passive unit trust investments during the period of the financial crisis and its specific cyclical movements.

These periods have been chosen as they best represent the dates of the cyclical movement of the market around the period of the financial crisis. Previous studies such as Dungey, Gonzalez-Hermosillo and Martin (2009) and Kassim and Majid (2009) also used these period for the purposes of their studies.

### 3.1.5 Measurement of performance

Due to this study being a replication of the study performed by Kassim and Kamil (2012), the same methodology will be followed. Before it was decided to replicate the study for South

African markets, the Sharpe, Jensen and Treynor measures were decided upon as the three measures of risk adjusted performance.

In their 2012 study, Kassim and Kamil (2012) also used the three above mentioned measures. They did, however, make some adjustments based on their prior research. For their study, and the purpose of this study, the adjusted Sharpe index and adjusted Jensen measure as adjusted by Jobson and Korkie (1981) will be used. Some biases were found in the original index and thus the appropriate changes were made to rectify those errors.

It must be noted that while researching the available risk adjusted measures that could be used, it was discovered that no one measure dominated another and each measure had their own merits and downfalls. As was seen in the review of past studies, many different measures were used while some authors put forward their own equations or modifications in an attempt to come to the same conclusion. While it is possible, those different measures could produce different results, however, this study will follow the guidelines set by Kassim and Kamil (2012) and therefore the results should be accurate in that context and should provide useful information in the assessment of the risk-adjusted performance of the unit trusts within the study. (Reilly and Brown, 2012: 933) By using the Sharpe, Treynor and Jensen measures, this study would align it with previous studies and would add a level of validity as the methods used are tried and tested measures of risk-adjusted performance.

A note must be made on the exclusion of costs from the calculations performed within the study. Due to the complex nature of costs and the various layering of costs that takes place between the funds, investment platforms and financial advisors, it was decided that this thesis would exclude costs from the study in order to simplify the sourcing of data and to take a gross returns approach to offer uniformity across the unit trusts results. Readers should bear this in mind when analysing the results.

### 3.1.6 Data Sources

Unit trust data was obtained from the McGregor I-Net BFA expert analysis database with the closing price of the various unit trusts being taken into consideration. Dividend payments were incorporated into the calculation so as to give an accurate measure of the monthly returns of the unit trusts.

### 3.1.7 The calculation of returns

The monthly returns the unit trust obtained were calculated by simply looking at the capital growth of the fund including the incomes earned by investors. The non-risk adjusted returns were calculated by simply dividing the change in monthly closing prices of the funds by the number of months/observations of that fund in each of the periods. This calculation gives the monthly return of the funds which in turn is used to calculate an average monthly return within the respective periods. In addition to the monthly return, minimum and maximum monthly returns are identified for each period as a discussion point on the volatility of that specific period. An average is then taken of the average monthly returns of the funds in order to get an understanding of how the funds operated within each period. The returns were calculated as follows:

$$R_{i,t} = \frac{NAV_t - NAV_{t-1} + D_t}{NAV_{t-1}}$$

In the calculation of returns, R*i,t* represents the rate of return of the unit trust *i* at the time t. NAV represents the net asset value at the time of *t*, NAV*t-1* is the net asset value one period before time *t* and finally, D*t* represents the dividends at time *t*.

## 3.2 Risk-adjusted Measures

### 3.2.1 Treynor

In 1965, Treynor was the first of the three risk adjusted measures used in this study to publish his performance index as a break through equation as a means of calculating the risk-adjusted returns of a portfolio. The basis of his measure was on the assumption that portfolios be completely diversified so that unsystematic risk is of no concern when measuring performance. Treynor (1965) preferred to focus on the systematic risk of the portfolio rather than the entire risk as asset managers should be producing wholly diversified portfolios. (Garvin, 1995; Marx *et al.* 2010: 284) In summary, Mayo (2011: 218) explains the Treynor measure as "a risk-adjusted measure of performance that standardizes the return in excess of the risk-free rate by the portfolio's systematic risk".

Treynor (1965) in its essence, measures the portfolios return per unit of non-diversifiable risk. (Gitman *et al.* 2011: 506; Marx *et al.* 2010: 284) Gitman *et al.* (2011: 506) and Marx *et*

*al.* (2010: 284) state that a higher result indicates that the portfolio has achieved a higher return for a given risk and this value can be compared to that of benchmark or market return. The benchmark or market return would have to also have its return computed through the Treynor measure for them to be used as a comparison. Levy and Post (2005: 772) suggest that the Treynor performance index is "the appropriate index to use in order to measure the performance of individual securities or a portfolio that forms part of a broader portfolio".

Because Treynor focuses on systematic risk, the portfolios beta is used as a measure of the portfolios risk. This, noted by Garvin (1995) differs from Sharpe who focuses on total risk. Focusing on total risk may provide more accurate results when testing unit trust performance because asset managers will often take non-diversified positions when making active calls when they are trying to outperform the market. (Gitman *et al.* 2011: 506)

The three performance measures attempt to produce the same outcome by measuring portfolio performance however they take similar, yet different approached in doing so. Levy and Post (2005: 772) make note of one of those differences with Treynor basing his measure on the SML (Securities Market Line) whereas Sharpe makes use of the CML (Capital Market Line). With regards to the SML, if a unit trust outperforms the market, we would expect it to lie above the SML and oppositely, if the unit trust were to underperform the market then we would expect to find it positioned below the SML. If a unit trust achieved the same returns as the market then the fund would be positioned on the SML. (Levy and Post, 2005: 775)

$$T_i = \frac{R_i - RFR}{\beta_i}$$

$T_t$ indicates the Treynor measure for unit trust *i*. $R_i$ represents the average return calculated for unit trust *i*. RFR is the abbreviation for the average return of the risk-free rate used and finally, $\beta_i$ is the systematic risk or Beta for the unit trust *i*.

### 3.2.2 Sharpe

The work by Sharpe (1966) followed that of Treynor and attempted to improve the understanding of risk-adjusted measures as a tool for measuring portfolio performance. What was a significant difference in the Sharpe Index was that it incorporated the total risk of the portfolio into its equation. This inclusion set out to penalise investment managers who did not

hold a completely diversified portfolio as both systematic and non-systematic risk was included. (Garvin, 1995; Reilly and Brown, 2012: 933)

The Sharpe Index produces a single value that is used to rank the risk-adjusted performance of portfolios, either against other similarly managed portfolios or against a benchmark portfolio. What is of significant importance is the fact that the Sharpe Index is independent of any benchmark used in comparison and distances itself from the various criticisms of the use of benchmarks. Criticisms are avoided due to the Sharpe Index not using Beta statistics within the calculation.

Within the calculation, Sharpe (1966) uses standard deviation as the measure of total risk mentioned by Reilly and Brown (2012: 933). (Marx *et al.* 2010: 285) With regards to the single value given by the Sharpe Index, a higher value represents a higher risk-adjusted average return. What this means in that the Sharpe Index evaluates an investment manager on two areas; the return of the portfolio (its return) as well as the efforts of the manager to adequately diversify the portfolio. (Garvin, 1995; Marx *et al.* 2010: 285)

The Sharpe Index is one of the most widely used measures due to its simplicity in using standard deviation as the measure of risk as opposed to having to calculate the beta of a portfolio as used in the Treynor measure and using an asset pricing model as used by the Jensen measure. (Marx *et al.* 2010: 285)

$$\frac{(R_p - RFR)}{\sigma_p}$$

The original Sharpe Index is calculated by subtracting the risk-free rate from the return of the unit trust. That value is then divided by the standard deviation of the portfolio returns.

$$AS_i = \frac{S_i \times N}{N + 0.75}$$

The adjusted Sharpe measure for unit trust $i$, $AS_i$, is calculated by multiplying the above calculated Sharpe measure by the number of observations, divided by the number of observations added to 0.75.

As can be seen in the equation above, the Sharpe Index divides the portfolios excess return (the average portfolio return minus the estimates risk-free return) by its standard deviation (total risk). The numerator, or risk premium is the return over and above the riskless rate that

is paid to induce the investor to a hold a certain level of risk. Bodie *et al.* (2009: 178) criticise the Sharpe Index due to its constraints regarding time periods. Bodie *et al.* (2009: 178) state that "the Sharpe ratio for any given portfolio will vary systematically with the assumed investment holding period".

### 3.2.3 Jensen

The Jensen measure is the third and final assessment tool to be used in this study. What is different about this measure is that in produces a value depicting the excess actual return a unit trust achieved over the required rate of return of the benchmark or market index. This measure allows investors to see the percentage value their unit trust under or over performed the market for the same level of risk borne by the unit trust. (Gitman, Joehnk and Smart, 2011: 507; Marx *et al.* 2010:285)

The Jensen measure is based on the CAPM equation and the theory behind this is that if the portfolio performs according to its CAPM expectations, the Jensen measure should produce a value equal to zero. If the portfolio outperforms its expectations on a risk-adjusted basis, then the Jensen measure should produce an alpha value greater than zero, indicating the extent to which the portfolio outperformed the market or benchmark on a percentage basis. Poor performance will be indicated by a negative alpha value. (Gitman *et al.* 2011: 507; Levy and Post, 2005: 775; Marx *et al.* 2010:285)

CAPM according to Mayo (2011: 216) is "used to determine the return that is required to make an investment; it may also be used to evaluate realised performance for a well-diversified portfolio". As mentioned above, the Jensen measure is able to determine whether or not the investment, according to the CAPM calculation, realised the return it ought to have returned given the level of risk associated with the investment. Like the Treynor measure, the Jensen measure focuses only the non-diversifiable risk as it uses beta as its risk measure. It thus assumes that unit trust has been sufficiently diversified.

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

Jensen's alpha ($\alpha$) is the raw excess return adjusted for systematic risk ($\beta$) by way of the CAPM. (Brown, 2008: 47) $R_p$ is the return on the portfolio; $R_f$ is the risk-free rate of return that is subtracted off the market return, $R_m$.

$$AJ_i = \frac{\alpha_i}{\beta_i}$$

The adjusted Jensen measure is calculated by dividing the above calculated α for the unit trust by the β for that unit trust.

Levy and Post (2005: 776) and Mayo (2011:219) explain how the Jensen measure produces similar results to that of the Treynor measure as they both use beta as their measure of risk. What this means is that both the Jensen and Treynor measure would produce the same result, i.e. which funds outperformed the market. What will not necessarily be the same is the ranking of those same funds with regards to their performance relative to the markets returns. These two measures work well together as while the Treynor measure will identify which funds over or underperformed the market by producing a relative value, the Jensen measure will be able to explain by what percentage they did so by producing an absolute value. (Mayo, 2011: 219)

Being able to interpret the level of over or underperformance is vital to unit trust managers and investors in both of their decision making. With the Jensen measure being able to allow investors and unit trust managers to make decisions with accurate performance records, it is an important information set for those decisions. Further statistical tests can be used to determine the level of significance of the Jensen measure's results. (Levy and Post, 2005: 776)

## 3.3 Summary

While these three measures assume that the unit trusts have been adequately diversified, it is surely going to raise questions about active managers who deviate away from diversified funds in search of market beating returns. Because active managers have the ability to make active calls that they believe will generate superior returns for their investors, they are potentially moving away from a diversified portfolio in order to do so. This in turn raises the argument that unit trust managers are potentially jeopardising investor returns in search of maximising results.

## 3.4 Measurement of risk and diversification

The risk on a unit trust is the uncertainty in return and thus higher risk needs to be compensated for. The risk involved with a unit trust includes systematic and unsystematic risk. With regards to systematic risk, this is commonly referred to as the market risk and is un-diversifiable. It is the risk associated with being a part of the stock market. Systematic risk on the other hand is diversifiable and it is up to the unit trust manager to diversify their fund in such a way as to bring the level of risk of the fund in line with the expected return advertised to investors.

Two measures are used in this study in order to calculate the systematic and unsystematic risk. Beta is used to measure systemic risk, the inherent risk of being involved in the market. Standard deviation is the other measured and this is used to calculate to total risk of the unit trust, taking into account the systematic risk and the diversifiable unsystematic risk.

### 3.4.1 Standard deviation

Standard deviation, according to Brown (2008: 47) is calculated by square rooting the variance of returns over the period of measurement. Oldert (2012: 88) defines it as being "a measure of the spread of a sample of numbers about their arithmetic mean". In layman's terms, the standard deviation is a measurement of the total risk of the investment. It is regarded as the most used measure of total risk and reflects the volatility of returns around their average.

The following description is taken from Kassim and Kamil (2012: 67).

$$\sigma = (\sum \left(R_{i,t} - R_i\right)^2 / (N-1))^{1/2}$$

$R_{i,t}$ is the rate of return of the unit trust $i$ at the time $t$. $R_i$ is the average return for the unit trust $i$ and finally N is the number of observations.

### 3.4.2 Beta

It is widely accepted that investors are generally risk averse and so, on average, expect to be compensated for any additional risks borne. It becomes the unit trust manager's concern to ensure that the risk of their fund is in line with the declaration of their fund.

Beta is a measure of the market risk and serves to measure the covariance between the unit trusts return to that of the market/benchmark return. (Grinold and Kahn, 1999: 14) in essence, the beta of a unit trust indicates how the fund will respond to changes in the market. If the fund has a positive beta, it is expected to move in the same direction of the market whereas if it has a negative beta, the fund would be expected to move in the opposite direction to the market. (Gitman *et al.* 2011: 175-176)

$$\beta_i = \frac{Cov\ (R_i\ ,\ R_m)}{Var\ (R_m)}$$

$\beta_i$ is the systematic risk for the unit trust *i*, Cov($R_i$, $R_m$) is the covariance between the returns of the unit trust and the market. Var ($R_m$) is the variance of the market returns $R_m$.

As is the case with the study performed by Kassim and Kamil (2012), all of the betas within the study are calculated through statistical formulation and not through regression analysis.

### 3.4.3 Coefficient of Determination ($R^2$)

As stated simply by Kassim and Kamil (2012: 67) the "$R^2$ coefficient of determination is used to measure the degree of diversification of the fund relative to the diversification of the market portfolio". In more technical terms, the $R^2$ is obtained by squaring the correlation coefficient that measures the change in the dependent variable that can be explained by the independent variable. In this case, the independent variable would be the market returns with the dependent variable being the returns of the unit trust. As the $R^2$ measures how diversified a fund is, the more diversified the fund, the closer the value will be to 1. The lower a funds coefficient of determination, the less a funds return can be put down to the returns of the market. When this is the case, various other factors become important in explaining the funds returns and could include various decisions that were made by the active unit trust manager. In essence, they are factors that led the fund to be less diversified and more risky. (Jones, 2010: 586; Mayo, 2011: 156) Because a unit trust is made up of individual shares, the inclusion of high $R^2$ shares will in turn lead to a well-diversified portfolio with a high $R^2$ coefficient of Determination. Previous studies that have incorporated the $R^2$ as a measure of diversification relaying to unit trusts include Debasish (2009) and Westerfield (1973).

$$R^2 = \frac{Sum\ of\ the\ squares\ regression\ (SSR)}{Total\ sum\ of\ squares\ (SST)} = \frac{\sum_{i=1}^{n}\ \ (\hat{y} - \bar{y})^2}{\sum_{i=1}^{n}\ \ (y - \overline{y})^2}$$

For $R^2$, n is the number of observations, $\hat{y}$ is the estimated value of the dependant variable for each value of the independent variable. y is the value of the dependant variable and $\bar{y}$ is the average value of the dependant variable.

## 3.5 Survivorship Bias

As with most debates in life, there are always complications and issues that arise for either side of the argument. One of those issues that affect the results of risk-adjusted performance studies is that of survivorship bias. Survivorship bias becomes a point of concern whenever performance persistence studies are done that involve more than two time periods. This is because survivorship bias occurs when results are skewed in favour of funds that survive over funds that no longer exist in their starting, original format.

What this means is that quite often, unit trusts are closed down, merged with other funds, or go under a complete reformat if they perform poorly over a certain period of time. These changes in turn affect the results of performance studies such as this one. The implications of survivorship bias being present when studies are done can be far reaching and have a negative effect on investors. More often than not, investors do not have the means of further analysing performance figures that are published and have only that information to make decisions based on. By taking survivorship bias into account in this study, it is hoped that the results obtained will be useful and add value to investors when they make their own minds up on the debate between actively managed and passively managed unit trusts.

Jones (2010: 73) defines survivorship bias as being "the bias resulting from the fact analysing a sample of stocks at a point in time reflects only those companies that survived, ignoring those that did not". This is confirmed by Brown (2008: 42) who describes survivorship bias being referred to when data sets are incomplete due to funds not being included because they were not in existence throughout the sample period. Brown (2008: 42) further urges individuals reviewing studies that include survivorship bias, to take those results with caution as those results may not be deemed as reliable as studies that accounted for survivorship bias.

In the literature, it was clear that some of the authors experienced their own dealings with survivorship bias with Grinblatt and Titman (1989), Brown *et al.* (1992), Malkiel (1995), Elton *et al.* (1996), Carhart (1997) and Wermers (1997) all mentioning the issue and its implications on their studies.

Malkiel (1995) who studied the returns from equity mutual funds from 1971 to 1991 showed significant implications of survivorship bias in his results, so much so that it has been recorded in the academic works of Grinold and Kahn (1999: 560) who recorded that with survivorship bias present, equity mutual funds only underperformed the S&P 500 by 43 basis points, however, when the same data set was analysed free from survivorship bias, those same equity mutual funds underperformed the S&P 500 by 183 basis points, highlighting the impact it can have on performance results.

South African studies, possibly due to there being far less in-depth analysis of persistence performance have relatively less information and have been tentatively discussed. In Meyer (1998) study over a 10 year period, only a few funds had been closed down and thus the author deemed survivorship bias to be immaterial to the results. In another study reviewed within this study's literature, Oldham and Kroeger (2005), it was also mentioned that very few funds closed down during their 6 year study sample and that survivorship bias was not an issue.

In a more recent and direct investigation on survivorship bias on South African unit trusts, Pawley (2006: 21) made the following comments defining the bias as well as its impact on unit trusts: "Survivorship bias is the tendency to exclude failed companies from performance studies simply because they no longer exist. In other words the dataset is truncated thereby removing the existence of the failed companies, which is a phenomenon that largely occurs with the data vendor providers. Survivorship bias causes the results of some studies, where truncated datasets have been used, to skew higher generally as a result of successful companies continuing to remain in the dataset at the end of the period. Similarly unit trust fund performances may be misleading due to survivorship bias, namely that the asset management company merges or discontinues under-performing funds thereby removing these funds from future truncated unit trust fund datasets."

Pawley's (2006: 23) study looked at funds that survived 5, 10, 15 and 20 year periods to determine the level of survivorship bias present. Pawley (2006: 23) found that as the periods increased, so did the geometric returns indicating the presence of survivorship bias. What this determined was that failed funds were in fact poor performers and the exclusion of them raised the level of return of the sample leading to inaccurate conclusions. It was interesting to note that in Pawley's (2006) study, only 62.08% of unit trusts survived over a 10 year period and more aligned with the time period of this study, just over half, 52.18% of funds survived.

Bearing in mind that this study was undertaken between 1972 and 2004 this study expects those survival rates to be higher. This is assumed due to changes in regulation and control and the measures in place to govern unit trusts and protect investor funds.

This study intends to include all unit trust funds for the sample period as the objective of this study is to determine whether active or passive unit trusts performed better during the financial crisis. If there were unit trusts closing down during this period, those failures will be represented in the results of who outperformed who.

## 3.6 Data analysis

Due to the nature of this study not involving the use of humans, the researcher does not foresee any ethical issues arising as the data will be gathered via online, publicly accessible websites. All information used in this study will be gathered from publicly accessible websites, past research papers and published textbooks. The researcher will offer an opinion on the gathered information and data, thus no infringements will be made on past opinions and research.

In order to analyse the data within the study, the unit trust prices will be exported to Microsoft Excel onto which the various risk-adjusted measures will be applied in order to obtain the necessary results. Before the risk-adjusted measures are applied, the various required pieces of data will be extracted from the unit trust prices. Such calculations and information needed include the standard deviation and beta along with the data of the risk-free rate and JSE ALSI prices. It is to the author's knowledge and best efforts that the results of this thesis will be reliable and valid. The utmost care has been taken in the selection of data and the calculations undertaken have been performed to replicate the study performed by Kassim and Kamil (2012).

# 4. RESULTS AND DISCUSSION

In order to best conceptualize this study on the risk-adjusted performance of actively managed unit trusts versus the market, a total sample of 161 unit trusts were analysed. In addition to the JSE ALSI, the risk-free rate taken as the 10 year Government bond and also the Satrix40 ETF, that offers the results of a passive investment seeing at the market is not an investment option, were studied.

It must be stated once again that this is not a long term study and this study is intended to analyse the returns of actively managed unit trusts against the market during specific periods relating to the financial crisis. The objectives are also to determine whether or not actively managed unit trusts are able to outperform the market during the specific periods. In addition to this, a passive ETF has been included as an alternative source of comparison between active and passive investments. Only the Satrix40 ETF has been included due to its popularity and it having the required data points that fit in with the time period of this study. There is an array of various other passive investments that one can consider; however, this study has decided to only include the Satrix40 for the time period under review.

Tables are constructed with all of the funds, alphabetically, for each of the periods of the study. The ranking of those funds will be based on the Sharpe, Treynor and Jensen risk adjusted measures. This will give a graphical representation of the performance of the funds in relation to the market and Satrix40 ETF. By doing do, investors will be able to check the performance rankings of any fund that was included in the sample.

### 4.1.1 Table 1: Non risk-adjusted performance

| NON RISK-ADJUSTED PERFORMANCE | | | | | | |
|---|---|---|---|---|---|---|
| Period | N | Minimum (Monthly) | Maximum (Monthly) | Mean (Monthly) | Mean Return (%) (Annualy) |
| January 2005 - June 2007 (Bull) | | | | | |
| Unit trusts | 1682 | -0.083498099 | 0.140586818 | 0.016914276 | 20.30% |
| Market (ALSI) | | -0.055842052 | 0.098045868 | 0.028532268 | 34.24% |
| Risk-free | | 0.005825 | 0.007141667 | 0.006371944 | 7.65% |
| Satrix 40 | | -0.052240664 | 0.117431598 | 0.030894066 | 37.07% |
| | | | | | |
| July 2007 - December 2009 (Crisis) | | | | | |
| Unit trusts | 3340 | -0.628472471 | 0.208241563 | 0.003851124 | 4.62% |
| Market (ALSI) | | -0.139559657 | 0.122875235 | 0.001287313 | 1.54% |
| Risk-free | | 0.005966667 | 0.008733333 | 0.007233333 | 8.68% |
| Satrix 40 | | -0.16251944 | 0.128514056 | 0.003885197 | 4.66% |
| | | | | | |
| January 2010 - June 2014 (Recovery) | | | | | |
| Unit trusts | 7701 | -0.17484941 | 0.309584438 | 0.010196211 | 12.24% |
| Market (ALSI) | | -0.058033223 | 0.090123407 | 0.011885606 | 14.26% |
| Risk-free | | 0.0056 | 0.007641667 | 0.006849691 | 8.22% |
| Satrix 40 | | -0.078717201 | 0.113189394 | 0.013512263 | 16.21% |
| | | | | | |
| January 2005 - June 2014 (Whole Period) | | | | | |
| Unit trusts | 12723 | -0.628472471 | 0.309584438 | 0.009285267 | 11.14% |
| Market (ALSI) | | -0.139559657 | 0.122875235 | 0.013344052 | 16.01% |
| Risk-free | | 0.0056 | 0.008733333 | 0.006824927 | 8.19% |
| Satrix 40 | | -0.16251944 | 0.128514056 | 0.015417222 | 18.50% |

Table 1 summarises the non-risk adjusted returns of the sample of unit trusts, the market, the risk-free rate as well as the Satrix40 over the sample periods.

The initial bull market period (January 2005 – June 2007) of the study saw 74 unit trusts be analysed with a total of 1682 data points being registered. Each data point represented a monthly return accumulated to the total number of data points. This period is considered the "up market" period that saw significant growth in the equity market.

The results of the unit trusts over the bull market were positive with the funds showing an average growth of 1.69% per month over the 30 month period leading up to the start of the financial crisis. In total, the unit trusts showed a positive average return over the period of 20.30% per annum which would have been a reasonably good, gross investment return. The word reasonable is used because when you analyse the returns of the unit trusts against that of the market, it is clear to see that active unit trust managers were unable to outperform the market that achieved average monthly returns of 2.85% and a total return of 34.24% over the period. In addition to that, the unit trusts also underperformed the Satrix40 by around 1.39% per month or 16.68% per year. What these results show is that passive investments, during a bull market scenario, on a gross-return basis, provided investors with superior returns. With regards to volatility during this period, passive investors who had money invested in the Satrix40 would only have potentially seen a negative return of -5.22% in one month whereas unit trust investors would have suffered a loss of -8.35% during a single month during the bull market. On the other hand though, unit trust investors would have experienced a potential growth of 14.05% during one month whereas Satrix40 investors would only have received 11.74%. While these figures are irrelevant to the outcomes of the study or the comparison of active versus passive investments that are intended for long term investment, they do offer numerical significance to the discussion of behavioural finance that links investor behaviour and thinking to investment returns. Investors who are attracted by the potential gains in the stock market would have been excited by the larger one month growth of the unit trusts as opposed to settling for less volatility with the Satrix40 but they would also have forgone better overall results with the Satrix40 for the thrill of market with the unit trusts.

During the crisis period of July 2007 – December 2009, the performance figures of the various funds suffered immensely under the pressures of the global financial crisis. A total of 143 unit trusts were analysed with a total of 3340 observations included in the calculations.

During this period, the ALSI suffered and saw only a total growth of 1.54% per year with an average monthly growth of 0.13%. With the market as a whole suffering under the conditions, it is positive to observe that both actively managed unit trusts as well as the Satrix40 were able to generate market beating performance figures of 4.62% and 4.66% respectively.

One of the objects of this study was to identify whether or not active unit trust managers would be able to make active decisions during the various economic stages of the study and generate returns that outperformed the market. What is interesting is that when the market was in a bull phase, active investors were unable to make active calls that would lead to outperformance as was mentioned previously, capitalizing on the performance of companies that were growing at exceptional rates. However, during the crisis period as equity markets suffered, one would have been under the impression that active managers may have been able to make various active calls in an attempt to generate better results than a passive investment that has no options of active calls. While achieving very similar returns of 4.62% for unit trusts and 4.66% for the Satrix40, the argument that will be discussed further on comes into reasoning that investing in the one fund, the Satrix40, would have guaranteed a return of 4.66% whereas the returns of 4.62% for unit trusts was only an average for the 143 actively managed unit trusts during that period.

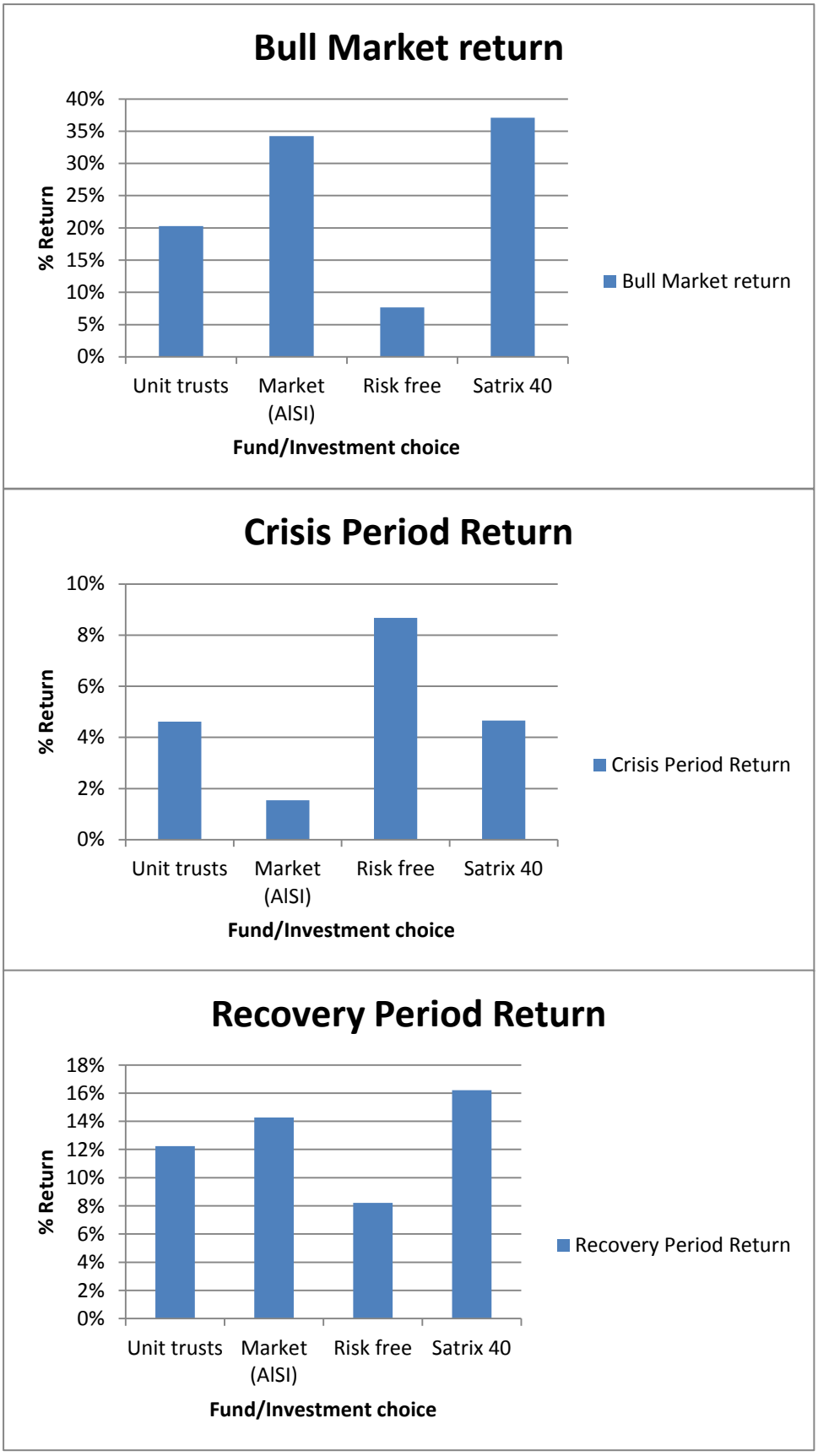
Because the Satrix40 tracks the 40 biggest shares on the JSE, the so called blue chip companies, it would be safe to assume that the larger, more stable companies would be better equipped to handle a crisis period due to larger cash reserves, a stable customer base as well as a tried and trusted business model that has been through testing times before for example. This assumption becomes a reality when you see that unit trusts had a minimum return of -62.84% during the crisis compared to the Satrix40 of -16.25%. While obviously suffering, the top 40 companies were able to suffer less of a loss as a result to the unit trusts that are more diversified and would have held smaller shares that perhaps would not have been as well suited to handling a financial dip as the larger companies would have been able to. On the other hand, the unit trusts were able to generate maximum returns of 20.82% whereas the Satrix40 was only able to grow by 12.85%. These results show the positive and negative sides of having a diversified fund and the volatility associated with investing in general equity shares.

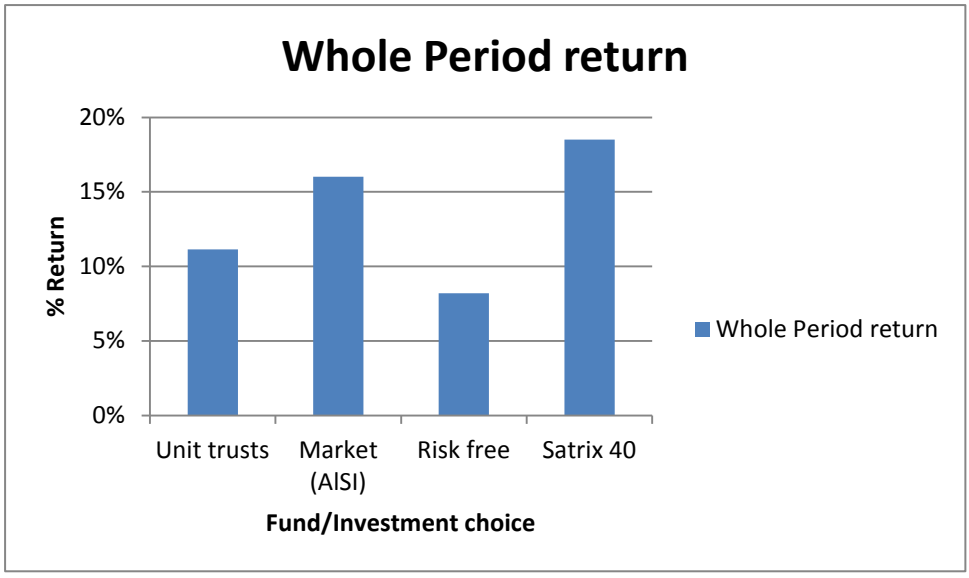
Following the crisis period was the recovery that took place from January 2010 up until June 2014. During this period, as was the same during the bull market, unit trust performance lagged that of the market but this time to a lesser extent. The difference between that of the ALSI with 14.26% and the unit trusts of 12.24% is, however, less than the 14% the ALSI outperformed unit trusts during the bull market. For a third consecutive period, the Satrix40 outperformed both the unit trusts and the market with an average monthly return of 1.35% or 16.21% per annum. These results hold further significance as they included 160 funds and a total of 7701 monthly returns. The better performance of the unit trusts in relation to the ALSI could be down to the greater number of funds within the period compared to the previous periods. With fewer funds in some of the periods, there is less of a chance of there being more better performing funds as opposed to the recovery period that analysed more unit trusts. What could also be the case is that many funds started at the conclusion of the crisis and thus they would have avoided the economic downfall and would have started in a period were companies and shares were recovering and showing positive growth returns leading to positive average returns for the unit trusts.

When analysing the results of the study over the entire period of the study, it is clear once again that the passive investment of the Satrix40 (18.50%) outperformed both the ALSI (16.01%) and the actively managed unit trusts (11.14%). These results were obtained from 161 unit trusts and 12723 monthly data points.

Table 1 clearly and accurately depicts the market movements during the sample period. When the ALSI was experiencing a bull market, funds were achieving good results. During the crisis, all funds in the study suffered while still being able to offer market beating returns. After the crisis, the unit trusts within the study were able to recover, however this recovery lagged the market. Overall, passive investments outperformed both the market and actively managed unit trusts in all of the sample periods as well as over the entire period as a whole.

### 4.1.2 Chart 1 – Graphical representation of Table 1.






The above graphs depict the results of table 1 and show the reader a period by period comparison of the results of the investments within the study and how they performed in the various economic conditions.

What has not been mentioned yet within the discussion and is something that investors need to take into consideration is the issue of the costs associated with the various investments. The performances of the active and passive investments have been compared but they have been gross of expenses. While the expenses have not fallen within the scope of this study, it is important to take them into consideration and understand that they would have further effects on the performance results.

### 4.1.3 Table 2: Risk-adjusted performance

| RISK-ADJUSTED PERFORMANCE | | | |
|---|---|---|---|
| Period | Sharpe | Jensen | Treynor |
| | | | |
| January 2005 - June 2007 (Bull) | | | |
| | | | |
| Total number of funds | 76 | 76 | 76 |
| | | | |
| No. of funds outperforming ALSI | 15 | 34 | 34 |
| % of funds outperforming ALSI | 19.74% | 44.74% | 44.74% |
| No. of funds outperforming Satrix40 | 8 | 27 | 27 |
| % of funds outperforming Satrix40 | 10.53% | 35.53% | 35.53% |
| | | | |
| July 2007 - December 2009 (Crisis) | | | |
| | 145 | 145 | 145 |
| Total number of funds | | | |
| | | | |
| No. of funds outperforming ALSI | 89 | 80 | 80 |
| % of funds outperforming ALSI | 61.38% | 55.17% | 55.17% |
| No. of funds outperforming Satrix40 | 61 | 60 | 60 |
| % of funds outperforming Satrix40 | 42.07% | 41.38% | 41.38% |
| | | | |
| January 2010 - June 2014 (Recovery) | | | |
| | 162 | 162 | 162 |
| Total number of funds | | | |
| | | | |
| No. of funds outperforming ALSI | 85 | 102 | 102 |
| % of funds outperforming ALSI | 52.47% | 62.96% | 62.96% |
| No. of funds outperforming Satrix40 | 78 | 93 | 93 |
| % of funds outperforming Satrix40 | 48.15% | 57.41% | 57.41% |
| | | | |
| January 2005 - June 2014 (Whole Period) | 163 | 163 | 163 |
| | | | |
| Total number of funds | | | |
| | | | |
| No. of funds outperforming ALSI | 54 | 81 | 81 |
| % of funds outperforming ALSI | 33.13% | 49.69% | 49.69% |
| No. of funds outperforming Satrix40 | 33 | 62 | 62 |
| % of funds outperforming Satrix40 | 20.25% | 38.04% | 38.04% |

Table 2 represents the comparative performance of the unit trusts against the market as well as against the passively managed Satrix40. This table represents the risk-adjusted returns calculated by means of the Sharpe, Treynor and Jensen measures.

Beginning with the bull market period, 74 funds were compared and out of those funds, only 15 unit trusts, measured by the Sharpe measure, or 19.74% of the sample data were able to outperform the market on a risk-adjusted basis. Even less convincing is the performance against the Satrix40 in which only 8 unit trusts were able to outperform it, giving a positive outperformance of 10.53%. The results for both the Jensen and Treynor measure were slightly more encouraging for unit trusts with an improved 44.74% of funds being able to outperform the market while a slightly lower amount of 35.53% of the active funds were able to outperform the Satrix40 during the same period.

During the crisis, unit trusts were able to improve on the bull market period with the Sharpe measure showing that 61.38% of unit trusts were able to outperform the market. In addition, the Jensen and Treynor measures showed that just over half (55.17%) of the unit trusts were able to outperform the market. These results are slightly more positive for the supporters of active fund management as these results show that more than half of the unit trust managers were able to make the active calls necessary to outperform the market during a period of economic downturn. On the other hand, only 42.07% of unit trusts for the Sharpe measure and 41.38% for both the Jensen and Treynor measures were able to outperform the passive investment during the crisis. If you refer back to Table 1, the Satrix40 outperformed the ALSI by around 3% before costs so even though more unit trusts were able to outperform the ALSI, individual investors would be more concerned with the ability of their investments to outperform the passive investment.

During the recovery period, when comparing the results of the 160 unit trusts, 52.47% of unit trusts according to the Sharpe measure were able to outperform the ALSI with 48.15% being able to outperform the Satrix40. Slightly better results were drawn for the Jensen and Treynor measures that calculated that almost 63% of unit trusts outperformed the market while around 57% of those unit trusts were able to outperform the passive Satrix40.

Taking a longer term view of the risk-adjusted performance of the 161 unit trusts over the entire sample period shows that with regards to actively managed general equity unit trusts, only 54 funds were able to outperform the market according to the Sharpe ration whereas only 33 unit trusts were able to outperform the passively managed Satrix40. While the Treynor and Jensen measures do show slightly better results, less than 50% of funds were able to outperform the market with less than 40% being able to outperform the Satrix40.

What needs to be mentioned as an important point for individual investors to understand is that the object of this study was to determine whether or not general equity managers of actively managed unit trusts could outperform the market during the various stages of the sample period. In addition to this, the unit trusts are compared to the performance of the Satrix40, a passively managed investment to show investors the results of a viable passive investment as investors are unable to directly invest in the ALSI. When studying the results of the Satrix40, those results are the results an investor would have achieved during each period. On the other hand, the results of the unit trusts are an average and a specific calculation would need to be done on the specific unit trust an investor had money in. This argument is again highlighted during table 3 when the number of funds out performing the ALSI and Satrix40 are explained. When looking at the entire sample period for example, only 54 unit trusts were able to outperform the ALSI and 33 funds able to outperform the Satrix40. The difficulty in interpreting these results is that it is very difficult for an individual investor to make the correct decision and select one of the 54 or 33 outperforming unit trusts. A much safer option would be to invest in the Satrix40, knowing that you outperformed 80% of the unit trusts as opposed to taking on the extra risk and potentially choosing a unit trust that underperforms the market as well as the Satrix40.

Table 3 looks at the beta, standard deviation as well as the coefficient of determination of the unit trusts and Satrix40 in relation to the market. The beta in addition to the standard deviation is used to determine the riskiness of the funds which includes both the systematic and total risk. The coefficient of determination serves as a good measure of fund diversification compared to the market.

### 4.1.4 Table 3: Measurement of risk and diversification

| RISK AND DIVERSIFICATION | | | |
|---|---|---|---|
| | | | |
| Period | Beta | Standard Deviation | Coefficient of Determination |
| | | (Monthly returns) | |
| January 2005 - June 2007 (Bull) | | | |
| | | | |
| Unit Trusts | 0.494 | 0.027 | 0.405 |
| Satrix40 | 0.978 | 0.040 | 0.963 |
| ALSI | 1 | 0.040 | 1 |
| | | | |
| July 2007 - December 2009 (Crisis) | | | |
| | | | |
| Unit Trusts | 0.498 | 0.046 | 0.509 |
| Satrix40 | 1.087 | 0.072 | 0.983 |
| ALSI | 1 | 0.065 | 1 |
| | | | |
| January 2010 - June 2014 (Recovery) | | | |
| | | | |
| Unit Trusts | 0.497 | 0.026 | 0.497 |
| Satrix40 | 1.127 | 0.041 | 0.969 |
| ALSI | 1 | 0.036 | 1 |
| | | | |
| January 2005 - June 2014 (Whole Period) | | | |
| | | | |
| Unit Trusts | 0.504 | 0.033 | 0.517 |
| Satrix40 | 1.075 | 0.051 | 0.974 |
| ALSI | 1 | 0.047 | 1 |

The higher the beta value for a fund, the greater the fund will be affected by a movement in the market. Taking a look at the beta of the unit trusts over the various periods shows that they held a very steady average beta of around 0.500 over the 4 periods of the study. This beta shows that the unit trusts were not very sensitive to movements in the markets. In comparison, the Satrix40 had a beta of 1.075 over the entire period ranging from 0.978 during the bull market to 1.127 during the recovery period following the crisis. Following that trend, the standard deviation of the unit trusts was less than that of the Satrix40 as well as the ALSI. This means that the unit trusts, on average, had lower levels of overall risk compared to the market and Satrix40. As expected, all three of the fund types under investigation showed their highest levels of risks during the financial crisis period when unit trust standard deviation averaged 0.046, Satrix40 with 0.072 and the market with 0.065. Over the entire period, the

unit trusts showed the lowest levels of risk with a standard deviation of 0.033 whereas the Satrix40 (0.051) and the ALSI (0.047) had higher but comparable levels of risk.

As the coefficient of determination explains the level of diversification of a fund, a $R^2$ value of above 0.500 indicates that a fund is well diversified as the coefficient of determination indicates the percentage of the variance in the portfolio's returns that is explained by the market's returns. Over the entire period, the unit trusts had a $R^2$ value of 0.517 meaning that funds had just met the threshold of being classified as well diversified. The Satrix40 ETF maintained a $R^2$ value between 0.963 and 0.983 through the various periods with an average of 0.974 over the entire period. The coefficient of determination results are in line with what would be expected when comparing actively managed unit trusts to a passive investment. The Satrix40 is a fixed fund that invests in the top 40 biggest shares on the JSE. These top 40 shares are also the biggest constituents within the JSE and make up a large portion of the growth or downfall of the market. It is easy to see why, with such a high $R^2$ value, why the Satrix40 would move in the same direction as the market. Unit trusts on the other hand have the ability to diversify away from these large shares and into smaller companies that would result in the funds being well diversified yet still not entirely correlated to the market.

## 4.2 Ranking and persistence

### 4.2.1 Adjusted Sharpe Ratio

In a non-technical test of persistence of the sample of unit trusts used in this study, the rankings of the unit trusts in comparison to the ALSI and Satrix40 was analysed to determine whether or not any of the actively managed unit trusts were able to consistently outperform the Satrix and the market throughout the various time periods.

The first comparison was done between the unit trusts and the Satrix40. With the Satrix40 placing $9^{th}$ out of the 74 unit trusts during the initial bull market phase, the 8 funds that outperformed the passive investment were tracked into the proceeding periods to monitor their performance rankings. During the crisis period that followed, of those 8 funds, only 2 of them were able to show some form of persistence and maintain their advantage over the Satrix40. This persistence was shorted lived with neither of those two unit trusts being able to outperform the Satrix40 in the recovery period.

Of the 8 unit trusts that initially outperformed the Satrix40 during the bull market phase, only 3 of them were able to outperform the ETF over the duration of the study covering all of the periods combined.

In summary, very short term persistence of performance was identifiable when monitoring the performance of the funds that were able to outperform the Satrix40 during the first period of the study. This persistence failed to continue over longer periods.

Over the various periods, it was interesting to find that the passive Satrix40 finished within the top performing 50% of the funds for each of the sample periods. During the bull market, only 8 of the 74 unit trusts were able to actively generate superior returns. During the crisis period, 61 out of the 143 funds outperformed the Satrix40 while during the recovery period, 78 out of the 160 funds managed to produce higher returns. Overall, the Satrix40 ranked 34$^{th}$ out of the 161 funds forming the sample of this study.

The market faired comparably to the Satrix40 by also outperforming a number of unit trusts throughout the study. Only 15 unit trusts outperformed the market during the growth phase of the bull market leading up to the financial crisis. During the crisis, only 89 (62%) of the unit trusts were able to make the active calls necessary to generate market beating returns. Once the markets started to recover in the following phase, 85 unit trusts were able to outperform the market. Overall, the JSE ALSI was ranked 55$^{th}$ in relation to the unit trusts and the Satrix40 falling into the top 50% of the funds.

Table 4 graphically represents the ranking of the funds used within this study and offers the reader an opportunity to track the ranking of a particular fund during each phase of the study.

## 4.2.2 Table 4: The Adjusted Sharpe performance ranking of funds

| Ranking of funds: | | | | |
|---|---|---|---|---|
| **Measure of performance** | **Adjusted Sharpe** | **Adjusted Sharpe** | **Adjusted Sharpe** | **Adjusted Sharpe** |
| **Period** | **Bull market** | **Crisis** | **Recovery** | **Entire period** |
| ADCB1 - Advantage Small Cap Value B1 | | 18 | 27 | 42 |
| ADFB1 - Momentum Mom Focused Equity Fund (B1) | | 43 | 44 | 54 |
| ADRB1 - Momentum Mom Real Return Fund (B1) | | 143 | 145 | 159 |
| ADRFA - Momentum Mom Real Return Fund (A) | | 135 | 140 | 143 |
| ADSB1 - Advantage Small Cap Growth B1 | | 47 | 3 | 59 |
| ADUB1 - Momentum Mom Ultra Long Term Value Fund (B1) | | 2 | 58 | 18 |
| APECB - Absa Property Equity Fund Class B | | 37 | 95 | 82 |
| APFF - Psg Balanced Fund | 37 | 106 | 14 | 87 |
| APRF - Destiny Prudential Psg Fof | 50 | 122 | 54 | 80 |
| ILCA1 - Integre Large Cap Prescient Fund - A1 | | | 106 | 95 |
| ILCB1 - Integre Large Cap Prescient Fund - B1 | | | 102 | 91 |
| ILCB3 - Integre Large Cap Prescient Fund- B3 | | | 109 | 88 |
| ILCFC - Integre Large Cap Prescient Fund - C | | | | 105 |
| 27FA1 - 27Four Shari'ah Active Equity Prescient Fund | | 27 | 50 | 49 |
| 27FB3 - 27Four Shari'ah Active Equity Prescient Fund | | 20 | 46 | 44 |
| ABFF - Absa Flexible | 39 | 119 | 94 | 125 |
| ABFI - Absa Dividend Income A | 76 | 144 | 161 | 162 |
| ABGF - Absa General A | 14 | 120 | | 17 |
| ABIB - Absa Inflation Beater Fund Class A | 64 | 140 | 155 | 160 |
| ABIF - Absa International Fund Class A | 49 | 142 | 68 | 108 |
| ABOF - Absa International Fof A | 44 | 138 | 90 | 119 |
| ABPE - Absa Property Equity Fund | 34 | 104 | 96 | 106 |
| ABSA - General Fund Class R | 18 | 103 | 74 | 86 |
| ABSB - Absa Balanced Fund Class R | 55 | 115 | 113 | 129 |
| ABSE - Absa Allrounder Fof | 46 | 116 | 130 | 132 |
| ABSG - Absa Growth Fof | 20 | 114 | 135 | 131 |
| ABST - Absa International Fund Class R | 33 | 141 | 66 | 117 |
| ADHB1 - Momentum Mom High Growth Fund (B1) | | 125 | 34 | 134 |
| AEBF - Alphen Equity Builder | | 3 | 105 | 24 |
| AEMB1 - Momentum Mom Emerging Manager Value Fund (B1) | | 12 | 120 | 94 |
| AFEA1 - Afena Equity Prescient Fund - A1 | | | 78 | 39 |
| AFEA2 - Afena Equity Prescient Fund - A2 | | | 76 | 38 |
| AFEB3 - Afena Equity Prescient Fund - B3 | | | 72 | 35 |
| AFEB4 - Momentum Mom Focused Equity Fund (B4) | | 42 | 61 | 61 |
| AFMA - Alexander Forbes Moderately Aggressive Fof | | 48 | 56 | 66 |
| AGEF - Allan Gray Equity Fund Class A | 19 | 77 | 30 | 57 |
| AGES - Allan Gray Equity Fund Class B | 17 | 81 | 35 | 23 |
| AGFCB - General Fund Class B | | 88 | 73 | 84 |
| AGGF - Allan Gray - Orbis Global Fund Of Funds | 51 | 66 | 80 | 62 |
| AGOB - Allan Gray Optimal Fund Class B | | 45 | 158 | 158 |
| AGOE - Allan Gray - Orbis Global Equity Feeder Fund | 23 | 107 | 42 | 52 |
| AGOF - Allan Gray Optimal Fund Class A | 62 | 34 | 156 | 147 |
| AHGB4 - Momentum Mom High Growth Fund (B4) | | 124 | 38 | 135 |
| AHGV - Nedbank Global Equity Feeder Fund Class A | 36 | 133 | 53 | 78 |
| AHVE - Nedgroup Investments Rainmaker Fund A | 5 | 70 | 84 | 69 |
| AHVR - Nedgroup Investments Rainmaker Fund R | 4 | 57 | 81 | 33 |
| AHWM - Nedgroup Investments Opportunity Fund A | 56 | 117 | 51 | 116 |
| AIFB1 - Advantage Absolute Return Fund Class B1 | | 145 | 160 | 163 |
| AIFCB - Absa International Fund Class B | | 128 | 71 | 113 |
| AMFCA - Absa Managed Fund - A Class | | | 98 | 74 |
| AMFCB - Absa Managed Fund - B Class | | | 100 | 76 |
| AMGB1 - Momentum Mom Macro Growth Fund (B1) | | 4 | 82 | 25 |
| AMGB4 - Momentum Mom Macro Growth Fund (B4) | | 5 | 85 | 30 |
| AMVB1 - Momentum Mom Macro Value Fund (B1) | | 1 | 13 | 2 |
| APMF - Destiny Multi Asset Psg Fund Of Funds | 15 | 131 | 64 | 68 |
| ASEF - Absa Select Equity Fund | 11 | 79 | 77 | 29 |
| AYEF - Aylett Equity Fund Prescient Class A1 | | 7 | 40 | 13 |
| AYEFA2 - Aylett Equity Prescient Fund Class A2 | | 8 | 41 | 15 |
| BEHG - Nedgroup Investments Private Wealth Satellite Fund Of Funds | | 51 | 57 | 65 |
| CAFA - Coronation Absolute A | 25 | 92 | 49 | 46 |
| CAFCD - Analytics Cautious Fund Of Funds Class D | | 82 | 134 | 130 |
| CBPB - Coronation Balanced Plus B Fund | | 29 | 33 | 43 |
| CCB4 - Coronation Capital Plus Fund B4 | | 6 | 59 | 20 |
| CCGF - Coronation Resources Fund | 1 | 52 | 118 | 100 |
| CEB2 - Coronation Equity Fund B2 | | 22 | 28 | 28 |
| CEQB - Coronation Equity B Fund | | 28 | 37 | 40 |
| CGMG - Community Growth Fund | 26 | 97 | 99 | 102 |

| | | | | |
|---|---|---|---|---|
| CIMF - Coronation Jibar Plus Fund | 73 | 40 | 148 | 156 |
| CIRV - Coronation International Relative Value Fof | | 129 | 159 | 161 |
| CMB3 - Coronation Market Plus Fund B3 | | 19 | 15 | 19 |
| CMPB - Coronation Market Plus Fund B | | 24 | 24 | 31 |
| CMPF - Coronation Market Plus Fund | 27 | 65 | 16 | 21 |
| CNCG - Coronation Industrial Fund | 47 | 73 | 2 | 12 |
| CNFG - Coronation Financial Fund | 60 | 71 | 25 | 73 |
| CNIG - Coronation Global Opp's Equity [Zar] Feeder | 48 | 121 | 45 | 77 |
| CODA - Coronation Dynamic Protector | 63 | 85 | 107 | 133 |
| COGCB3 - Coronation Optimum Growth Fund B3 | | 96 | 21 | 37 |
| CORA - Coronation Equity A | 30 | 54 | 32 | 27 |
| CORB - Coronation Balanced Plus Fund | 43 | 61 | 22 | 53 |
| CORG - Coronation Equity Fund | 52 | 53 | 23 | 51 |
| COSG - Coronation Smaller Companies Fund | 40 | 118 | 26 | 81 |
| CPSA - Coronation Preference Share Fund A | 66 | 95 | 141 | 139 |
| CPSB - Coronation Preference Share Fund B | | 21 | 137 | 126 |
| CPSF - Coronation Preference Share Fund B2 | 67 | 98 | 142 | 142 |
| CSICB3 - Coronation Strategic Income Fund B3 | | 15 | 136 | 120 |
| CSIF - Coronation Strategic Income Fund | 68 | 72 | 138 | 141 |
| CTTB - Coronation Top 20 Fund B | | 17 | 52 | 36 |
| CTTCB2 - Coronation Top 20 Fund B2 | | 16 | 39 | 26 |
| DBFD - Discovery Balanced Fund | | 74 | 55 | 85 |
| DEFF - Four Plus Capital Fof | 61 | 78 | 147 | 137 |
| DGEF - Discovery Global Equity Feeder Fund | | 137 | 43 | 112 |
| DIEF - Discovery Equity Fund | | 31 | 108 | 110 |
| ECFF - Four Plus Secure Fof | 75 | 60 | 151 | 157 |
| FARCB - Foord Absolute Return Fund Class B | | 69 | 1 | 3 |
| FEEC - Element Earth Equity Fund C | | 23 | 117 | 114 |
| FEFA - Element Earth Equity Fund - Class A | 13 | 84 | 124 | 115 |
| FEFCC - Foord Equity Fund Class C | | 101 | 11 | 41 |
| FEQF - Foord Equity Fund | 7 | 105 | 6 | 16 |
| FEWS - Analytics Managed Equity A | 21 | 91 | 75 | 50 |
| FFCA - Analytics Cautious Fof A | 58 | 102 | 115 | 122 |
| FFCB - Analytics Cautious Fof B | 59 | 93 | 111 | 118 |
| FFCC - Analytics Cautious Fund Of Funds Class B2 | | 68 | 132 | 127 |
| FGBF - Foord Balanced Fund | 6 | 111 | 19 | 22 |
| FGFA - Investec Global Equity Fund Of Funds Class A | 38 | 134 | 60 | 75 |
| FGFB - Investec Global Equity Fund Of Funds Class B | 35 | 132 | 63 | 72 |
| FGGA - Investec Growth Fund Class A | 28 | 94 | 83 | 63 |
| FIEC - Element Islamic Equity Fund C | | 58 | 116 | 123 |
| FIEU - Element Islamic Equity Fund A | 8 | 86 | 122 | 111 |
| FIFB - Element Islamic Equity Fund B | | 80 | 131 | 128 |
| FORA - Fortress Reit A | 45 | 127 | 123 | 145 |
| FORB - Fortress Reit Fund B | | 110 | 110 | 138 |
| FRB1 - Fortress Reit Fund B1 | | 112 | 119 | 140 |
| VGEF - Efficient Bci Quality Smaller Companies Fund | | 113 | 133 | 136 |
| VPCFC - Ampersand Momentum Cpi Plus 2% Fund Of Funds (A) | | 25 | 103 | 90 |
| WPCA - Gtc Wealth Accumulator Plus Fund | | 9 | 125 | 93 |
| WPCB - Gtc Wealth Accumulator Plus Fund Class B | | 10 | 125 | 97 |
| WPCC - Gtc Wealth Accumulator Plus Fund Class C | | 14 | 125 | 107 |
| APEA1 - Aps Equity Fof A1 | | | 20 | 10 |
| ASEB1 - Aps Equity Fof B1 | | | 29 | 11 |
| FASB1 - First Avenue Sci Equity Fund B1 | | | 12 | 8 |
| FVSB1 - First Avenue Sci Equity Fund B2 | | | 9 | 6 |
| FVSB3 - First Avenue Sci Equity Fund B3 | | | 7 | 5 |
| NPAA2 - Noble Pp Stanlib All Weather Fof - A2 | | | 5 | 1 |
| NPBA2 - Noble Pp Stanlib Balanced Fof - A2 | | | 18 | 9 |
| NPWA2 - Noble Pp Stanlib Wealth Creator Fof - A2 | | | 8 | 4 |
| PIPCX - Inflation Plus Fund Class X | | | 10 | 7 |
| FWSB - Analytics Managed Equity B | 22 | 87 | 70 | 45 |
| GABS - Old Mutual Symmetry Balanced Fund Of Funds C | | 26 | 69 | 64 |
| GADE - Old Mutual Symmetry Defensive Fund Of Funds A | 53 | 100 | 97 | 101 |
| GADS - Old Mutual Symmetry Defensive Fund Of Funds C | | 41 | 104 | 109 |
| GAES - Old Mutual Symmetry Equity Fund Of Funds C | | 39 | 92 | 89 |
| GAEU - Old Mutual Symmetry Equity Fund Of Funds A | 12 | 89 | 93 | 60 |
| GAFI - Old Mutual Symmetry Enhanced Income Fund Of Fund A | 71 | 56 | 146 | 150 |
| GAFS - Old Mutual Symmetry Enhanced Income Fund Of Fund C | | 32 | 154 | 149 |
| GBFB - Investec Global Strategic Managed Feeder Fund B | 54 | 123 | 62 | 79 |
| GBFC - Investec Global Strategic Managed Feeder Fund B2 | | 126 | 65 | 92 |
| GDKI - Stanlib Industrial Fund R Class | 32 | 46 | 17 | 32 |
| GTWA - Gtc Wealth Accumulator Plus Fund Class E | | 11 | 125 | 99 |
| GTWD - Gtc Wealth Preserver Plus Fund Class D | | 139 | 143 | 152 |
| GTWP - Gtc Wealth Preserver Plus Fund Class C | | 130 | 144 | 154 |
| GWCB - Gtc Wealth Preserver Fund Class B | | 55 | 121 | 124 |

| | | | | |
|---|---|---|---|---|
| HSEF - Hermes Equity A | 3 | 108 | 112 | 83 |
| HUEF - Huysamer Equity Prescient Fund Class A | 2 | 83 | 91 | 98 |
| HUEFB2 - Huysamer Equity Prescient Fund Class B2 | | 76 | 89 | 104 |
| HUEFB3 - Huysamer Equity Prescient Fund Class B3 | | 63 | 87 | 96 |
| HUEFB4 - Huysamer Equity Prescient Fundclass B4 | | 75 | 88 | 103 |
| ICMCD - Investec Cautious Managed Fund Class B3 | | 30 | 129 | 121 |
| IECCD - Investec Emerging Companies Class B3 | | 13 | 31 | 14 |
| INAB - Investec Absolute Balanced Fund Class A | 65 | 36 | 153 | 148 |
| INAC - Investec Commodity Fund Class A | 10 | 49 | 114 | 58 |
| INAE - Investec Emerging Companies Fund Class A | 24 | 109 | 4 | 48 |
| INAF - Investec Opportunity Fund Class R | 57 | 50 | 36 | 71 |
| INAG - Investec Gilt Fund Class A | 69 | 67 | 139 | 144 |
| INAH - Investec High Income Fund Class A | 74 | 44 | 149 | 155 |
| INAI - Investec Absolute Income Fund Class A | 72 | 38 | 150 | 153 |
| INAO - Investec Opportunity Fund Class A | 42 | 59 | 48 | 47 |
| INAQ - Investec Equity Fund Class A | 29 | 99 | 67 | 56 |
| INAV - Investec Value Fund Class A | 41 | 64 | 101 | 67 |
| INAW - Investec Worldwide Equity Feeder Fund Class A | 31 | 136 | 47 | 70 |
| INB2 - Investec Absolute Balanced Fund Class B2 | | 35 | 158 | 151 |
| INBA - Investec Absolute Balanced Fund Class B | 70 | 33 | 152 | 146 |
| JSE ALSI | 16 | 90 | 86 | 55 |
| Satrix40 | 9 | 62 | 79 | 34 |

### 4.2.3 Jensen Alpha and Treynor measure

In a non-technical test of persistence the same process for the Jensen and Treynor measures was followed in comparing the unit trusts ranking to that of the Satrix40 and ALSI. The rankings were analysed to determine whether or not any of the actively managed unit trusts were able to consistently outperform the Satrix and the market throughout the various time periods.

During the bull phase of the market, the Satrix40 was ranked 28$^{th}$ out of the 74 unit trusts in the study. The 27 outperforming unit trusts were followed into the next periods to determine whether or not any of them were able to persist with their superior rankings to the passive Satrix40. During the crisis period, of those 28 unit trusts, only 5 unit trusts were able to maintain their advantage over the Satrix40 showing a very small amount of persistence for general equity unit trusts. Following the crisis, none of those 5 unit trusts were able to maintain their performance during the recovery period of the financial crisis. This meant that the small levels of persistence found earlier were short lived and not maintainable over the long term.

Of the 27 unit trust that initially outperformed the Satrix40 during the bull phase, 15 of them were able to show a better ranking than the Satrix40 over the duration of the entire period looked at as a whole.

In summary, very short term persistence of performance was identifiable when monitoring the performance of the funds that were able to outperform the Satrix40 during the first period of the study. This persistence failed to continue over longer periods.

The ranking of the Satrix40 demonstrated positive results for the supporters of passive investments. During the bull phase, the Satrix was ranked 28th meaning it was in the top 40% of the funds analysed. The Satrix then fell to 61st out of 145 funds during the crisis period which was still in the top 42% of the sample. During the recovery the Satrix40 showed signs of lagging the performance of the actively managed unit trusts by being ranked 94th overall. Over the duration of the entire period, the Satrix40 was ranked 63rd meaning it fell within the top 40% of funds.

In comparison to the ALSI, unit trust managers showed slightly improved results than they did against the Satrix40. During the growth phase, the ALSI was ranked 35th meaning that only around 38% of the unit trusts were able to outperform the market. Following the effects of the crisis, an improved 55% of unit trusts were then able to outperform the market that was ranked 81st overall. Through the recovery after the financial crisis, 63% of unit trusts were ranked as better performers than the market returns. Over the entire period of the study, the ALSI was ranked 82nd which placed it in the middle of the sample of funds. This shows that over the duration of the study, only 50% of active unit trust managers were able to outperform the market.

Table 5 graphically represents the ranking of the funds used within this study and offers the reader an opportunity to track the ranking of a particular fund during each phase of the study.

### 4.2.4 Table 5: The Jensen and Treynor performance ranking of funds

| Ranking of funds: | | | | |
|---|---|---|---|---|
| **Measure of performance** | **Jensen/Treynor** | **Jensen/Treynor** | **Jensen/Treynor** | **Jensen/Treynor** |
| **Period** | **Bull market** | **Crisis** | **Recovery** | **Entire period** |
| ADCB1 - Advantage Small Cap Value B1 | | 25 | 35 | 19 |
| ADFB1 - Momentum Mom Focused Equity Fund (B1) | | 50 | 77 | 76 |
| ADRB1 - Momentum Mom Real Return Fund (B1) | | 134 | 151 | 152 |
| ADRFA - Momentum Mom Real Return Fund (A) | | 133 | 148 | 148 |
| ADSB1 - Advantage Small Cap Growth B1 | | 52 | 21 | 43 |
| ADUB1 - Momentum Mom Ultra Long Term Value Fund (B1) | | 39 | 84 | 66 |
| APECB - Absa Property Equity Fund Class B | | 45 | 14 | 14 |
| APFF - Psg Balanced Fund | 55 | 112 | 38 | 93 |
| APRF - Destiny Prudential Psg Fof | 40 | 120 | 37 | 91 |
| ILCA1 - Integre Large Cap Prescient Fund - A1 | | | 118 | 114 |
| ILCB1 - Integre Large Cap Prescient Fund - B1 | | | 116 | 109 |
| ILCB3 - Integre Large Cap Prescient Fund- B3 | | | 114 | 102 |
| ILCFC - Integre Large Cap Prescient Fund - C | | | 123 | 122 |
| 27FA1 - 27Four Shari'ah Active Equity Prescient Fund | | 40 | 80 | 78 |
| 27FB3 - 27Four Shari'ah Active Equity Prescient Fund | | 34 | 75 | 70 |
| ABFF - Absa Flexible | 50 | 114 | 108 | 133 |
| ABFI - Absa Dividend Income A | 75 | 1 | 4 | 1 |
| ABGF - Absa General A | 31 | 119 | | 24 |
| ABIB - Absa Inflation Beater Fund Class A | 66 | 2 | 154 | 158 |
| ABIF - Absa International Fund Class A | 9 | 138 | 23 | 95 |
| ABOF - Absa International Fof A | 3 | 139 | 161 | 110 |
| ABPE - Absa Property Equity Fund | 47 | 124 | 11 | 57 |
| ABSA - General Fund Class R | 53 | 96 | 90 | 101 |
| ABSB - Absa Balanced Fund Class R | 58 | 107 | 125 | 134 |
| ABSE - Absa Allrounder Fof | 45 | 109 | 140 | 138 |
| ABSG - Absa Growth Fof | 38 | 105 | 146 | 137 |
| ABST - Absa International Fund Class R | 6 | 137 | 22 | 123 |
| ADHB1 - Momentum Mom High Growth Fund (B1) | | 144 | 72 | 143 |
| AEBF - Alphen Equity Builder | | 11 | 119 | 41 |
| AEMB1 - Momentum Mom Emerging Manager Value Fund (B1) | | 15 | 133 | 99 |
| AFEA1 - Afena Equity Prescient Fund - A1 | | | 95 | 90 |
| AFEA2 - Afena Equity Prescient Fund - A2 | | | 93 | 89 |
| AFEB3 - Afena Equity Prescient Fund - B3 | | | 91 | 84 |
| AFEB4 - Momentum Mom Focused Equity Fund (B4) | | 49 | 83 | 88 |
| AFMA - Alexander Forbes Moderately Aggressive Fof | | 54 | 69 | 75 |
| AGEF - Allan Gray Equity Fund Class A | 46 | 71 | 58 | 72 |
| AGES - Allan Gray Equity Fund Class B | 30 | 77 | 67 | 38 |
| AGFCB - General Fund Class B | | 89 | 92 | 97 |
| AGGF - Allan Gray - Orbis Global Fund Of Funds | 5 | 7 | 160 | 2 |
| AGOB - Allan Gray Optimal Fund Class B | | 28 | 12 | 7 |
| AGOE - Allan Gray - Orbis Global Equity Feeder Fund | 1 | 122 | 25 | 12 |
| AGOF - Allan Gray Optimal Fund Class A | 64 | 98 | 15 | 8 |
| AHGB4 - Momentum Mom High Growth Fund (B4) | | 143 | 76 | 144 |
| AHGV - Nedbank Global Equity Feeder Fund Class A | 8 | 126 | 28 | 61 |
| AHVE - Nedgroup Investments Rainmaker Fund A | 39 | 67 | 99 | 92 |
| AHVR - Nedgroup Investments Rainmaker Fund R | 18 | 60 | 97 | 51 |
| AHWM - Nedgroup Investments Opportunity Fund A | 57 | 111 | 70 | 128 |
| AIFB1 - Advantage Absolute Return Fund Class B1 | | 142 | 1 | 162 |
| AIFCB - Absa International Fund Class B | | 136 | 26 | 98 |
| AMFCA - Absa Managed Fund - A Class | | | 113 | 100 |
| AMFCB - Absa Managed Fund - B Class | | | 115 | 103 |
| AMGB1 - Momentum Mom Macro Growth Fund (B1) | | 12 | 100 | 60 |
| AMGB4 - Momentum Mom Macro Growth Fund (B4) | | 14 | 101 | 64 |
| AMVB1 - Momentum Mom Macro Value Fund (B1) | | 6 | 51 | 20 |
| APMF - Destiny Multi Asset Psg Fund Of Funds | 29 | 128 | 42 | 67 |
| ASEF - Absa Select Equity Fund | 27 | 70 | 89 | 50 |
| AYEF - Aylett Equity Fund Prescient Class A1 | | 17 | 61 | 27 |
| AYEFA2 - Aylett Equity Prescient Fund Class A2 | | 19 | 64 | 31 |
| BEHG - Nedgroup Investments Private Wealth Satellite Fund Of Funds | | 55 | 79 | 87 |
| CAFA - Coronation Absolute A | 21 | 92 | 68 | 54 |
| CAFCD - Analytics Cautious Fund Of Funds Class D | | 94 | 147 | 139 |
| CBPB - Coronation Balanced Plus B Fund | | 41 | 63 | 59 |
| CCB4 - Coronation Capital Plus Fund B4 | | 13 | 71 | 22 |
| CCGF - Coronation Resources Fund | 17 | 57 | 130 | 112 |
| CEB2 - Coronation Equity Fund B2 | | 33 | 62 | 49 |
| CEQB - Coronation Equity B Fund | | 42 | 74 | 62 |
| CGMG - Community Growth Fund | 49 | 88 | 112 | 118 |

| | | | | |
|---|---|---|---|---|
| CIMF - Coronation Jibar Plus Fund | 76 | 46 | 13 | 6 |
| CIRV - Coronation International Relative Value Fof | | 8 | 10 | 9 |
| CMB3 - Coronation Market Plus Fund B3 | | 29 | 47 | 35 |
| CMPB - Coronation Market Plus Fund B | | 35 | 57 | 47 |
| CMPF - Coronation Market Plus Fund | 25 | 66 | 49 | 34 |
| CNCG - Coronation Industrial Fund | 22 | 75 | 27 | 16 |
| CNFG - Coronation Financial Fund | 59 | 79 | 43 | 71 |
| CNIG - Coronation Global Opp's Equity [Zar] Feeder | 7 | 123 | 20 | 45 |
| CODA - Coronation Dynamic Protector | 63 | 91 | 117 | 141 |
| COGCB3 - Coronation Optimum Growth Fund B3 | | 95 | 29 | 30 |
| CORA - Coronation Equity A | 32 | 59 | 66 | 42 |
| CORB - Coronation Balanced Plus Fund | 48 | 63 | 54 | 69 |
| CORG - Coronation Equity Fund | 52 | 58 | 59 | 73 |
| COSG - Coronation Smaller Companies Fund | 14 | 121 | 34 | 80 |
| CPSA - Coronation Preference Share Fund A | 70 | 113 | 8 | 153 |
| CPSB - Coronation Preference Share Fund B | | 27 | 2 | 140 |
| CPSF - Coronation Preference Share Fund B2 | 71 | 115 | 6 | 154 |
| CSICB3 - Coronation Strategic Income Fund B3 | | 3 | 9 | 10 |
| CSIF - Coronation Strategic Income Fund | 67 | 145 | 5 | 161 |
| CTTB - Coronation Top 20 Fund B | | 26 | 82 | 58 |
| CTTCB2 - Coronation Top 20 Fund B2 | | 24 | 73 | 44 |
| DBFD - Discovery Balanced Fund | | 73 | 78 | 96 |
| DEFF - Four Plus Capital Fof | 62 | 97 | 152 | 145 |
| DGEF - Discovery Global Equity Feeder Fund | | 132 | 31 | 115 |
| DIEF - Discovery Equity Fund | | 43 | 121 | 119 |
| ECFF - Four Plus Secure Fof | 74 | 9 | 162 | 4 |
| FARCB - Foord Absolute Return Fund Class B | | 76 | 24 | 11 |
| FEEC - Element Earth Equity Fund C | | 32 | 129 | 125 |
| FEFA - Element Earth Equity Fund - Class A | 44 | 82 | 139 | 127 |
| FEFCC - Foord Equity Fund Class C | | 100 | 50 | 56 |
| FEQF - Foord Equity Fund | 20 | 101 | 45 | 32 |
| FEWS - Analytics Managed Equity A | 33 | 85 | 88 | 68 |
| FFCA - Analytics Cautious Fof A | 60 | 110 | 127 | 130 |
| FFCB - Analytics Cautious Fof B | 61 | 103 | 122 | 126 |
| FFCC - Analytics Cautious Fund Of Funds Class B2 | | 86 | 144 | 136 |
| FGBF - Foord Balanced Fund | 19 | 106 | 55 | 36 |
| FGFA - Investec Global Equity Fund Of Funds Class A | 13 | 130 | 18 | 39 |
| FGFB - Investec Global Equity Fund Of Funds Class B | 12 | 129 | 19 | 37 |
| FGGA - Investec Growth Fund Class A | 36 | 90 | 98 | 86 |
| FIEC - Element Islamic Equity Fund C | | 65 | 128 | 131 |
| FIEU - Element Islamic Equity Fund A | 43 | 84 | 134 | 124 |
| FIFB - Element Islamic Equity Fund B | | 78 | 141 | 135 |
| FORA - Fortress Reit A | 4 | 125 | 142 | 149 |
| FORB - Fortress Reit Fund B | | 117 | 81 | 146 |
| FRB1 - Fortress Reit Fund B1 | | 118 | 131 | 147 |
| VGEF - Efficient Bci Quality Smaller Companies Fund | | 116 | 145 | 142 |
| VPCFC - Ampersand Momentum Cpi Plus 2% Fund Of Funds (A) | | 22 | 96 | 53 |
| WPCA - Gtc Wealth Accumulator Plus Fund | | 18 | 135 | 104 |
| WPCB - Gtc Wealth Accumulator Plus Fund Class B | | 21 | 135 | 107 |
| WPCC - Gtc Wealth Accumulator Plus Fund Class C | | 23 | 135 | 120 |
| APEA1 - Aps Equity Fof A1 | | | 56 | 33 |
| ASEB1 - Aps Equity Fof B1 | | | 60 | 40 |
| FASB1 - First Avenue Sci Equity Fund B1 | | | 46 | 25 |
| FVSB1 - First Avenue Sci Equity Fund B2 | | | 44 | 23 |
| FVSB3 - First Avenue Sci Equity Fund B3 | | | 41 | 18 |
| NPAA2 - Noble Pp Stanlib All Weather Fof - A2 | | | 39 | 17 |
| NPBA2 - Noble Pp Stanlib Balanced Fof - A2 | | | 48 | 26 |
| NPWA2 - Noble Pp Stanlib Wealth Creator Fof - A2 | | | 52 | 28 |
| PIPCX - Inflation Plus Fund Class X | | | 32 | 13 |
| FWSB - Analytics Managed Equity B | 34 | 83 | 86 | 65 |
| GABS - Old Mutual Symmetry Balanced Fund Of Funds C | | 38 | 85 | 83 |
| GADE - Old Mutual Symmetry Defensive Fund Of Funds A | 51 | 99 | 107 | 106 |
| GADS - Old Mutual Symmetry Defensive Fund Of Funds C | | 48 | 120 | 121 |
| GAES - Old Mutual Symmetry Equity Fund Of Funds C | | 47 | 111 | 105 |
| GAEU - Old Mutual Symmetry Equity Fund Of Funds A | 26 | 87 | 110 | 81 |
| GAFI - Old Mutual Symmetry Enhanced Income Fund Of Fund A | 69 | 5 | 158 | 163 |
| GAFS - Old Mutual Symmetry Enhanced Income Fund Of Fund C | | 10 | 159 | 159 |
| GBFB - Investec Global Strategic Managed Feeder Fund B | 10 | 135 | 16 | 21 |
| GBFC - Investec Global Strategic Managed Feeder Fund B2 | | 131 | 17 | 48 |
| GDKI - Stanlib Industrial Fund R Class | 54 | 51 | 36 | 29 |
| GTWA - Gtc Wealth Accumulator Plus Fund Class E | | 20 | 135 | 108 |
| GTWD - Gtc Wealth Preserver Plus Fund Class D | | 141 | 149 | 150 |

| | | | | |
|---|---|---|---|---|
| GTWP - Gtc Wealth Preserver Plus Fund Class C | | 140 | 150 | 151 |
| GWCB - Gtc Wealth Preserver Fund Class B | | 62 | 132 | 132 |
| HSEF - Hermes Equity A | 11 | 102 | 124 | 94 |
| HUEF - Huysamer Equity Prescient Fund Class A | 23 | 80 | 106 | 113 |
| HUEFB2 - Huysamer Equity Prescient Fund Class B2 | | 74 | 105 | 117 |
| HUEFB3 - Huysamer Equity Prescient Fund Class B3 | | 68 | 102 | 111 |
| HUEFB4 - Huysamer Equity Prescient Fundclass B4 | | 72 | 104 | 116 |
| ICMCD - Investec Cautious Managed Fund Class B3 | | 44 | 143 | 129 |
| IECCD - Investec Emerging Companies Class B3 | | 16 | 40 | 15 |
| INAB - Investec Absolute Balanced Fund Class A | 65 | 36 | 156 | 155 |
| INAC - Investec Commodity Fund Class A | 24 | 53 | 126 | 79 |
| INAE - Investec Emerging Companies Fund Class A | 16 | 108 | 30 | 46 |
| INAF - Investec Opportunity Fund Class R | 56 | 56 | 53 | 85 |
| INAG - Investec Gilt Fund Class A | 68 | 4 | 153 | 160 |
| INAH - Investec High Income Fund Class A | 73 | 30 | 7 | 5 |
| INAI - Investec Absolute Income Fund Class A | 72 | 104 | 3 | 3 |
| INAO - Investec Opportunity Fund Class A | 42 | 64 | 65 | 55 |
| INAQ - Investec Equity Fund Class A | 41 | 93 | 87 | 77 |
| INAV - Investec Value Fund Class A | 37 | 69 | 109 | 74 |
| INAW - Investec Worldwide Equity Feeder Fund Class A | 15 | 127 | 33 | 52 |
| INB2 - Investec Absolute Balanced Fund Class B2 | | 37 | 157 | 156 |
| INBA - Investec Absolute Balanced Fund Class B | 2 | 31 | 155 | 157 |
| JSE ALSI | 35 | 81 | 103 | 82 |
| Satrix40 | 28 | 61 | 94 | 63 |

# 5. CONCLUSION

This study set out to achieve the goal of updating the information South African investors have on unit trusts by analysing the risk-adjusted performance of actively managed, general equity unit trusts versus the performance of the market over varying economic conditions. Between 2005 and 2014, a total of 161 actively managed general equity unit trusts were analysed against the returns of the JSE ALSI. In addition, the Satrix40 was included to offer investors the results of a passive investment over the same time periods.

Due to the financial crisis in 2007 that shook financial industries all over the world, investors have started to question their investments and are seeking a more stable investment journey. Unit trusts have long been touted as the answer too many investor requests but in doing so, have become increasingly complicated to understand.

Chapter one set out to introduce the reader to the South African unit trust industry and briefly the mutual fund market in the United States. The need for continued information and studies into the unit trust industry was put forward by discussing the competition and performance between unit trusts and the subsequent effects that the financial crisis had on those two aspects and investor needs. The persistence of unit trust performance was also mentioned, and although it did not fall within the objectives of the study, it did bring to the attention of the reader the thought process that investors undertake in judging past performance and their interaction with the EMH.

Chapter two served as an information chapter that sought out to educate the reader on the various aspects of unit trusts, the benchmark used in this study, some of the benefits and costs involved when making investment decisions and the principle of risk versus return. These sections lead into the discussion of the Efficient Market Hypothesis and the arguments for and against market efficiency. Through the understanding of the EMH, further points of interest arose such as the differences between active and passive investments. Personal views become important when analysing the degree of market efficiency as those views would determine whether or not an investor would invest in actively managed unit trusts in order to capitalise on market inefficiencies or whether they would adopt a passive strategy and forego volatility for a potentially more stable investment journey.

Behavioural finance formed the third chapter as it went search of a deeper understanding on investor decisions and why the markets would be efficient or inefficient as the EMH tried to determine. Due to investors having their own personalities and positive and negative characteristics, the decisions that go into investments decisions are not as straight forward as initially thought when modern financial theories were put forward. Today, behavioural finance has become an important aspect of research and current financial theories and many supporters of the field believe that the decision process that goes into decision making is far more complicated than modern financial theories suggest. This chapter had hoped to provoke the thoughts of the reader and broaden their thinking when analysing the differences between active and passive investment decisions.

Chapter 4 included the reviews of historical studies and literature on unit trust performance and their persistence over time as well the financial crisis. This section brought the reader's attention to past studies that looked at similar circumstances and tried to further the knowledge on unit trust performance. Studies were looked at in groupings of either those studies that supported the notion of performance persistence or those that found no relation between past performances and future performance. These studies were looked at in isolation between the US and South African markets.

The next chapter was that of the methodologies used within this study. The reader was introduced to the Sharpe, Treynor and Jensen measures as well the methods used to gather and manipulate the data in order to produce the necessary results. This chapter also set out the periods for the study and served as a means of putting the previous chapters' information into action. This section was derived from the previous work done by Kassim and Kamil (2012). This thesis set out to extend their study into the South African unit trust industry.

The most important chapter of the study followed on from the methodology chapter and reported on the results of the study. An initial market summary was tubulised as seen in table 1. This grouped the returns of the unit trusts, ALSI, risk-free rate and Satrix40 by the different periods of the studies and showed the reader the non-risk-adjusted returns for each of the funds. Over the varying periods, it was seen that unit trusts on average underperformed the market except for the period of the financial crisis. This showed that without taking costs or risk into consideration, unit trusts were able to outperform the market during the period of economic turmoil. With regards to the views of the EMH and passive investments, it was also interesting to note that over all of the periods, including the entire period of the study, the

Satrix40 was the best performing investment offering its point of view that the cheaper passive investments might be a better option that actively managed general equity unit trusts.

Table 2 highlighted the more relevant results of the study that included the risk-adjusted returns also over the varying periods. Over the duration of the whole period of the study, only 33.13% of funds according to Sharpe and half of the unit trusts according to Treynor and Jensen were able to outperform the market. During the financial crisis, however, around 60% for Sharpe and 55% for Jensen and Treynor were able to outperform the market showing that while it may be difficult to select the correct funds, active unit trust managers were able to make the active decision necessary to outperform the market. These were encouraging results for supporters of active management principles as it showed that the majority of the funds justified the fees they charged investors during periods of economic turmoil. With regards to the other periods, however, active unit trust managers did not produce the necessary results to justify their fees as they continuously failed, on average, to outperform the market as well as the passive Satrix40.

In conclusion of this thesis, the results obtained were not what the author had expected. While a lot of debate went into the differences between active and passive investments and the review of past literature, it was still expected that active unit trust managers would have the skill and ability to make the active decisions necessary to outperform the market. This was only evident during the financial crisis where unit trusts, on average, outperformed the market as a whole. While this does offer some encouragement to investors, when the performance of the Satrix40 was compared to unit trusts throughout the study, the Satrix40 proved to be a safer and better performing investment decision when the market is analysed during the whole period.

## 5.1 Theoretical Construct

At the beginning of this study, it was one of the author's objectives to put together a theoretical construct that would serve as a guideline and offer some direction to investors who were seeking information on the performances of active versus passive investments during varying different economic conditions.

As the study took shape, it became apparent that such a proposition would be a challenge to put forward to investors due to the assumptions and limitations of the study. Based on the results of the study, the author would put forward the idea that investors should be cautious

when investing in active unit trust performance based on the results of this study. However, with a holistic view of the active unit trust industry and passive investments, original investment knowledge would still be a suitable theoretical construct for investors. Having a well-diversified portfolio of investments comprising of active unit trusts as well as passive investments would be the most logical approach for investors. In addition to a diversified portfolio, the investor must accept that in order to achieve the best results with unit trusts, patients is required and the investment must be held until the set date of the investment horizon. This idea is based on the difficulty of having to choose the best performing actively managed unit trust, as well as the positive returns showed by the Satrix40. In addition, while not offering exciting returns, investing in a risk-free long term government bond would provide some form of stability to the portfolio especially during the period of a financial crisis as was seen in table 1 when the 10 year government bond produced the best returns over the financial crisis period.

## 5.2 LIMITATIONS

In order to put this study together, some limitations were put in place to ensure that general equity unit trust would become the focus of the research. While this has been achieved, it can be argued that this has not widened the scope enough into actively managed unit trusts in order to give a validating theoretical construct.

Judgement can be made regarding general equity unit trusts, the market and Satrix40 investment however it would be short sighted if the author were to make overall market conclusions or deductions based on one of the many unit trust sections open to investments.

While every effort was made to provide accurate and concise judgements on unit trust performances in this study, the exclusion of costs has reduced the ability of the author to make more accurate and validating conclusions regarding the active versus passive debate. Gross performance results were analysed and it is on this basis that the unit trusts were judged.

## 5.3 RECOMMENDATIONS

While every effort has been taken to ensure the results of this study are accurate and free from any errors, certain simplifications and adjustments are made meet the objectives of the study. For future studies on this topic, the following recommendations are proposed.

1. The classification of unit trusts studied could be widened to include not only general equity unit trusts but also other classes. In relation to this particular study, more analysis could go into the strategies of the general equity unit trust that were selected, and the results of the study could be based on those strategies and this would provide more in depth knowledge to investors.
2. One issue the author came upon was that of not being able to select which unit trusts would out or underperform the market during the varying periods. A selection process could be designed based on the funds strategies for example to try and identify when or why certain funds underperform or outperform the market.
3. The most obvious recommendation for future studies would be for costs to play a more prominent role. Costs were chosen to be excluded during this study to ensure simplicity in reporting and to form a basis for further studies that could take these results and dig deeper into the debate on active versus passive unit trust investment.
4. In addition to the Satrix40, more passive investments could be included in the study to obtain more in depth results regarding general equity active and passive investments during the period of this study.
5. In addition to this, further comparisons could be made between various sector unit trusts and their passive counterparts to view the performance of various sectors during periods of varying economic conditions. It would be interesting to judge the performance of various industries during the period of a financial crisis to see how they reacted and navigated the various boom and bust cycles associated with crises.
6. A final recommendation would be to place further emphasis on the interaction between the unit trust industry in South Africa and the EMH. Based on the results of this study and any further studies looking at unit trust performance versus the market, more analysis could be placed on the effects of the results on the arguments behind the EMH and give more updated information to those opposing sides of the argument.

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