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The role of market timing and security selection in hedge funds' returns to investors in South Africa

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Student Name: Elmar Garfield Gräter

Student Number: 16391391

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ABSTRACT

This research study investigates the ability of hedge funds to deliver alpha. But more significantly, the research goes further and investigates the role of security selection and market timing, i.e. skill, in delivering this alpha to investors. Empirical work regarding the ability of hedge funds to deliver alpha, as well as whether hedge funds have the ability to make superior security selections and time the market, have been mixed. The Jensen's alpha measure is utilised to investigate the level of alpha that hedge funds are able to deliver. The performance attribution model as introduced by Brinson, Hood and Beebower is employed to calculate the returns attributable to security selection and market timing. The monthly returns of 30 South African hedge funds are analysed for the period between February 2005 and February 2017. Findings show that overwhelming alpha is present, with 28 of the 30 hedge funds in the sample delivering positive alpha. While the alpha can be attributed to both security selection and the market timing activities of hedge funds, 24 of the 30 hedge funds were able make superior security selections and time the market.

Keywords: Hedge Funds, Performance Attribution, Jensen's Alpha, Security Selection, Market Timing

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other university. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1. INTRODUCTION

In 2016, the South African hedge fund industry attained a record high of R68.6bn in assets under management. This is a 118.3% increase from just five years before that, a 52.8 fold increase from the R1.3bn in assets which South African hedge funds managed in 2002 (Novare, 2016). Investors invest in hedge funds due to the belief that these funds will deliver to them returns higher than the returns delivered by the fund's benchmark, or due to hedge funds delivering superior risk-adjusted returns when compared to other investment options also referred to as alpha.

The Capital Asset Pricing Model (CAPM) is one of the most popular tools for assessing the performance of managed portfolios. The attraction of the CAPM is that it offers a powerful and intuitively simple method regarding how to not only measure risk, but also the relationship between expected return and risk (Fama & French, 2004). The investor that desires higher returns must be willing to take on higher volatility/risk to achieve those returns (Lintner, 1965; Sharpe, 1964).

Fama and French (2004) explain that when there is risk-free borrowing and lending available in the market, the expected return on assets uncorrelated with the market portfolio must equal the risk-free rate. This is the case with many hedge funds such as market neutral funds and to an extent long-short equity funds that have reduced market exposure. With market neutral funds having no exposure to the market due to their long and short positions, these funds are left with a benchmark rate equal to the risk-free rate. Despite the arguments outlined by Fama and French (2004), we find that funds earn returns as high as 14.2%, with the average return for market neutral hedge fund strategies being 6.1% (Novare, 2016).

In addition to this, Fama (1965) argues that active managers who oversee the management of funds should not be able to deliver superior risk-adjusted returns continuously due to the efficiency of markets. Efficient markets are markets in which a random walk is present in the series of price movements (Fama, 1965). The presence of a random walk implies that there is no dependence in a series of successive price movements. Accordingly, a fund manager should not be able to successfully and continuously predict the price movement of assets and thus outperform the benchmark or deliver alpha persistently.

Despite this, there is evidence that hedge fund managers deviate from benchmarks. This is done with the objective of adding value in one of two ways, either through stock selection or factor timing (market timing) (Petajisto, 2013).

1.2. BACKGROUND TO HEDGE FUNDS

The first hedge fund was the brainchild of Alfred Winslow Jones in 1949, Winslow was the first to incorporate the strategy of offsetting long positions with short positions. The objective behind the long-short position is to have the market exposure of promising long equity position offset by a short equity position which is expected to perform relatively poor, while at the same time incorporating leverage (Joubert, 2005). The fund developed by Winslow also charged a fee based on the performance of the fund in addition to the normal management fee (Fung & Hsieh, 1999). Although the strategy utilised by funds has changed quite drastically since the time of Jones, many still charge fees still in the same manner as Jones did back then.

Similarly, to the fee structure set up by Alfred W. Jones, hedge fund managers today typically receive a fixed income of one to two per cent of the net asset value of the fund. In addition to this, hedge fund managers typically receive an additional 15% to 25% of returns generated above a certain hurdle rate. This rate is usually set at the risk-free rate (Stulz, 2007). This large performance fee is due to hedge fund managers being judged on their ability to produce superior performances and to deliver alpha, rather than simply track a benchmark as with mutual funds (Brown, Goetzmann, & Ibbotson, 1999)

Hedge funds remained quite obscure until in 1966 when an article in the Fortune magazine described that the hedge fund developed by Jones was delivering returns net of fees at a much higher level than corresponding and best performing mutual funds (Fung & Hsieh, 1999).

One category of hedge funds is market neutral hedge funds that incorporate the same long-short equity strategy of Jones with the objective of avoiding major market risk factors (Fung & Hsieh, 1999). Market neutral funds have the objective of creating alpha, while hedging away all exposure to the market (Capocci, 2006). Effectively, the goal of market neutral funds is to invest in undervalued securities through the utilisation of proceeds from the short sales of related securities and through this creating a “market neutral” portfolio (Patton, 2009). Within the South African environment, market neutral funds have shown strong growth in 2016. Novare (2016) reports that of all funds Market Neutral funds experienced the most inflows. As a result of these inflows market neutral fund’s share of total assets under management in South Africa has increased from 8.7% to 12.6%.

Another variation of hedge funds is referred to as long-short equity hedge funds. These funds also incorporate long and short positions, but not to the extent that they reduce market exposure to a level where beta is zero (Payne & Tresl, 2015). The objective of these funds is to reduce market risk while maintaining company-specific risk, and the majority of these long-short equity funds tend to be long biased in the South African market (Novare, 2016).

These hedge fund managers actively deviate from their benchmarks. Petajisto (2013) posits that fund managers take active positions due to their belief that they can add value by delivering superior risk-adjusted returns in comparison to their benchmarks through stock selection and market timing. It follows that hedge fund managers take on this active investment approach with the objective of utilising their skill to deliver superior risk-adjusted returns or alpha (Amihud & Goyenko, 2013).

1.3. CAPITAL ASSET PRICING MODEL

Markowitz in 1952 introduced the Modern Portfolio Theory, which demonstrates that when investors construct portfolios they aim to maximise the return for a given level or risk, or accordingly, minimise the risk for a given level of return (Markowitz, 1952). This work highlighted the relationship between risk and return, with later work such as the capital asset pricing model providing a framework for quantifying the expected return, given a portfolio's level of risk.

The capital asset pricing model was independently developed by Lintner (1965), Sharpe (1964) and Treynor (1961). The capital asset pricing model will be outlined in more detail as part of the research methodology, but the model calculates the expected return for a portfolio. It states that expected return is determined by the interaction of three factors. Firstly, the risk-free rate. Secondly, beta, a measure of systematic risk which is crucial to the pricing of assets. Lastly, the expected return for the market portfolio. This market portfolio consists of each investable asset in the market in proportion to its fraction of the total value of all assets in the market (Jensen, 1968). It follows that the capital asset pricing model tells us the level of return a portfolio or fund is expected to return, given its level of risk.

If a manager is able to deliver a return higher than that of the expected return for the given level of systematic risk used to calculate the expected return, then the difference is referred to as alpha. This alpha acts as a measure of the portfolio manager or hedge fund managers ability to forecast security prices (Jensen, 1968).

1.4. JENSEN'S ALPHA

Linking to the earlier work of Markowitz in 1952, Jensen (1968) posits that the concept of performance has two dimensions. Firstly, the ability of the portfolio manager (or hedge funds for this research) to increase returns through the successful prediction of movement in future asset prices. Secondly, the ability of the portfolio manager to minimize, through diversification, the amount of risk carried by the investors (Jensen, 1968).

Jensen's alpha assesses the predictive ability of the portfolio manager or hedge fund manager in this case. This is the ability to earn returns through the successful prediction of future prices which are higher than what we would expect of a portfolio with a similar level of riskiness (Jensen, 1968).

Jensen's measure of portfolio performance is derived from the theoretical results of the capital asset pricing models. As outlined earlier, in the instance that a fund or hedge fund manager is able to deliver returns greater than that justified by the systematic risk of the portfolio as outlined by the capital asset pricing model, then the return in excess of the expected return is referred to as Jensen's alpha.

1.5. EFFICIENT MARKET HYPOTHESIS (EMH)

Fama (1991) states that if markets are efficient, then investors will not be able to continuously outperform their benchmarks. It follows that the efficient market hypothesis has significant implications for hedge fund managers who claim to possess skill and are able to either select superior securities or time the market, or even both. Fama (1991) formulates a clear and concise definition of what the efficient market hypothesis means. The efficient market hypothesis is described as markets in which security prices at all times fully reflect all available information. Accordingly, a market in which this takes place is said to be efficient (Fama, 1970). Due to prices reflecting all available information, no trader possesses an information advantage in security markets which are efficient (Brown, 2011).

If markets are said to be efficient, then the price of a security today represents the market expectation of what it will be worth tomorrow. It follows that, if markets are efficient, no trader should be able to consistently outperform the market (Brown, 2011).

The efficient market hypothesis has significant implications for hedge fund managers. It implies that fund managers should not be able to beat the market, especially not on a

persistent basis. Therefore, there is no incentive for hedge fund or any active manager to deviate from his benchmark.

Brown (2011) points out that Fama's work in 1970 was the first to challenge the conventional thinking that it is relatively easy to make money in the markets through simply following trends. Fama (1991) shifted the responsibility of proof to asset managers to prove to their clients that they possessed the skill and were able to deliver excess return through the active trading of securities. Accordingly, they had to prove that they were in fact able to deliver alpha.

1.6. SKILL AS A DETERMINANT OF PORTFOLIO PERFORMANCE

Skill can be defined as the general cognitive ability to pick stocks or to time the market. Effectively, skill is the use of public or private information to deliver superior risk adjusted performance (Kacperczyk, Nieuwerburgh, & Veldkamp, 2014).

The seminal work of Brinson, Hood, and Beebower (1986) built the foundation for measuring this skill. Their work aimed to contribute the returns of a portfolio to the different activities or functions of which the investment management process consists. The investment management process consists of the investment policy, market timing and security selection (Brinson, et al., 1986). The work of Brinson et al. (1986) set out to determine the contribution that each of these activities made to total return.

The investment policy represents the fund's benchmark return for the period. Policy identifies the fund's normal portfolio. Timing is the strategic under or overweighting of an asset class with respect to the normal weight, with the objective of enhancing returns or lowering risk. Security selection is the active selection of securities within an asset class, it is the portfolio's actual asset class returns in excess of those asset classes' passive benchmark returns (Brinson et al., 1986).

Brinson et al. (1986) summarise that designing a portfolio consists of four main steps. Firstly, deciding on which asset classes will be included in the portfolio. Secondly, deciding on the normal or benchmark weightings for each of these asset classes. Thirdly, strategically altering the weightings of asset classes with the objective of capturing excess returns due to short-term fluctuations in asset class prices. This is the return due to market timing. Lastly, selecting specific securities within an asset class to achieve higher returns than the relative asset class, this is the return attributable to security selection (Brinson et al., 1986). Brinson et al. (1986) found that 93.6% of return was attributable to the policy selection or benchmark, with security selection and market timing only making marginal contributions to total return.

1.7. THE RESEARCH PROBLEM

An investor typically has two investment options, an active investment option such as those provided by hedge funds where managers attempt to use their skill to outperform their benchmarks, or passively managed funds, where they typically take buy and hold positions. The actively managed funds are associated with higher costs, but also has the promise of superior risk-adjusted performance due to the skill of the fund manager (Malkiel, 2003b). In efficient markets prices already fully reflect all available information (Fama, 1970). Therefore, active managers, regardless of skill, should not be able to persistently outperform their benchmarks.

The majority of hedge funds in South Africa charge a management fee of approximately 1%, and on top of this they also earn a performance fee of 20% (Novare, 2016). In contrast to this, the passively managed fund's management fee can be as low as 20 basis points (Malkiel, 2003b). Are these fees charged by hedge fund managers justified? Are hedge fund managers making security selections and market timing decisions which add positively to the active returns of the fund? Without an understanding of this, investors could be paying management and performance fees to hedge funds for risk-adjusted returns they could have earned through simply investing passively at a lower cost.

This research aims to provide an understanding of the performance of South African hedge funds, specifically market neutral and long-short equity hedge funds, while including a small sample of other strategy hedge funds. The study endeavours to investigate whether these hedge funds are able to earn superior risk-adjusted returns referred to as alpha, with this alpha being representative of skill. In addition to this, this study aims to determine whether this alpha, or skill, of hedge funds is attributable to superior security selection, market timing or possibly a combination of both superior security selection and market timing.

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

The previous chapter introduced the concept of hedge funds as well as the skill these hedge funds claim to possess and how that delivers superior risk-adjusted return or alpha to investors. During this chapter various supporting theories relating to hedge funds, their performance and alpha will be outlined, discussed and reviewed.

2.2. JENSEN'S ALPHA AND THE CAPITAL ASSET PRICING MODEL

Stakeholders of this research, such as individual investors, institutional investors and especially portfolio managers, require insight into whether hedge funds are in fact delivering investors with alpha on a continuous basis. Also, whether this alpha is attributable to skill. Prior to answering these questions, it is important to first establish a good understanding of what alpha, or more specifically Jensen's alpha entails, and where it originated from.

Writing in 1968, Jensen posits that a central problem in finance is the evaluation of the performance of risky assets, with portfolio performance effectively having two dimensions. The first of these being the ability of the fund manager or portfolio manager to increase returns through the successful prediction of future price movements. Secondly, the ability of the portfolio manager to minimise insurable risk carried by those invested in the portfolio or fund (Jensen, 1968).

Research shows that risk aversion is present in capital markets, therefore as long as investors are able to perceive the riskiness of an asset, then this implies that risky assets must on average yield higher returns than less risky assets. Accordingly, when assessing the performance of a fund or portfolio, the effects of different levels of risks on those returns need to be taken into consideration (Jensen, 1968).

Jensen's alpha aims to measure a fund manager's predictive ability. This predictive ability can be described as the ability to earn returns through the successful prediction of security prices which are higher than returns that would be expected of another portfolio, given the same level of riskiness (Jensen, 1968).

Wagenvoort (2006) writes that it is common practice for the performance of hedge funds to be measured according to the alpha delivered. Jensen (1968) explains that the Jensen's alpha performance measure is derived from the direct application of the theoretical results of the

Capital Asset Pricing Models independently derived by Sharpe (1964), Lintner (1965) and Treynor (1961). Considering the dependence of Jensen's alpha on the Capital Asset Pricing Model, it is critical to first establish an understanding of the relationship between expected return and insurable risk as expressed in the Capital Asset Pricing Model.

The Capital Asset Pricing Model is based on the assumptions that all investors are risk averse, all investors are single-period expected utility of terminal wealth maximisers, all investors are able to choose among portfolios based solely on expected return and variance of returns, and all transaction costs and taxes are zero, and that all assets are infinitely divisible (Lintner, 1965; Sharpe, 1964; Treynor, 1961).

Given that the market is in equilibrium, the model results are presented in the following equation which calculated the expected one-period return for a security or portfolio (Lintner, 1965; Sharpe, 1964; Treynor, 1961).

$$R_p = R_f + B_p(R_m - R_f)$$

$$where: R_p = Portfolio\ Return$$

$$R_f = Risk - Free\ Rate$$

$$B_p = Measure\ of\ Beta$$

$$R_m = Return\ of\ the\ Market$$

The Capital Asset Pricing Model implies that the expected return of any security or portfolio is influenced by the risk-free rate plus a risk premium. This risk premium is a product of the systematic risk of the portfolio and the risk premium that can be earned on the market portfolio. In turn, the risk premium on the market portfolio equates to the difference between returns that could be earned holding the market portfolio and the risk-free rate (Jensen, 1968). Therefore, based on the Capital Asset Pricing Model, additional return on a portfolio can only be obtained by the portfolio manager or fund manager taking on additional systematic risk.

The resulting Capital Asset Pricing Model tells us the expected level of return a manager is expected to earn, given the level of systematic risk undertaken. It follows that if a fund manager is able to successfully predict security prices they should be able to earn a higher return than what is implied by the riskiness of the portfolio and with it the Capital Asset Pricing Model (Jensen, 1968).

The Jensen's alpha is derived from the following formula (Jensen, 1968). Jensen (1968) states that the α_p intercept represents the average incremental rate of return that can be solely attributed to the manager's forecasting ability. When undertaking a buy and hold strategy, this

alpha value will be zero. When not doing as well as the random buy and hold strategy the alpha will be negative. But when the fund manager is adding value to the portfolio and forecasting future security prices correctly, then this alpha intercept value will be positive.

$$R_p - R_f = \alpha_p + \beta_p(R_m - R_f)$$

$$where: E(R_p) = Expected\ Return\ of\ Portfolio$$

$$R_f = Risk - Free\ Rate$$

$$\alpha_p = Alpha\ of\ Portfolio$$

$$\beta_p = \frac{Cov(R_p, R_M)}{Var(R_p)}$$

$$(R_p) = Return\ of\ Portfolio$$

$$(R_m) = Return\ of\ Market\ Portfolio$$

In summary, the Capital Asset Pricing Model expresses the expected return that could be earned over a period, given the riskiness of the security or fund. Jensen's alpha is the return earned in excess of the return justified by the Capital Asset Pricing Model considering the insurable risk undertaken by the fund manager. This alpha then represents the predictive ability of the portfolio or fund manager, with a positive alpha showing that the fund manager made correct predictions about movements in security prices and the selection of undervalue securities (Barjaktarović, Ječmenica & Paunović, 2013).

2.3. EFFICIENT MARKET HYPOTHESIS

Roll (1997) describes the efficient market hypothesis as one of the most controversial and well researched propositions in all of the social sciences. The appeal of the efficient market hypothesis lies within its simplicity; it is fairly simple to state, while at the same time having significant implications for both academic research as well as business practices. Despite its simplicity, it has remained quite resilient to empirical proof of refutation.

The hypothesis on which the efficiency of capital market is founded, originates from the realisation that the competitive behaviour among profit-seeking competitors in capital markets will ensure that prices continuously adjust to reflect all available price influencing information (Phiri, 2014). Based on this proposition that security prices continuously adjust to information as it becomes available, the efficient market hypothesis suggests that security prices that at any time prevail in capital markets, should be an unbiased representation or reflection of all

currently available information. Also, that return earned is consistent with the perceived risk of the security (Naseer & Tariq, 2015).

The efficient market hypothesis rests upon three main assumptions. Firstly, investors are assumed to be rational and that they value securities on the basis of maximum utility. Secondly, in the case where investors are not rational, their trades are assumed to be random and with that, offsetting any effect on prices. Lastly, rational arbitragers are assumed to eliminate any influence irrational investors have on security prices (Naseer & Tariq, 2015).

The efficient market hypothesis is mainly based upon the random walk model. Malkiel (2003a) describes the logic behind a random walk as a price series in which all subsequent price changes represent random departures from previous price changes. Based on this, the random walk model depicts the manner in which information and information flows into the market is random and unpredictable. As a result, price changes are expected to be random and unpredictable (Naseer & Tariq, 2015). When a random walk is present, then stock returns do not conform to any pre-existing pattern. Therefore no investor should be able to earn abnormal returns through simply formulating a trading strategy (Rao, 2007).

Based upon this logic, free markets according to the efficient market hypothesis could only be inefficient if “rational” investors ignored price-sensitive data. If other investors then chose to use this data they could use it to make large profits and the market would readjust, becoming efficient again (Rao, 2007).

Ball (2009) takes a different approach to outlining the efficient market hypothesis. He describes the efficient market hypothesis as consisting of merging two insights. Firstly, the first insight originates from economics and is probably one of the simplest and most powerful, being is that competition causes a correspondence between revenues and costs. This simply means that if profits are excessive, new competition will enter and erode those profits. The second insight, and this is specifically put forth by Fama (1965), is to view the change in asset prices as a function of the flow of information into the market.

Based on this, the efficient market hypothesis can be summarised as follows. The competition among market participants results in returns on using information being commensurate of its cost (Ball, 2009).

The efficient market hypothesis has three categories depending on which type of information security prices reflect, namely the weak form, semi-strong form and strong form efficient market hypothesis (see Figure 1). The weak form efficient market hypothesis is consistent with the random walk model. It therefore states that the stock price moves randomly and reflects all market-related information for that security, such as historical price data or trading volumes

(Naseer & Tariq, 2015). Information such as past movements in security prices and historical trading volumes cannot be used to predict future price movement, therefore it is not possible to beat the market and earn abnormal returns using technical (trend) analysis (Naseer & Tariq, 2015; Phiri, 2014).

The semi-strong form efficient market hypothesis suggests that security prices adjust rapidly to reflect all market and publicly available information. This kind of information includes dividends and earnings announcements, as well as political and economic events. Thus, based on the semi-strong form of the efficient market hypothesis, it is not possible to earn abnormal returns based on fundamental analysis (Naseer & Tariq, 2015; Phiri, 2014).

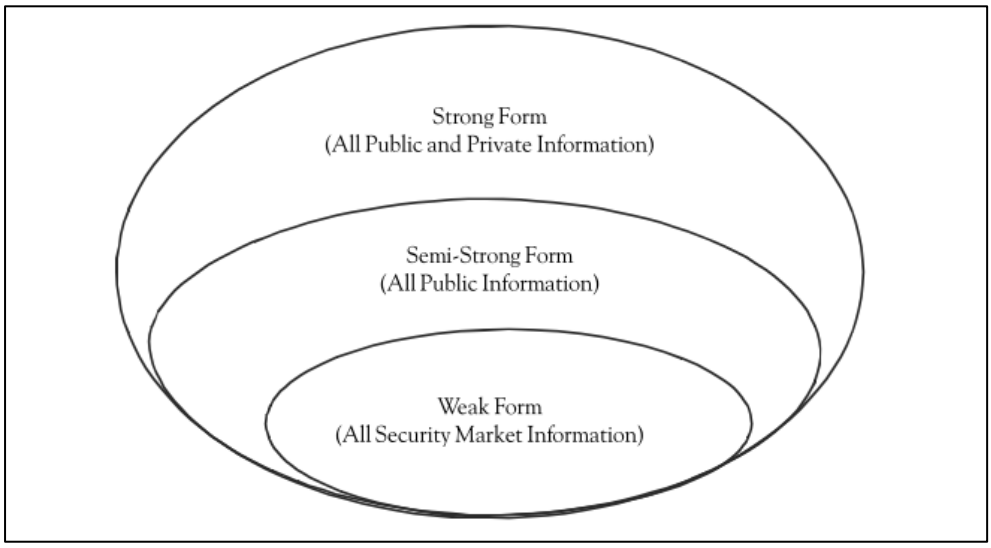

Figure 1: Forms of Market Efficiency

Source: Naseer and Tariq (2015)

The strong form efficient market hypothesis theorises that both privately held and publicly available information is at all times reflected in security prices. Based upon this, no investor has access to monopolistic information (Naseer & Tariq, 2015; Phiri, 2014).

The consequence of the efficient market hypothesis and the presence of random walk is that the flow of information is unhindered and that all information is immediately reflected in prices. The price change tomorrow will only be dependent on the information available tomorrow, thereby being independent of the price changes taking place today. The news or information is by definition unpredictable, as a result the future price changes must be random (Malkiel, 2003a).

The implications of this hypothesis are vast. For investors or fund managers it means that they should not be able to earn excess returns based on information they hold, whether it be privately, publicly or historical information (Phiri, 2014). This is due to the fact that if the efficient

market hypothesis holds true, all information will now be reflected in security prices. Then no investor should be able to utilise historical or present data to predict future price movement (Naseer & Tariq, 2015). This significantly contradicts the views of hedge fund managers who claim to possess the skill to persistently deliver superior risk-adjusted returns relative to their benchmarks, especially on a continuous basis (Fama, 1991)

Further implications of the efficient market hypothesis for active managers include, firstly, that equity research holds no value and provides no benefits. Secondly, strategies that have minimal execution costs such as broad buy and hold strategies and randomly diversified portfolios, would be superior to other investment strategies. Lastly, a strategy with lower transaction costs should provide higher returns in the long run (Rao, 2007).

The consequence of this for hedge fund managers is that the skill hedge fund managers claim to hold is irrelevant in delivering returns to investors. Investors are better off taking a passive approach to investing (Brown, 2011). Malkiel (2003a) adds that in efficient markets, an uninformed investor buying a diversified portfolio out the market, will obtain a rate of return as generous as an expert investor (Malkiel, 2003a).

Brown (2011) points out that Fama's work in 1970 was the first to challenge the conventional thinking that it is relatively easy to make money in the markets through simply following trends. Fama's research shifted the responsibility of proof to asset managers to prove to their clients that they were able to deliver excess return through the active trading of securities. Accordingly, they had to prove that they were in fact able to deliver alpha.

2.3.1. EFFICIENT MARKET HYPOTHESIS – FACT OR FICTION

Even after decades of research as well as thousands of journal articles, economists have still not reached a consensus on whether financial markets are efficient or not (Roll, 1997). Since the seminal work of Fama in 1965 regarding the presence of a random walk in security prices, there have been large amounts of research regarding the efficiency of markets, with findings both for and against capital market efficiency. This section will outline some of this work to provide context on whether fund managers should be able to earn abnormal returns.

Shiller (2003) writes that the world of academic finance has evolved a great deal since the times when the efficient markets theory was considered to be proven beyond a doubt (Shiller, 2003). A generation ago it was widely believed that securities markets functioned in an extremely efficient manner, thereby efficiently reflecting information regarding individual stocks, as well as information regarding the stock market as a whole (Malkiel, 2003a).

In 1965 Fama tested for the presence of the random walk model, with this finding that a random walk was in fact present and as a result proved the independence of stock price movements over time. This implied that stock prices rapidly adjusted to the arrival of new information. Fama (1965) posits that the adjustment of prices to new information may not be perfect i.e. sometimes prices may over adjust, while at other times they may under adjust, but at all times the randomness of these price adjustments makes these adjustments unbiased (Fama, 1965)

Further work by Fama in 1970 showed that there is a serial correlation present among the 30 stocks, of the Dow Jones Industrial Average between 1957 and 1962, but this correlation is always found to be zero. This correlation of zero represented a linear independency among returns, which is consistent with the market efficiency model (Fama, 1970).

Support in favour of the efficient market hypothesis came from the work of Malkiel in 1973. Malkiel at the time made the bold statement that a blindfolded chimpanzee throwing darts at the Wall Street Journal could select a portfolio that does as well as some of the so-called experts. The advice here was not to literally throw darts, but rather a towel over the stock pages. With that the research aimed to point out that investors should buy a broad-based index of securities and hold the stocks thereby being charged very low expenses (Malkiel, 2003a).

At the start of the 21st, century the intellectual dominance of the efficient market hypothesis became far less significant. Many financial economists now started to believe that security price movement was at least partially predictable, while during this same time a new breed of economists started placing heavy emphasis on the influence of psychological and behavioural factors of stock price determination. These very same economists were making the claim that these predictable patterns could be used to earn excess risk-adjusted returns (Malkiel, 2003a).

While these predictable patterns may have been documented, they were not robust enough to create profitable investment opportunities. Especially after they had been documented and publicised, they would not allow for investors to earn excess returns (Malkiel, 2003a).

Malkiel (2003b) argues that one of the most direct and convincing tests of market efficiency is the direct testing of the ability of profession fund managers to outperform the market as a whole. If market prices were determined by irrational investors and prices consistently deviated from rational estimates of prices, if it was easy to spot predictable patterns in security prices and or anomalous security prices. Then these professional fund managers should be able to consistently beat the market (Malkiel, 2003b).

A large body of research tends to suggest that these professional managers are not able to outperform the market. Jensen, in as early as 1968, found that active mutual fund managers were unable to add value. These mutual funds researched underperformed the market by a the amount of their added expenses (Jensen, 1968).

In 1995 Malkiel takes a similar approach to Jensen and finds that survivorship bias is present and significant when assessing the performance of active fund managers. The survivorship bias heavily skews the performance results of actively managed funds such as mutual funds and hedge funds. This occurs through consolidating poorly performing funds into other good performing funds, thereby the underperformers are buried. It is found that even with survivorship bias present, one cannot conclude that the professional managers outperform the market (Malkiel, 1995).

Malkiel (2003b) concludes that the performance record of professional fund managers does not suggest that sufficient predictability exists in the stock market or that there are sufficient recognisable and exploitable inefficiencies for professional managers to produce excess returns.

Opposing research against the efficient market hypothesis happened is presented early as 1968. Seyhun (1968) presented research investigating the abnormal returns investors could earn trading on insider information. The research presented sufficient evidence to show that insiders profit by trading on information which had not yet been incorporated into market prices. This research suggested that the strong form efficient market hypothesis does not hold in a world or market which does not offer an even playing field for all investors (Seyhun, 1986).

As was discussed earlier, original work supporting the randomness in stock price movements was founded upon the short-run serial correlations between successive price changes. This showed that the stock market had no memory, thereby showing that how security prices behaved in the future, had no dependence on previous prices (Fama, 1970). This view is challenged by Lo and MacKinlay (2002) who postulate that short-run serial correlations are non-zero, with the existence of too many successive price moves in the same direction enabling the rejection of the hypothesis that stock price movements follow a random walk.

Further work opposing the notion of market efficiency is put forth by Shiller (2003). The research found several anomalies contradicting the findings of the efficient market hypothesis. The research concluded that the volatility is too severe to support the claims of the efficient market hypothesis (Shiller, 2003).

Ball (2009) argues that the market efficiency model is abound with anomalies not explained by the model. This lengthy list includes price overreactions and excess volatility, price under

reactions and momentum particularly in relation to earnings announcements. Also included are the seasonal patterns in returns, as well as the relationship between future earnings and variables such as market capitalisation, price/earnings ratio, account accruals and dividend yields, to name a few (Ball, 2009).

Brown (2011) argues that the accumulation of evidence against efficient market hypothesis since its introduction by Fama (1965) shows that at the strongest form, the efficient market hypothesis cannot hold true. Upholding the efficient market hypothesis is an even more difficult task on a theoretical level, considering that if prices reflect all available information then there is no incentive for the collection of information. Due to there being no incentive for collection of new information, there is no mechanism for prices to adjust to new information (Brown, 2011).

The growth in popularity of behavioural finance and its belief in functioning of markets also stood in stark contrast with the foundation of the efficient market hypothesis. This is due to one of the implications of behavioural finance being that the efficient market hypothesis is not a true representation of the world in which we find ourselves (Shiller, 2003).

The biggest of the contrasts between the behavioural finance and efficient market hypothesis is that behavioural finance in some instances assumes that markets are informationally inefficient. It is argued that just because it is difficult to find trading strategies or investors that on a continuous basis earn abnormal returns, it does not necessarily imply that markets are efficient (Ritter, 2003).

These economists are of the belief that stock price movements are to some degree predictable, based on historical price movements as well as certain fundamental valuation metrics. Therefore, based on this premise of predictable price patterns, these economists claim that investors are able to earn excess risk adjusted returns persistently (Malkiel, 2005). This would disprove the efficient market hypothesis.

Shiller (2003) posits that the 1990s saw a large shift away from the econometric analysis of time series on prices, dividends and earnings. During this time the focus shifted towards the development and analysis of models that would allow the consideration of human psychology and the manner in which it relates to financial markets. Shiller (2003) states that behavioural finance has greatly enhanced the investment community's comprehension of financial markets. Furthermore, Shiller(2003) states that behavioural finance does not imply that market efficiency is so mistaken that profits are freely and persistently available.

In lieu of arguments in line with Shiller (2003) that behavioural finance does not imply that market efficiency is incorrect to the extent that profits are freely available, other research has

looked to find middle ground. Lo (2005) argues that since the inception of behavioural finance in the 1990s, the battle between it and the efficient market hypothesis has steadily been growing with little consensus on who is winning. Lo (2005) has the objective of developing a new framework, one in which traditional models of modern financial economics can co-exist alongside behavioural models. This new framework is named the adaptive market hypothesis.

The research and arguments presented thus far focused on the international markets, especially in the United States. Looking more closely at the South African environment, the findings with regard to its efficiency are also mixed.

Research finding the South African market to be efficient is presented by Smith, Jefferis, and Ryoo (2002). Smith et al. (2002) investigated the efficiency of African countries, included in this sample is the South African stock market. Through the use of the multiple variance ratio tests, Smith et al. (2002) found that the South African market is in fact efficient and that the null hypothesis of a random walk is not rejected.

Jefferis and Smith (2005) employ the GARCH model with time-varying parameters to create a test of evolving efficiency (TEE). The sample period ranged from early 1990s until June 2001, with the objective of detecting change in efficiency over time. Of all the African markets under inspection, Jefferis and Smith (2005) found that the South African market was the only one to be weak form efficient through the entire period of inspection.

Further research by Almudhaf and Alkulaib (2013) utilised the Augmented Dickey Fuller (ADF), Phillips-Perron (PP) tests and variance ratio tests to inspect the efficiency of the Johannesburg Securities Exchange (JSE) Limited. Almudhaf and Alkulaib (2013) found that the South African stock market does follow a random walk process, is stationary, and integrated of order one. Therefore, due to following a random walk, the markets are said to be efficient.

Contrasting results are reported by Appiah-Kusi and Menyah (2003), whose research focused on the performance of eleven African markets including South Africa. Appiah-Kusi and Menyah (2003) inspected for weak form efficiency through the use of a logistics map and EGARCH-M modelling. The authors concluding that the South African market was weak form inefficient.

Lim (2009) studied the nonlinear serial dependence of South Africa and four other Middle Eastern and African countries. Lim (2009) concludes that after the removing of all short-term linear dependence in the time series, that nonlinearity tests still contained predictable nonlinearities. The required criteria for the weak-form efficient market hypothesis was therefore contradicted.

Therefore, similar to the international arena, the empirical research around whether the South African market is efficient is not conclusive. From the research drawn upon above it becomes clear that the conclusion regarding the efficiency of the market could possibly be influenced by various factors such as the test being utilised, the school of thought, period of analysis, and also the frequency of the data.

In summary, most money managers are opposed to the notion of efficient capital market. This is due to the fact that the efficient market hypothesis implies that they are not honest enough to admit to their clients that they are competing in a fiercely competitive world. This world is populated by a large number of capable and ambitious people similar to themselves (Ball, 2009).

In these markets that are said to be efficient and full of competitors, superior returns are generally (not exclusively) more attributable to luck than the skill of the money manager. To justify fees, money managers have to show that they are above average, and consistently beat the market. But the efficient market hypothesis and body of evidence supporting it suggests otherwise, that managers are not able to do so (Ball, 2009).

Shiller (2003) possibly proposes a possible compromise between proponents for efficient market hypothesis best by stating that theoretical models such as the efficient market hypothesis do play a critical role in the illustration of the functioning of markets in a perfect world. These very same theoretical models however cannot be maintained in their purest form as a representation of the operation and price formation process of real markets globally.

This is supported by Ball (2009) who concludes that the efficient market hypothesis is just a theory. It is not a fact, but rather an abstraction from reality. We as researchers hope to find this abstraction useful when organising our thoughts and actions, but realise that no theory is perfect. All theories have anomalies, these anomalies simply being facts or occurrences that the theory cannot explain (Ball, 2009).

2.4. SKILL AND ACTIVE MANAGEMENT

The following section aims to firstly outline the various determinants of portfolio performance as introduced by Brinson et al. (1986), as well as research what has built on their contribution to performance attribution. Following this, the difference between active and passive management is defined, as well as why investors deviate from their benchmarks and take up these active positions. Further, there is a general focus on what constitutes skill that active managers claim to possess. The same skill that results in superior risk-adjusted performance in comparison to their passive investment alternatives.

2.4.1. DETERMINANTS OF PORTFOLIO PERFORMANCE

Sorensen, Miller and Samak (1998) state that a common dictionary definition of skill is the ability to separate or discriminate. Kacperczyk et al. (2014) provide an alternative, possibly more applicable definition of skill for the investment industry, as skill is defined as the general cognitive ability to pick stocks or time the market. Effectively skill is the use of public or private information to deliver superior risk-adjusted performance.

The role of skill could be illustrated through the example of a professional investor who faces making a decision of selecting a stock portfolio that will be a subset of a larger number of choices. Once the subset has been chosen, only time will tell whether the choices made were good or not. This assessment will be made based on the performance of the selection against that of the benchmark or their peer group (other managers). Managers will only be considered good if they were able to outperform these (Sorensen et al., 1998).

Brinson et al. (1986) were the first to introduce a framework for the attribution of returns to the investment policy (benchmark), as well returns to investment strategy. This investment strategy consisted of security selection and market timing. If the investment strategy positively contributed to the return of the portfolio it could be defined as skill.

Brinson et al. (1986) argued that funds must develop for the delineation of responsibility and measuring of performance contribution of components that actually make up the investment management process. This investment management process consists of the investment policy, market timing and security selection. The objective of the research is to determine which of the investment decisions had the greatest impact on the magnitude of total return.

The framework as introduces by Brinson et al. (1986), differentiates between the returns attributable to the investment policy and those attributable to the investment strategy, with investment strategy consisting of timing, security selection and the effects of the cross-product term of the two.

Brinson et al. (1986) found that for the sample selected, the total return over the 10-year period was 9.01%. Over the same period, the average plan lost 66 basis points per year due to market timing efforts and a further 36 basis points due to security selection efforts. Therefore, the return attributable to the normal plan policy or benchmark was 10.11%.

The research of Brinson et al. (1986) found that on average, 93.6% of the total variation in actual return is attributable to the investment policy rather than the investment strategy. In the sample of funds, no less than 75.5% of fund returns and as much as 98.6% of total return variation are explained by the investment policy.

The design of a portfolio effectively consists of four steps. Firstly, deciding on which asset classes are to be included and excluded from the portfolio. Secondly, deciding on the normal long-term weights for each of the asset classes allowed in the portfolio. Thirdly, strategically altering the weights from normal in an attempt to capture excess returns from short fluctuations (market timing). Lastly, selecting individual securities within the specific asset class to achieve superior returns relative to that asset class (security selection) (Brinson et al., 1986).

The first two points belong to the investment policy section of fund management, while point three and four relate to the investment strategy. The research highlighted the importance and significant contribution that investment policy makes to total return variation.

It follows that if one is trying to explain the variability of returns over time, then the asset allocation policy is of critical importance. But the fact remains that the findings of the Brinson model is often misinterpreted and the results are applied to questions that they were never intended to answer (Ibbotson & Kaplan, 2000).

The two main questions that the work of Brinson et al. (1986) was incorrectly applied to were firstly, how much of the variation in returns among funds is explained by differences in policy between the funds. Put differently, how much of the difference in returns between funds are attributable to their investment policy? Secondly, what portion of return is explained by policy return? More simply put, what is the ratio of policy benchmark return to the fund's actual return (Ibbotson & Kaplan, 2000)?

Ibbotson and Kaplan (2000) support the view of Brinson et al. (1986) that over time investment policy explains a large portion of the movement in total return for a specific fund. But relating to the first question above, it is found that only 40% of the difference in returns between funds is explained by their investment policy. Therefore, 60% of difference in returns is attributable to the investment strategy (security selection and market timing) decisions of the fund manager.

Regarding question two, which addresses the proportion of fund return which is explained by policy return, it is calculated by taking the ratio of compound annual policy return and dividing it by the compound annual total return. This results in a relatively simple performance measure, a fund that stayed precisely at its policy mix will have a ratio of 1.0 or 100%, whereas a fund that outperformed its benchmark will have a ratio of less than 100%. It is found that the average proportion of returns explained by the investment policy is 100% (Ibbotson & Kaplan, 2000).

This implies that the pension funds and mutual funds included in the sample are not adding value. These funds are also not outperforming their benchmarks because of a combination of

market timing and security selection, management fees and expenses (Ibbotson & Kaplan, 2000).

Sharpe (1991) anticipated these results and argued that due to the aggregation of investors making up the entire market, the average performance of all investors before costs must equal the performance of the market. Due to costs not netting off across all investors, it means the average investor has to underperform the market on a cost-adjusted basis. The findings of Ibbotson and Kaplan (2000) confirm this.

Important to note is that this does not mean that active management is useless. Active fund managers who have the ability to make superior security selection and market timing decisions, can earn above average returns. If this superior performance and inferior performance persists over time, then investors need only invest in funds that have outperformed in the past (Ibbotson & Kaplan, 2000).

Similar to this work, this research aims to determine which portion of long-short equity, market neutral and other strategy hedge fund performance is attributable to their investment policy or benchmark, security selection and market timing.

2.4.2. ACTIVE VERSUS PASSIVE MANAGEMENT

With an understanding of which actions by fund managers influence total return, i.e. investment policy or the benchmark and investment strategy (security selection and market timing), it is important to understand whether fund managers have been able to use their investment strategy to outperform their benchmarks over time. The following section aims to outline in more detail what constitutes active management well as whether previous research shows this as adding value to the assets of investors.

Hedge funds are a form of active management. But prior to attempting to assess what hedge funds are or how their performance differs to alternative investment options, it is first important to establish an understanding of what it is that makes active investors or active fund managers different from their passive counterparts.

A passive investor is an investor who holds every security in the market (or benchmark) with each of these securities being represented (weighted) the same way they are in the market (or benchmark). An active investor can be defined as any investor who is not passive, and these investors take positions different to that of the market or benchmark (Muller & Ward, 2011; Sharpe, 1991). This active investor's portfolio differs from a passive investor sometimes or all of the time. These fund managers act on the perceptions of mispricing in the market, and

due to these perceptions of mispricing changing relatively frequently, these managers tend to trade more frequently. Therefore, the term is active (Sharpe, 1991).

Pastor, Stambaugh and Taylor (2017) support this by stating that when analysing the trading activity of active fund managers, they find that active managers trade more when they perceive there are greater profit opportunities in the market. Accordingly, funds should earn greater profits, or superior returns when trading more frequently.

Fama and French (2010) introduce a different aspect to active investing which questions the ability of all active managers to earn more. The authors posit that there is a constraint to active management, this constraint is referred to as equilibrium account. When returns are measured before costs, then passive investors get passive returns, that is, they earn no alpha relative to their passive benchmarks.

It follows that active investment must also be a zero-sum game, aggregate alpha is zero before costs. Therefore, if certain active investors have positive alpha before costs, then dollar for dollar it must be at the expense of other active investors. Accordingly, after taking fees into consideration in totality, active management must be a negative sum game (Fama & French, 2010; Sharpe, 1991). This points to the important consideration that while certain fund managers may be able to earn alpha, there is a counterpart which is delivering negative post-fee returns as a result.

Cremers and Petajisto (2009) explain that active fund managers can attempt to generate positive alpha (risk-adjusted return) in one of two ways. Either by stock selection or by factor timing, or both simultaneously. Stock selection involves the picking of individual stocks which the fund managers believe will outperform their peers. Factor timing on the other hand involves time-varying bets on systematic risk factors such as entire industries, sectors of the economy, or more generally, systematic risk bets relative to the benchmark (Cremers & Petajisto, 2009).

Tracking error volatility has been known as the traditional method for measuring active management. It is representative of the volatility of the difference between the fund's return and that of the benchmark index. The issue with this measure is that each of the two distinct approaches to active management contributes to returns very differently and as a result influences tracking error differently, while at the same time either of them could produce a higher alpha (Cremers & Petajisto, 2009).

Cremers and Petajisto (2009) posit that a fund which overweighs a stock relative to its benchmark, effectively has an active long position in that stock. Similarly, when a fund underweights a stock relative to the benchmark or does not buy it at all, it effectively has an active short position in the stock. Therefore, any portfolio can be decomposed into a 100%

position in the benchmark index plus a zero net investment long-short portfolio. For example, a fund can have a 100% investment in the S&P 500 combined with 40% active long positions and 40% active short positions.

The size of the active long-short portfolio (40% in the example above) is proposed as the measure of active share for a portfolio. Active share can therefore be interpreted as the fraction of the portfolio which is different from the benchmark or index (Cremers & Petajisto, 2009).

Through the use of this active share measures, Cremers and Petajisto (2009) set out to determine how much and which kind of active management funds undertake. Further, the researchers unpack the trend of active management over time. Lastly, Cremers and Petajisto (2009) investigate whether more active managers have more skill.

Cremers and Petajisto (2009) find results consistent with the popular notion that small funds are indeed more active than their larger counterparts. Further, they find that the fraction of pure index funds has grown significantly since the 1990s, from about 1% to 13% in 2009. An even more startling find is that the fraction of passive funds as per active share which claims to be active, has also increased significantly. These are referred as closet index funds. Funds with a low active share of between 20%-60% had about 30% of all assets in 2003, up from almost zero in the 1980's.

It was found that fund performance is significantly related to active management. Funds with the highest active share show skill and pick portfolios which on average, outperform their benchmark by 2.00%-2.71% per year. In contrast to this, funds with the lowest active share tend to deliver benchmark adjusted returns between 0.06% and -0.66%. This difference in performance between top and bottom active share groups was also found to be statistically significant (Cremers & Petajisto, 2009).

The results further suggest that the most active stock pickers possessed enough skill to generate alphas that remain positive even after taking fees and transaction costs into consideration. In contrast to this, funds that take factor bets are found to have zero to negative skill, which leads to significantly poor performance net of fees and transaction costs. It can be deduced from this that there are elements of mispricing in individual stocks that active stock pickers can exploit, but broad factors portfolios are either too efficient for mispricing to occur and therefore there is no opportunity on which to capitalise, or these factor portfolios are too difficult for managers to predict (Cremers & Petajisto, 2009).

Later work by Petajisto (2013) supports the findings of Cremers and Petajisto (2009). This research focused on the same work as Cremers and Petajisto (2009), but with concentration on performance including the period of the financial crisis from 2008 until 2009. Even during

times of volatility such as those after the 2008 financial crisis, it was found that the trend of increasing popularity of indexing has increased since 2008. In 2013, these index trackers accounted for approximately one third of all mutual fund assets.

Again, these closet index trackers performed poorly, as these funds largely just match the performance of their benchmark indexes before taking fees into consideration. Therefore, these funds lag their benchmarks by the amount of their fees (Petajisto, 2013).

With regard to active fund managers taking bets on specific stocks and factors bets, findings are again similar to that of Cremers and Petajisto (2009). Funds that primarily focus on taking factor bets have mostly lost money for their investors, while the active stock pickers have managed to beat their benchmark by an average of 1.26% a year after taking fees into consideration. It is concluded that high active share is strongly related to future performance among small-cap funds, but predictive power is both economically and statistically significant among large-cap funds (Petajisto, 2013).

Further work by Amihud and Goyenko (2013) support the view that greater active investing leads to greater fund performance. They define this active management as the deviation of fund holdings from a diversified benchmark portfolio. The authors propose a different, yet new, method for measuring active management.

This measure is derived from the fund's $R^{2.}$ This measure is calculated by regressing the returns of the fund against a multifactor benchmark model. R^2 is then the proportion of variation in fund returns that is explained by variation in these factors (Amihud & Goyenko, 2013).

Lower R^2 therefore means that the fund's returns showed greater deviation from the common factors, and therefore involved a higher level of active management or deviation from the benchmark. It is found that funds with lower R^2 deliver superior risk-adjusted returns or alpha after controlling for fund characteristics or past performance (Amihud & Goyenko, 2013).

Research by Pastor et al. (2017) also supports the positive correlation between level of active management and performance. The authors find positive correlation between the level of activity or trading frequency and alpha. The authors find that a fund's turnover positively predicts the fund's benchmark-adjusted return. This evidence of active management's influence on risk-adjusted returns comes from a sample of 3 126 U.S. equity mutual funds, analysing returns between 1979 and 2011. It shows that a one standard deviation increase in turnover is associated with 0.65% increase in performance in a typical fund.

Pastor et al. (2017) point out that literature investigating the ability of active managers to deliver superior risk-adjusted returns, is extensive. Many studies show that active funds have underperformed their passive benchmarks, net of fees. Despite this, the argument is that

active managers can have skill and deliver alpha, skilled managers may charge higher fees resulting in recouping their fees being more difficult. Some managers may be more skilled than others. The authors conclude that the correlation between turnover and fund performance provides evidence of skill (Pastor et al., 2017).

The active versus passive conversation has been ongoing since as early as the 1990s. It was especially a big consideration at the time due to so many mutual funds at the time finding it very difficult to outperform the S&P 500. The reason for the strong performance of the S&P 500 was the bull market for equities which was being led by large capitalisation stocks.

Research opposing the ability of active managers to outperform their benchmarks is presented by Sorensen et al. (1998). The research found that in 1997 only approximately 11% of mutual funds in the United States managed to outperform the S&P 500 (Sorensen et al., 1998).

Malkiel (2005) states that data clearly shows that actively managed mutual funds do not outperform their comparable benchmarks. For the year ending December 2003, close to 75% of mutual funds holding large-cap stocks were outperformed by the S&P 500 stock index. When measured over a longer period of 10 years, the results are worse for active managers with 80% of active managers being outperformed by their benchmarks.

In addition to this, when considering the margin by which the average actively managed fund is outperformed by the benchmark, the findings show that the average actively managed fund underperforms by 200 basis points. The biggest reason for this shortfall is the expenses associated with active investing, where the average actively managed mutual fund has an expense ratio of just less than 150 basis points. The benchmark or index fund in which passive investors can participate, has minimal expense ratios of less than 20 basis points (Malkiel, 2005).

Malkiel (2005) goes as far as stating that active equity management is a loser's game, concluding that switching from security to security does very little other than increasing transaction costs and harming of performance.

Further evidence opposing the ability of active managers to outperform their benchmarks is presented by Cuthbertson, Nitzsche and Sullivan (2008). Their research shows that only between 5.00% and 10.00% of UK equity mutual funds possess the ability to successfully pick stock which will outperform their benchmark. These findings are in line with research regarding their UK equity mutual fund's counterparts in the U.S. where these funds also struggle to outperform their benchmarks.

The above results do not imply that the mutual fund industry is inefficient. Rather due to the competitive industry, that mutual funds are operating within only certain funds which will earn

superior risk-adjusted returns over an extended period. This is due to funds who possess skill, achieving higher alpha, and as result of it, experience large capital inflows. The inflows of capital results in increasing marginal costs of active management which results in weaker performance in future and a lack of performance persistence in many of the previous winners (Cuthbertson et al., 2008).

Fung, Hsieh and Naik (2008) provide an alternative explanation for the lack of persistence in performance of previous winners. The authors state that those funds that provide higher returns attracted higher and more constant capital flows. These very same inflows of new capital may contribute negatively on the ability of the funds to deliver above normal returns in the future. The authors studied and concluded that funds that provide higher returns attracted higher and more constant capital flows, but these very same capital flows negatively impact the ability of the funds to deliver superior risk-adjusted returns in future, due to investment opportunities being traded away.

Guercio and Reuter (2014) state that the typical actively managed U.S. equity fund earns a negative after fee alpha return, and that this is well documented throughout history. The authors then posit that this underperformance by actively managed funds gives rise to two important questions. Firstly, why do these actively managed funds underperform? Secondly, why are the vast majority of funds in the United States still invested in actively managed mutual funds?

The widely-accepted answer to the first question is that due to efficient U.S. equity markets, it is difficult for U.S. mutual fund managers to add value after fees are taken into consideration. The answer to the second questions is not as certain, but it is suggested that the persistent allocation of funds to active management could be driven by the disadvantaged investor who is either ignorant to the underperformance, or continues to behave irrationally. (Guercio & Reuter, 2014)

Guercio and Reuter (2014) state that there are two categories of investors in mutual funds, those directly sold to investors versus those sold through brokers. The retail funds which are sold directly to investors offer unbundled access to portfolio management. These investors neither pay not receive additional fees for investment advice. In contrast to these direct-sold investments, investments sold through brokers, bundle portfolio management with financial advice.

Experienced and knowledgeable investors are more likely to self-select their investments and therefore fall into the direct-sold category. Due to the knowledge level of these investors, flows into the direct-sold category of mutual funds are likely to be more sensitive to movements in risk-adjusted returns, giving this category of funds a strong incentive to generate positive

alpha. It is found that the average underperformance of an actively managed fund can be explained by the incentive funds face to generate alpha (Guercio & Reuter, 2014).

This research highlights the importance of considering incentive when assessing the performance of actively managed funds. It also challenges the notion that it is the efficiency of markets that prevents actively managed mutual funds from recovering their fees. Rather, the findings of the research show that the underperformance of the actively managed fund is a result of the interaction between the efficiency of equity markets combined with relatively weak incentives to identify and incentivise skilled managers (Guercio & Reuter, 2014).

As stated earlier, active management involves a higher management fee (cost) for the investor than passive management. The management fee for active management is approximately 140 basis points of assets under management while passive management can be as low as 20 basis points (Malkiel, 2003b). Higher fees tend to act as incentive for higher performance, and research shows that mutual funds with higher fees have a record of delivering higher returns (Berk & van Binsbergen, 2015).

Accordingly, actively managed funds, such as mutual funds, in return for these higher fees must deliver returns in excess of their benchmark. These returns must still exceed that off the benchmark after subtracting fees, otherwise investors could have invested in the benchmark and earned the same return.

Contradicting research has been presented regarding the skill of active fund managers, focusing on their ability to select superior performing securities and time the market. Thus, the ability of actively managed funds as well the skill possessed by active fund managers has been researched extensively over time. Research has not been conclusive with findings for and against active managers delivering alpha, as well as active managers showing superior market timing and security selection capability i.e. skill.

2.5. HEDGE FUNDS AND THEIR PERFORMANCE

The previous section outlined what constitutes skill and the components of which it comprises. Also, how active fund managers deviate from their passive benchmarks with the aims of achieving superior risk-adjusted returns. While the previous section mainly focused broadly on active versus passive management of funds, thereby including mutual funds, this section will outline some aspects of hedge funds that set them apart from mutual funds. It also provides insights into previous research around the ability of hedge funds to deliver superior risk-adjusted returns.

2.5.1. HEDGE FUND CHARACTERISTICS

The term “hedge fund” originates from the idea that high net-worth individuals seek investment opportunities which protect themselves and their assets from downside risk, i.e. hedging. Unlike more traditional unit trusts which are long only and focus on performance versus a certain benchmark, hedge funds actively transact seeking only positive returns. This is achieved via short selling, taking on positions in derivatives and leverage positions (Ward & Muller, 2005).

Conventional fund managers, meaning non-hedge fund managers, tend to take buy and hold positions in a set number of securities over an extended period of time. Contrary to this, hedge fund managers tend to have a much higher turnover of trading. This increased number of trades is largely attributable to hedge fund’s ability to not only go long, but also short securities. This ability to go both long and short allows hedge funds to benefit from both bull and bear markets. Hedge fund managers are able to trade almost any security available, while at the same time combining these investment options into complex investment strategies which cannot be replicated by conventional fund managers (Naik & Tapley, 2007).

Naik and Tapley (2007) posit that hedge funds cannot really be defined, but can rather be explained by the concept of leveraging assets, while at the same time taking long and short positions in equity securities. Hedge fund managers, due to the amount of skill they possess, are able to minimise risk and maximise profits irrespective of whether the market is trending up or down.

Wagenvoort (2006) explains that hedge funds are often described as unregulated and opaque investment partnerships that engage in a variety of active investment strategies. Based on this definition, the distinction between hedge funds and traditional investment options such as mutual and pension funds is reduced to two main features. Firstly, hedge funds, unlike mutual funds, are not as strictly regulated therefore they are lightly supervised. Secondly, the operations of hedge funds are opaque due to their rare reporting of their investment strategies to investors. These include investors in the hedge fund itself, not to mention the general public.

Hedge funds have been able to evade regulatory oversight through their targeting of high net-worth individuals as well as institutional investors. This hurdle to investment has not stopped the industry from experiencing significant growth. Between 2000 and 2005 the hedge fund industry’s assets under management have doubled and at that time exceeded $1.1 trillion.

Despite this drastic growth in hedge fund’s assets under management, Stulz (2007) states that the economic function of hedge funds is no different to that of mutual funds, in that

investors provide these fund managers with their money in the hope of in the future receiving back their original investment plus a sizeable return.

If both mutual fund and hedge funds offer investors the same economic function then why do these investment alternatives continue to coexist? Brown et al. (1999) differentiates between the two by stating that mutual funds can be divided into passive and active categories, whereas hedge funds are all actively managed and do not pursue the same return as a benchmark. These funds rather aim to outperform their benchmarks. These funds ultimately continue to coexist due to hedge funds offering investors options of complex strategies as well as the promise of absolute returns during times when mutual funds are not able to do so.

Effectively, hedge funds and mutual funds differ across three main areas. Firstly, one of the most significant differences is the difference in fee structures. Ibbotson, Chen and Zhu (2011) postulate that regardless of how one wishes to characterise the returns of hedge funds, hedge funds claim to possess extraordinary levels of investment skill. Through this extraordinary level of investment skill, hedge funds are able to demand and justify the high fees they charge. Mutual funds and hedge funds compensation structures differ significantly.

The asymetrical nature of hedge fund returns implies that hedge fund managers receive a significant protion of the profits generated by their investment skill. In general, hedge fund managers typically receive a fixed-income of between one and two per cent of assets under management. In addition to this, hedge fund managers also receive an additional 15.00% to 25.00% of returns generated above a certain hurdle rate (Ibbotson et al., 2011).

This large performance fee is justified due to hedge fund managers being juded on their ability to deliver alpha, rather than simply tracking a benchmark (Stulz, 2007). The one to two per cent management fee associated with hedge funds is already approximately double what an investor can expect to pay for investing in a mutal fund (Naik & Tapley, 2007).

These return structures provide great incentives for hedge fund managers to take risks, even excessive risks. Many market commentators have directed the question of whether returns produced by hedge funds, net of these extravagant performance and management fees, are worth the risk undertaken to achieve them. Especially if compared to other asset classes such as exchange traded funds (Botha, 2007).

To counter excessive risk-taking by hedge funds, compensation agreements of hedge fund managers include high water marks (Stulz, 2007). If a fund manager makes a loss in one period, he/she can only earn a performance fee once the loss has been recovered. The drawback to these high water marks is that at the same time, the manager can just close down the fund if the high water mark is too high after a significant loss has been incurred.

The second area where hedge funds and mutual funds differ significantly, is with regard to liquidity. Mutual funds tend to be quite a liquid investment option, giving investors the ability to withdraw funds as regularly as on a daily basis. It is due to this that mutual funds are required to keep a certain portion of funds invested in low-earnings cash to ensure this liquidity is available. The obligation of mutual funds to keep a certain portion of funds invested in low-earning cash is mainly attributable to adverse movement in the market leading to investors wanting access to their funds quickly. The liquidity of funds invested in cash provides this (Stulz, 2007).

In stark contrast to this, hedge funds typically have rules in place which restrict the sudden or immediate withdrawal of funds by investors, these are referred to as lock-up periods. These lock-up periods are periods during which no funds are allowed to be withdrawn and even when funds are being withdrawn, a one to even three-month notice period needs to be given to the hedge fund prior to the withdrawal. These lock-up periods provide hedge funds with the ability to invest in less liquid investments than mutual funds, ultimately allowing them to access liquidity premiums inherent in these investments (Stulz, 2007).

The remaining significant difference between mutual funds and hedge funds was briefly touched upon earlier and relates to the regulation of each industry. According to Stulz (2007), hedge funds are unregulated pools of money which are managed by the fund manager. These fund managers have a much greater deal of flexibility than the mutual fund alternatives. This flexibility includes the ability of long and short securities, also trading in various alternatives, unlike mutual funds.

These relaxed regulations and flexibility allow hedge fund managers to combine various assets to form complex investment strategies which ultimately lock in returns, regardless of the direction of the market. This ability has led to hedge fund managers being considered the crème de la crème of money managers. This ability has resulted in hedge funds being considered such an attractive investment option (Naik & Tapley, 2007).

Mutual funds on the other hand, have the responsbility to adhere to more rigorous regulation standards. Mutual funds are not able to sell short or trade in derivaties. Also, mutual funds have the obligation to disclose a diverse set of information to its investors and the public. Typically, this includes a report of their holdings to the regulatory body as well as audited financial statements (Stulz, 2007).

Stulz (2007) continues by stating that hedge funds due to the lax regulation standards are able to keep their profitable trades hidden from possible imitators. At the same time, this limits the ability of investors to fully assess the risk associated with investing in hedge funds.

Botha (2007) adds to this by writing that in the past, hedge funds might have been considered as ambiguous asset classes or investment vehicles, but this image has drastically changed if one considers that hedge funds in 2007 managed 1.5 trillion U.S. Dollars of assets for various investors, which included pension funds and university endowments. Locally, South Africa has also seen significant growth in the hedge fund industry. Reaching record highs of R68.6bn in assets under management, shows an 118.3% increase from just five years before that, a 52.8 fold increase from the R1.3bn in assets which South African hedge funds managed in 2002 (Novare, 2016).

This growth is no surprise considering the unique return characteristics offered by hedge funds due to the complex investment strategies that can be undertaken by their fund managers. Ibbotson et al. (2011) argue that the growth of hedge funds can also be attributed to their ability to deliver alpha, and hedge funds low correlation with other asset classes. These two features combined could be greatly responsible for the growth in interest in hedge funds and the great influx of capital into hedge funds.

Regardless of how one would like to characterise the returns that hedge funds deliver, hedge funds claim to possess extraordinary levels of investment skill and it is through this that the demand of high fees is justified.

2.5.2. HEDGE FUND PERFORMANCE

Hedge fund are unique and different from mutual funds in the way the industry is regulated, the structure of their fees, as well as from a liquidity perspective. While previous sections have shown whether active management offers superior risk-adjusted returns, the focus has not been specifically on hedge funds. The following section addresses previous research specifically relating to hedge funds and outlines whether the complex strategies undertaken by hedge funds truly lead to these funds delivering superior risk-adjusted returns to their investors.

Brown et al. (1999) researched the ability of hedge funds to deliver alpha during a period prior to when information regarding hedge funds became widely available. Between the years of 1989 and 1995, from the sample selected, some hedge funds did deliver investors with statistically significant alpha.

Agarwal and Naik (2000) also investigated the viability of hedge funds as an alternative investment option, specifically focusing on the risk-return trade-offs that hedge fund investing provide. The authors found that hedge funds outperform their benchmarks by between 6%

and 15% per year. This is a much larger margin than when compared to other active investment options, including mutual funds.

These superior performances relative to their benchmark, act as evidence of the alpha that hedge fund managers deliver to their investors. It also acts as an indication of the diversification benefit that hedge funds can offer when added as an investment class to a portfolio (Agarwal & Naik, 2000).

Fung, Xu and Yau (2002) investigated the market timing and security selection ability of hedge fund managers. Findings show that hedge fund managers exhibit superior performance, superior performance measured by a positive and significant Jensen's alpha. With this Jensen's alpha being divided between market timing ability and superior security selection ability. Findings showed that during the entire period of analysis, the Jensen's alpha was generally high for all hedge funds which once indicated the presence of managerial skill.

Even after taking a plausible survivorship bias of 0.2% per month into consideration, the abnormal returns delivered by hedge funds included in this sample still remained significantly different from zero. This indicates that hedge fund managers do possess skill with regards to market timing and security selection (Fung et al., 2002).

Amin and Kat (2003) researched the superior risk return trade-off that hedge funds claim to offer investors. The Dybvig's pay-off pricing model is utilised for this, and the strength of this model lies in its ability to assess the performance of the hedge fund without the need to take into consideration the return distribution of the fund. Out of the 90 funds included in the sample, 71 showed positive and significant alpha, while 28 of the remaining were still able to generate a higher Sharpe ratio than the market.

In 2007 Stulz found that over the period of the study, if an investor had placed an investment in a hedge fund they would have earned an annual return of 10.80% in comparison to 10.30% if they had been invested in the S&P 500. It follows that the hedge funds are able to outperform the market without taking risk into consideration in any way.

If the risk profile as measured by volatility is to be taken into consideration, then hedge fund significantly outperforms the S&P 500 due to the lower volatility associated with hedge fund investing. For the period under investigation, the annualised standard deviation of the hedge fund was 7.8% versus 14.5% for the S&P 500. Therefore, an investor in a hedge fund could have done twice as well as an investor who invested in the market on a risk-adjusted basis (Stulz, 2007).

Kosowski, Naick and Teo (2007), through the use of powerful Bootstrap and Bayesian methods, investigated whether the performance of hedge funds is in fact attributable to luck

or skill, and whether these performances persist over annual time periods. During their analysis, the authors found that the top performing bracket of hedge funds deliver on average an alpha of between 1.00% and 1.25%. This alpha is also found to be statistically significant, even after correcting for biases associated with hedge fund performance, such as survivorship and look-ahead bias.

Ibbotson et al. (2011) built on the work of Brown et al. (2001) by investigating the performance of a relatively complete data set of hedge fund returns between 1995 and 2009. In this data set, results were corrected for survivorship bias, which was achieved through including funds which had died off and correcting for backfill bias through the backfill of performance data.

The objective of the research is to establish which portion of return is attributable to traditional beta exposures, such as bonds, equities and cash, and which portion is due to true hedge fund alpha. The distinction between these contributors to return is due to the fact that more traditional beta returns can be generated without the skill of an experienced hedge fund manager (Ibbotson et al., 2011).

Ibbotson et al. (2011) estimated a return of 11.13% for an equal weighed index of hedge funds, prior to taking any fees into consideration. Unpacking the return, the 11.13% consisted of 3.43% fees, alpha of 3.00% and 4.7% beta, with this alpha return of 3.00% being statistically significant at the 5.00% significance level. This alpha was both positive and significant during both bull and bear markets, showing that hedge fund managers have the ability to add value during both of these phases of market performance.

Contrasting research supporting the view that hedge funds do not possess the ability to deliver superior risk-adjusted returns to investors, was presented by Ackermann, McEnally and Ravenscraft (1999) who compared the performance of hedge funds to mutual funds as well as the market. The outperformance of hedge funds compared to mutual funds could in part be attributed to the alignment of hedge fund manager's interests with that of the investors through the fee structures associated with hedge funds, i.e. a high part of hedge fund managers pay results from incentive fees (Ackermann et al., 1999).

On a total risk-adjusted basis, hedge funds were found to struggle to beat the market. The comparison of hedge fund returns to eight different standard market indices showed no clear winner. The winner typically depended on factors such as period, the index being compared to, and the hedge fund category. While hedge funds possess the ability to outperform mutual funds, primarily due to the alignment of interests between the hedge fund managers and the investors, the same cannot be said when comparing the performance of hedge funds to the market (Ackermann et al., 1999).

The view that hedge funds fail to deliver alpha is supported by Wagenvoort (2006) who analysed the performance of hedge funds. The author claims that the main contribution of the research lies within the ability to measure the total risk-adjusted performance of hedge fund indices in well diversified portfolios. Through doing this, the issues with regard to other studies measuring the performance of single hedge fund indices using factor risk-adjusted performance measures and the Sharpe ratio, are overcome.

Work in previous research that utilised the factor risk-adjusted performance measures, fails to take into consideration unexplained volatility, while the Sharpe ratio ignores the potential diversification benefits (Wagenvoort, 2006).

Wagenvoort (2006) found that between July 1995 and December 2005 the Credit Suisse/Tremont hedge fund index failed to deliver significant alpha to investors. Some of the subindices managed to deliver alpha in certain intervals, but none of them were able to continue with excess performance in the five-year period that followed.

Fung et al. (2008) investigated the performance of a comprehensive set of fund-of-fund hedge funds over the period from 1995 until 2004. Fund-of-fund returns overcome certain of the biases associated with returns of hedge funds. One of the most concerning bias is upward bias, which is a result of managers having the option to either disclose their performance reports or not. The tendency of funds to disclose returns only when performance has been stellar exists.

The use of fund-of-fund's data rather than individual hedge fund data should provide a more comprehensive representation of the returns of hedge funds. This is due to a fund-of-funds investment in a diversified portfolio having a better chance of surviving the collapse of an underlying hedge fund, therefore the fund-of-fund better represents the true performance of hedge funds. An individual hedge fund would have just stopped reporting once it realised that it had no option other than liquidation.

The authors found that in over the 10-year period included in the sample, the average fund-of-fund only managed to deliver positive and significant alpha in an 18-month period. This period spanning between October 1998 and March 2000. Fung et al. (2008) concluded that on an average ledge, alpha is scarce for hedge funds.

Fung et al. (2008) researched whether the average hedge funds are able to deliver alpha. The authors found that in the 120-month sample period analysed, that the average fund-of-fund only managed to deliver positive and significant alpha in the 18-month period between October 1998 and March 2000. Fung et al. (2008) conclude that at an average level, alpha is scarce.

2.6. SUMMARY

This chapter on the literature review introduced and reviewed various significant components relating to the hedge funds, their performance and underlying principles. These included alpha, which hedge funds ultimately try and achieve, and efficient market hypothesis which states that active managers should not be able to persistently outperform the market.

This was followed by an outline of what differentiates active and passive management, as well as the work of Brinson et al. (1986) who introduced the concept and model for attribution of returns of a portfolio to the investment policy and the investment strategy. Investment strategy consists of security selection and marketing, which ultimately constitute skill. Lastly, the chapter concludes with hedge fund characteristics and research regarding hedge fund performances and their ability to deliver alpha.

From the literature, it has become evident that hedge fund managers deviate and take active positions with the objective of outperforming their benchmarks. The efficient market hypothesis states that active investors should not be able to persistently outperform their benchmark.

This contradiction combined with research both for and against the ability of hedge funds to deliver superior risk-adjusted returns to investors, leaves it unclear whether these hedge fund managers possess the required skill to outperform their benchmarks. The question arises whether, if these managers do possess the required skill, as per the Brinson et al.'s (1986) model the outperformance is due to superior security selection or market timing.

The following chapter introduces the research propositions which this research will aim to address.

CHAPTER 3: RESEARCH PROPOSITIONS

Investors invest in actively managed hedge funds due to the belief that these funds will deliver returns in excess of that delivered by the fund's benchmark or superior risk-adjusted returns, also referred to as alpha.

According to Fama (1965), active managers who oversee these funds should not be able to deliver these superior risk-adjusted returns due to the efficiency of markets, i.e. the efficient market hypothesis. Despite this active fund managers deviate from benchmarks with the objective of adding value in one of two ways, either through stock selection or factor timing (market timing) (Petajisto, 2013). Fund managers take on this active investment approach with the objective of utilising their skill to deliver superior risk-adjusted returns or alpha (Amihud & Goyenko, 2013).

Skill has been defined as the general cognitive ability to pick stocks or time the market. Effectively, this skill results in active fund managers, through the use of public or private information, being able to deliver superior risk-adjusted performance (Kacperczyk et al., 2014). An investor typically has two investment options, an actively or passively managed fund. The actively managed funds, hedge fund in the case of this research, is associated with higher costs but also has the promise of superior risk-adjusted performance due to the skill of the hedge fund manager (Malkiel, 2003a). In efficient markets, prices already fully reflect all available information (Fama, 1970). Therefore, hedge fund managers, regardless of skill, should not be able to persistently outperform their benchmarks.

The fee structure for hedge fund differs drastically from mutual funds and index trackers. Are these fees justified, are hedge funds truly delivering superior risk-adjusted returns to investors compared to benchmarks, or are investors better off investing passively? Without an understanding of this, investors could be paying higher management fees for risk-adjusted returns they could have earned through simply investing passively at a lower cost.

Hedge fund performance, manager's ability to deliver alpha and the skill possessed by fund managers have been researched extensively over time. Research has not been conclusive, with researchers presenting findings for and against superior performance by hedge funds, as well as contrasting evidence regarding their ability to deliver alpha as well whether hedge fund managers show superior market timing and security selection capability i.e. skill. Within the South African environment, similar research has not been done during times of such significant monetary easing experienced internationally since the financial crisis in 2007.

Thus, the research around the level of skill shown by hedge fund managers in achieving the levels of return they produce for investors is unclear, especially with focus towards the South African market. Accordingly, this research aims to determine whether market neutral hedge funds and long-short equity funds deliver superior risk-adjusted returns. Do these hedge fund managers possess skill, i.e. are they able to make superior security selection and market timing choices than what would have been observed had they not deviated from their benchmarks. Ultimately, quantifying the role of skill i.e. market timing and security selections that hedge fund managers in South Africa exhibit is explored.

Based on this outline, the research propositions are as follows:

1. It is proposed that South African long-short equity, market neutral and other strategy hedge funds deliver alpha.
2. It is proposed that managers of these long-short equity, market neutral and other strategy hedge funds possess skill and accordingly, make superior security selection decisions in order to deliver alpha.
3. It is proposed that managers of these long-short equity, market neutral and other strategy hedge funds possess skill and accordingly, make market timing decisions in order to deliver alpha.

CHAPTER 4: RESEARCH METHODOLOGY

4.1. INTRODUCTION

The following section outlines the design of the research that was utilised in addressing the research propositions stated above. Therefore, this section will discuss the sources of data, as well as the broad format of analysis that was utilised to address the research propositions. Attention will be given to the sampling method employed, data utilised, as well as defining the measures that were used to report on the research propositions.

4.2. PHILOSOPHY

When research is guided through that which is possible, it is a characteristic of a pragmatic research philosophy (Saunders & Lewis, 2012). The analysis of risk-adjusted returns and attributing them to either security selection or market timing, is not appropriate for philosophies utilised in physical and natural sciences or even social sciences. Therefore, the pragmatic philosophy was deemed most applicable and was utilised for addressing the propositions relating to risk-adjusted returns, as well as performance attribution.

4.3. APPROACH

This research had a deductive approach. Deduction involves the testing of a theory through propositions or hypotheses (Nicholas, 2010). The propositions stated previously relate to theoretical foundation of the efficient market hypothesis which states that due to market efficiency, hedge fund managers should be unable to outperform their benchmarks over an extended period of time.

Furthermore, the performance attribution framework as outlined by Brinson et al. (1986) will be employed to determine whether hedge managers possess skill through making superior security selection and market timing decisions. The causal relationship between variables that will be tested has also been outlined (Saunders & Lewis, 2012), this is the relationship between market timing and returns, as well as security selection and returns.

4.4. TYPE OF STUDY

This research is descriptive in nature. Descriptive research examines data or observations to establish what the norm is (Nicholas, 2010). Further, this research was also explanatory due to going beyond the facts and descriptive findings. The research made sense of what has been revealed in the descriptive findings (Nicholas, 2010). The research first describes the difference in returns between hedge funds and their benchmarks, but also goes further to explore, explain and attribute these returns to either security selection or market timing.

4.5. STRATEGY

The research method can be defined as a generalised plan for achieving the research objectives (Singh, 2006). The label of the strategy is relatively unimportant, the most significant consideration is that the strategy employed leads to the answering of the research question or addressing the research propositions (Saunders & Lewis, 2012).

Considering this, the research strategy that was employed is secondary data analysis. Secondary data is any data that has already been collected for some other purpose (Lewis, Saunders, & Thornhill, 2009). The main focus was on the returns and series of price movements of hedge funds as well as their benchmarks. Accordingly, this data has previously been collected and stored in databases, thus it can be sourced and analysed to achieve the research objectives.

4.6. CHOICES

Research method choice relates to the combination of data collection techniques and analysis of procedures (Lewis et al., 2009). Due to the utilisation of a single data collection technique i.e. secondary data and corresponding analysis procedures, this research employed the mono-method to address the research propositions.

4.7. TIME HORIZON

While this research addresses the ability of hedge funds to deliver alpha, it does so not only at a single point in time, rather the research has considered the performance of hedge funds over a period of time. The aim was the attempt to be able to speak to whether the skill that is proposed, persists over time. The time horizon is therefore longitudinal; longitudinal research is undertaken over a period of time, allowing for the examination of changes in trends (Saunders & Lewis, 2012).

The returns of these funds were analysed from February 2005, if the fund was operating at that point in time. In instances where funds only started operating at a later point in time, data was utilised from the first month where data was available. It follows that all analysis was done over the period for which data for the individual hedge fund return was available. Accordingly, hedge fund performance is only compared to their benchmark's performance over the period for which hedge fund return was available.

The analysed period spanned until February 2017. Therefore, for certain funds a period will be covered before the financial crisis which occurred in 2007 up until February 2017. This allows for the consideration of hedge fund performance during both a recession as experienced with the financial crisis, and strong market performance as seen in 2015, 2016 and 2017. Through this the period of analysis included both a bull and a bear phase of market performance, thus performance was assessed during various economic cycles.

4.8. TECHNIQUES AND PROCEDURES

The research methodology that was utilised for this research was quantitative in nature with the utilisation of secondary data. Quantitative research is based on meanings derived from numbers (Lewis et al. 2009). All analyses and answers to research proposition will be derived from numerical outputs such as benchmark returns, hedge fund returns, alpha, returns attributable to market timing, and returns attributable to security selection. Quantitative data also results in the numerical and standardised data. For this research, a series of returns for various market neutral and long-short equity hedge funds was utilised for analysis. These series of returns were reported on a monthly basis.

Secondary data is defined as data that was originally collected for some other purpose (Lewis & Thornhill, 2009). The availability of monthly returns for hedge funds varies from fund to fund. This research utilised a combination of hedge funds which make their monthly returns available via their fact sheets, as well as a database of hedge fund returns which was consolidated for previous research by Chris Muller and David Boers (Boers, 2017).

4.9. POPULATION

The population consisted of all South African-based hedge funds. The population also consisted of any of those listed funds that had traded between February 2005 and February 2017.

4.10. UNIT OF ANALYSIS

Based on the data collection method and method of analysis described earlier, the unit of analysis for this research included the following. The monthly returns of the sample drawn as well as the portion of those returns attributable to security selection and market timing (Brinson et al., 1986). Skill was measured through considering market timing and security selection (Brinson et al., 1986). These units of analysis combined provided the required insight to confirm the propositions provided, or to provide the evidence to show they are not valid.

4.11. SAMPLE SIZE AND METHOD

A non-probability sampling method was utilised, namely convenience sampling. Convenience sampling involves the haphazard selection of cases that are easiest to obtain for a sample. The sample selection process is simply repeated until the desired sample size is reached (Saunders & Lewis, 2012). When utilising convenience sampling, the researchers need to be cautious of possible biases present in the sample due to cases only appearing in the sample as a result of the ease of obtaining them. A possible drawback to the utilisation of convenience sampling is that it limits the conclusions that can be made about the population if the sample was not truly representative of the population (Saunders & Lewis, 2012).

A sample of 30 hedge funds consisting of long-short equity, market neutral and other strategy hedge funds was utilised for this research. As discussed previously, this database of hedge fund returns was constructed through the use of hedge fund performance data published on various hedge fund's websites, as well as through the use of the database of hedge fund returns which was consolidated for previous research by Chris Muller and David Boers (Boers, 2017).

4.12. MEASUREMENT INSTRUMENTS

Measurement instrument refers to the data collection instrument that is used to collect the data for example, a survey (Robson, 2002). This research involved the analysis of secondary data; therefore, no measurement instrument was employed due to data being electronically available. The data was electronically sourced from the work of Chris Muller and David Boers (Boers, 2017). The information contained there pertains to monthly return data of hedge funds, and was supplemented by other hedge funds which had made their returns available online via their factsheets.

The instruments utilised as well as the methods used for the collection of data for this study, relate to the reliability of the study. Instruments and methods utilised in this study should yield the same results and findings when compared to another reliable source (Lewis & Thornhill, 2009). Considering the reputable nature of these sources and the fact that there is no interpretation, but rather the direct electronic sourcing of data, these can be considered reliable.

4.13. DATA GATHERING PROCESS

Secondary data was collected for this research. Monthly return data of various hedge funds was electronically sourced from a database provided by Chris Muller and David Boers (Boers, 2017). This data was then further supplemented by other market neutral and long-short equity hedge funds which make their monthly returns available via their online websites as per their factsheets.

For hedge funds, the hurdle or benchmark rate is predominantly set at the cash rate (Novare, 2016). The 3-month Short-Term Fixed Interest Index (STeFI) is used as a proxy for this rate and also sourced electronically on a monthly basis.

Due to the use of secondary data, no specific data-gathering process such as a questionnaire or survey was utilised. Saunders and Lewis (2012) recommend that when using secondary

data, emphasis should be place on the suitability of the secondary data for answering the research questions or research propositions. Considering the fund performance, data is available and will be collected from a reputable source which was considered as suitable for the addressing of the research propositions.

4.14. ANALYSIS APPROACH

During the following sections, the various methodologies utilised in the data analysis as well as certain aspects of the methodology will be discussed.

4.14.1. RETURNS

The main measure that was required for this research was returns, for both the hedge funds and their benchmark. In instances where closing prices instead of returns were provided, these series of prices were converted into returns utilising the following formula (Rompotis, 2009).

$$R_i = \frac{Share\ Price_i - Share\ Price_{i-1}}{Share\ Price_{i-1}}\ x\ 100$$

4.14.2. HEDGE FUND EXPOSURES

As discussed previously, hedge funds have no obligation to report their investment strategies or holdings to the general public (Wagenvoort, 2006). It follows that while hedge fund factsheets may show the fund's monthly returns, even at times the exposure to certain sectors and asset classes, it is very rare that the hedge fund's actual holdings over the performance period is reported.

In order to apply the model of Brinson et al. (1986), which attributes returns over the benchmark to security selection and market timing, the weights of the securities held by the hedge fund are required. Due to hedge funds not reporting these, all their holdings or weightings have to be derived. It was assumed that the majority of these hedge fund's exposure is to equities, due to the majority of them being market neutral and long-short equity-based hedge funds.

Due to this, the weightings were derived based on three measures. Firstly, the returns of the hedge fund. Secondly, the returns of the 17 equities with the highest market capitalisation of the SA Top 40 Index, these 17 equities constituting nearly 80% of the Top 40s market

capitalisation. Lastly, the 3-month STeFI rate. Not all equities making up the Top 40 were included as to increase the degrees of freedom in the resulting calculation.

Through the use of the solver function in Microsoft Excel, the exposure of each individual hedge fund to the 17 equities and 3-month STeFI was calculated so that the squared difference between the actual hedge fund return and the calculated return was at a minimum These weightings were calculated for a 36-month period for each fund as to increase the degrees of freedom and allow for some measure of error in the calculation of the exposures.

4.14.3. JENSEN'S ALPHA

Jensen's Alpha (α_p) was calculated through the following formula which is based on the capital asset pricing model (Jensen, 1968):

$$R_p - R_f = \alpha_p + \beta_p(R_m - R_f)$$

$$where: R_f = risk - free\ interst\ rate$$

$$\beta_p = Beta\ for\ portfolio\ p$$

$$R_m = return\ on\ market\ portfolio$$

According to the Jensen's alpha equation, the return of a portfolio consists of the risk-free rate, the return justified by the systematic risk of the asset relative to the market as well as the alpha for the portfolio or fund. Based on this, alpha is the return in excess of the risk-free rate and the return that can be justified by the systematic risk undertaken by the investment in the fund.

For the purposes of this research in the calculation of Jensen's alpha, the long-short equity hedge funds as well as market neutral hedge funds included in the sample, are assumed to have zero exposure to the market over the longer period of time. This is due to the assumption that their long and short positions net-off to create zero exposure to the equity market. Leaving these hedge funds with long positions in stocks they believe will increase in value, and short positions in stocks they forecast to devalue.

With this, these fund's systematic risk exposure equals zero, as a result of this their beta is also equal to zero. The same assumption is applied. Accordingly, the following section of the Jensen's alpha formula becomes zero:

$$\beta_p = 0$$

$$therefore: \beta_p(R_m - R_f) = 0$$

This simplifies the Jensen's alpha equation to the below:

$$\alpha_p = R_p - R_f$$

4.14.4. SECURITY SELECTION AND MARKET TIMING

A similar methodology to that developed by Brinson et al. (1986) was employed to determine the level of skill that hedge fund managers possessed. The objective was to determine if firstly hedge fund managers possess skill, and if so, how much was due to market timing and what portion was due to security selection. Brinson et al. (1986) present the computational requirements for attributing returns to market timing and security selection, which is illustrated in the following figure.

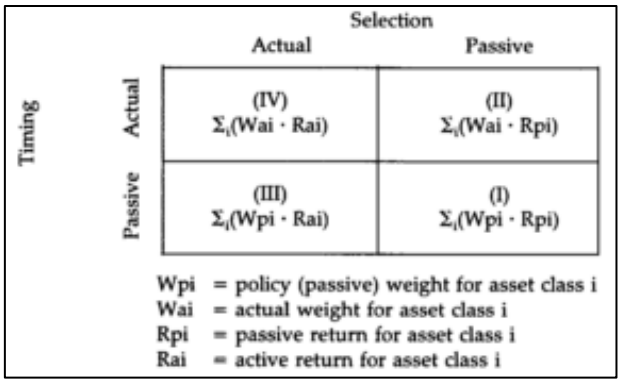

Figure 2: Computation Requirements for Return Accountability

Source: Brinson et al. (1986)

In order to be able to calculate the portion of returns attributable to market timing and security selection, the following formulae was utilised. Firstly, the return to the investment policy or benchmark is calculated as follows (Brinson et al., 1986):

$$Policy\ Return = \Sigma_i[(w_{pi} x R_{pi}) \dots\dots (I)$$

$$where: w_{pi} = policy\ for\ asset\ class\ i$$

$$R_{pi} = passive\ return\ for\ asset\ class\ i$$

$$Policy\ Return\ =\ \Sigma_i[(w_{pi}xR_{pi})$$

As per Brinson et al. (1986), the portion of return due to market timing cannot be calculated immediately. First the return attributable to the combination of market timing and investment policy is calculated based on the formula below. From there, the impact of the investment policy can be deducted to provide the influence of market timing alone (Brinson et al., 1986).

$$Market\ Timing\ and\ Policy\ Return\ =\ \Sigma_i[(w_{ai}xR_{pi})\ \ldots\ldots\ (II)$$

$$where: w_{ai} = actual\ weight\ for\ asset\ class\ i$$

$$R_{pi}\ = passive\ return\ for\ asset\ class$$

$$Timing\ =\ \Sigma_i[(w_{ai}xR_{pi}) - (w_{pi}xR_{pi})]$$

Similarly, the return attributable to security selection can only be calculated once the combined impact of security selection and investment policy has been calculated. The return attributable to investment policy is then subtracted from this to get the return attributable to security selection for the hedge fund.

$$Security\ Selection\ and\ Policy\ Return\ =\ \Sigma_i[(w_{pi}xR_{ai})]\ \ldots\ldots\ (III)$$

$$where: R_{ai}\ = actual\ return\ for\ asset\ class\ i$$

$$Security\ Selection\ =\ \Sigma_i[(w_{pi}xR_{ai}) - (w_{pi}xR_{pi})]$$

The return of the actual hedge fund was calculated with the following formula (Brinson et al., 1986).

$$Actual\ Portfolio\ Return\ =\ \Sigma_i[(w_{ai}xR_{ai})]\ \ldots\ldots\ (III)$$

With these values determined, it will be possible to address the research propositions regarding the ability of hedge fund managers to deliver higher risk-adjusted returns as well as their level of skill regarding market timing and security selection. A framework similar to that of Brinson et al. (1986) will be used for the presentation of active returns due to timing and selection. The framework developed by Brinson et al. (1986) is presented. The other term in this framework represents effects of a cross-product term (Brinson et al., 1986).

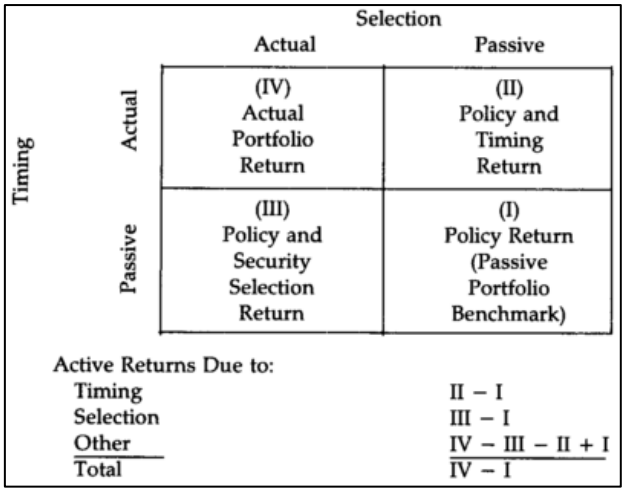

Figure 3: Simplified Framework for Return Accountability

Source: Brinson et al. (1986)

4.15. MODEL CONFIDENCE AND THE R-SQUARED

The non-disclosure of holdings or trades by hedge funds results no data on hedge fund's exact holdings, therefore the holdings of these funds were derived. The use of these derived exposures to calculate returns introduced error, mainly due to two reasons.

Firstly, the use of only equities as a possible asset class that hedge funds hold. The majority of these hedge fund's main holdings are equities but based on the fact sheets of the various hedge funds they also have exposure to other asset classes such as fixed income and property, further certain of the funds also utilise derivatives. Secondly, due to only the top 17 equities on the Top 40, from a market capitalisation perspective, being considered for the hedge fund holdings.

The R-Squared measure was utilised as a barometer of how well the returns have been modelled through the use of the derived weightings. In turn, R-Squared acts as a measure to indicate the confidence in the results obtained from the use of the Brinson et al. (1986) model.

R-Squared is the percentage of the dependent variable explained by the independent variable. The measure can range between 0.00% and 100.00%, with 100.00% indicating that the model explains all of the variation in the dependent variable (Miles, 2014). Therefore, the higher the R-Squared the better the model and the more confidence can be placed in the results.

4.16. LIMITATIONS

Limitations of this research included the influence of survivorship bias. Survivorship bias might influence the results due to liquidated hedge funds being excluded from the sample. It is argued that survivorship bias could amount to as much as 0.20% per month, or 2.43% over a year (Fung & Hsieh, 2002).

A further limitation could be that factors influencing the performance of funds were not considered. Other research shows that macroeconomic variables play a significant role in explaining the performance of funds (Banegas, Gillen, Timmermann & Wermers, 2013). In addition to this, other research shows that the size of the fund, represented by assets under management, could also play a significant role in determining the performance of the fund (Stambaugh & Taylor, 2014). Therefore, this research's main focus on the role of market timing and security selection in the determining the performance of hedge funds, could have overlooked these influential factors.

The use of convenience sampling rather than a probability sampling method could inhibit the ability to make conclusions regarding the population based on the sample, due to the sample possibly not being representative of the entire population.

Furthermore, Botha (2007) emphasises the various return distributions associated with hedge fund returns. It is argued that hedge fund returns are not only non-normal, but they also possess non-negligible higher statistical moments. Not only are the majority of traditional performance measures such as the Jensen's alpha (Jensen, 1968) based on the mean-variance paradigm and also dependent on normal distributions, these measures do not take these higher statistical moments into consideration (Botha, 2007).

A further limitation is the restricted number of funds included in the sample. The voluntary nature of hedge fund return reporting has made the lack of access to more hedge fund data a limitation. Lastly, the use of the derived weights rather than the hedge funds actual holdings over time, combined with the assumption of the same holdings for a 36-month period, is a limitation to this study.

4.17. SUMMARY

The research methodology chapter discussed the methods and measures employed to analyse the data pertaining to the study. The performance measure outlined was the Jensen's alpha measure combined with an overview of Brinson et al.'s (1986) model relating to the determinants of portfolio performance which were applied for this research. The following chapter reports the results and findings of the research.

CHAPTER 5: RESULTS

5.1. INTRODUCTION

The previous chapter focused on outlining the various data analysis methods that were utilised as well as the data or sample to which it will be applied. The remainder of this chapter will outline the results of the applied methodology and analysis methods, and the results of these methods will enable the addressing of the research propositions.

This chapter is structured as follows. Firstly, the descriptive statistics regarding the performance of these hedge funds as well as the STeFI is presented. This is followed by the Jensen's alpha for each of the funds. A scatter-plot chart is utilised to illustrate the role of security selection and market timing in the returns of each fund.

This is supplemented by a detailed overview of the returns attributable specifically to security selection, and then also to market timing. Lastly, the chapter is concluded with a summary of the errors in the difference between the calculated return of each fund versus the actual return, this error term resulting from employing the solver to calculate the funds' equity exposures, rather than their true holdings.

5.2. DESCRIPTIVE STATISTICS

Table 1 reports the descriptive statistics for the long-short equity hedge funds included in the sample. The mean monthly return for these 16 funds was 0.92%, compared to the 0.57% of the STeFI. Taking into consideration the accompanying measures of risk, the monthly standard deviation for these long-short equity hedge funds was 2.22%, significantly greater than the 0.15% standard deviation of the STeFI. The strong volatility in returns is supported by the range measure, for which the long-short equity hedge funds the range was 29.84%, while for the STeFI a significantly lower range of 0.65% was reported.

Table 1: Descriptive Statistics of Long-Short Equity Funds and STeFI

Strategy	Fund	Mean	Median	Standard Deviation	Kurtosis	Skewness	Range	Minimum	Maximum	Count
Long-Short Equity	Capricorn Sanlam Collective Investments Performer Fund	1.49%	1.78%	3.29%	0.40	0.00	16.41%	-5.63%	10.79%	55
	Emperor Asset Management Robert Falcon Scott Fund	1.45%	1.40%	4.95%	0.30	0.02	28.82%	-15.60%	13.22%	145
	Fairtree Assegai Long Short Equity Fund	1.28%	0.98%	2.41%	-0.28	0.16	11.47%	-4.15%	7.32%	58
	Peregrine High Capital Growth Fund	1.19%	1.22%	2.17%	0.55	-0.31	12.59%	-5.34%	7.25%	145
	360NE Hedge Fund	1.06%	1.02%	2.25%	1.86	-0.57	14.53%	-7.74%	6.79%	131
	Laurium Aggressive Long Short Prescient QI Hedge Fund (QIF)	1.04%	0.83%	3.05%	0.75	0.77	14.08%	-3.65%	10.43%	50
	Salient Quants SA Hedge Fund	1.03%	1.17%	1.86%	1.65	0.00	11.92%	-4.00%	7.92%	127
	Bateleur Long Short Prescient QI Hedge Fund	0.99%	0.85%	1.88%	0.13	0.09	9.59%	-3.78%	5.81%	145
	Steyn Capital IDS QI Hedge Fund (QIF)	0.97%	0.92%	1.55%	0.97	0.11	9.23%	-3.25%	5.98%	94
	Obsidian Xebec Aggressive Equity Hedge Fund	0.96%	0.73%	4.13%	1.06	-0.18	22.19%	-11.45%	10.73%	101
	Corontation Presidio Fund	0.96%	0.79%	2.34%	1.39	0.41	15.81%	-5.70%	10.11%	137
	X-Chequer IDS Flexible Long Short QI Hedge Fund (QIF)	0.82%	0.91%	1.28%	-0.09	-0.33	5.95%	-2.56%	3.39%	61
	Laurium Long Short Prescient RI Hedge Fund	0.72%	0.58%	2.05%	0.05	-0.11	11.04%	-5.47%	5.56%	103
	Matrix NCIS Equity Retail Hedge Fund	0.68%	0.62%	1.27%	-0.76	-0.16	4.98%	-1.92%	3.06%	44
	Anchor Long Short IDS Retail Hedge Fund	0.64%	0.50%	1.58%	-0.15	0.44	6.64%	-2.36%	4.29%	47
	Old Mutual Chronos Fund	0.43%	0.54%	1.95%	1.13	-0.12	11.28%	-5.07%	6.21%	54
	Long-Short Equity Funds	**0.92%**	**0.76%**	**2.22%**	**5.63**	**0.40**	**29.84%**	**-15.60%**	**14.25%**	**2 814**
	STeFI	**0.57%**	**0.54%**	**0.15%**	**0.63**	**1.17**	**0.65%**	**0.37%**	**1.03%**	**145**

Source: Researcher's Own Data (Microsoft Excel)

Table 2 illustrates the descriptive statistics for hedge funds following a market neutral strategy. The mean monthly return for all market neutral hedge funds combined was 0.71%, compared to the 0.57% for the STeFI. The standard deviation for these market neutral funds was 1.12%, whereas for the STeFI it was 0.15%. The range for market neutral funds is much lower than that of long-short equity hedge funds at 10.89%, but still significantly higher than that of the STeFI at 0.65%.

Table 2: Descriptive Statistics of Market Neutral Hedge Funds and STeFI

Strategy	Fund	Mean	Median	Standard Deviation	Kurtosis	Skewness	Range	Minimum	Maximum	Count
Market-Neutral	Capricorn Market Neutral Retail Hedge Fund	1.21%	1.11%	2.23%	0.31	0.03	10.89%	-3.95%	6.94%	57
	Peregrine Capital Pure Hedge H4 QI Hedge Fund	0.80%	0.78%	1.10%	1.11	0.11	6.81%	-2.41%	4.40%	145
	Peregrine Capital Dynamic Alpha H4 QI Hedge Fund	0.71%	0.50%	1.66%	0.15	0.20	6.81%	-2.41%	4.40%	27
	Fairtree Equity Market Neutral	0.70%	0.73%	0.95%	0.15	0.22	5.09%	-1.89%	3.20%	145
	Bateleur Market Neutral Prescient QI Hedge Fund	0.70%	0.69%	0.61%	1.95	-0.10	3.85%	-1.40%	2.45%	104
	Laurium Market Neutral Prescient RI Hedge Fund	0.67%	0.72%	1.02%	1.98	0.27	6.88%	-2.26%	4.61%	98
	Old Mutual Aristeia Opportunities Fund	0.48%	0.47%	0.38%	0.54	-0.09	2.00%	-0.58%	1.42%	75
	G3 Tlou Market Neutral Fund	0.46%	0.45%	0.99%	1.03	-0.37	5.38%	-2.76%	2.62%	68
	Market Neutral Funds	**0.71%**	**0.68%**	**1.12%**	**3.72**	**0.48**	**10.89%**	**-3.95%**	**6.94%**	**719**
	STeFI	**0.57%**	**0.54%**	**0.15%**	**0.63**	**1.17**	**0.65%**	**0.37%**	**1.03%**	**145**

Source: Researcher's Own Data (Microsoft Excel)

Table 3 shows the descriptive statistics for funds included in the sample which do not outrightly meet the criteria of long-short equity and market neutral hedge funds. The mean monthly returns for these funds was 0.91%, the strong performance of Truffle High Growth Hedge Fund with a mean monthly return of 1.70% skewing the mean upward to 0.91% for this category of funds.

The STeFI's monthly mean return was once again 0.57% over the entire sample period. The standard deviation for all the funds in this category was 1.88% which is higher than the 0.15% of the STeFI benchmark. The range of returns as with the mean was skewed by the performance of the Truffle High Growth Hedge Fund which had a range of 20.21%.

Table 3: Descriptive Statistics for Other Strategy Hedge Funds and STeFI

Strategy	Fund	Mean	Median	Standard Deviation	Kurtosis	Skewness	Range	Minimum	Maximum	Count
Other	Truffle High Growth Hedge Fund	1.70%	1.54%	3.71%	1.24	0.72	20.21%	-5.96%	14.25%	68
	Fairtree Acacia Fund	0.98%	0.82%	1.86%	2.77	0.52	13.23%	-4.06%	9.17%	145
	Matrix NCIS Multi Strategy Retail Hedge Fund	0.86%	0.70%	1.69%	-0.19	-0.02	8.90%	-3.69%	5.20%	125
	BACCI IDS Protected Equity QI Hedge Fund	0.76%	0.95%	1.70%	-0.77	-0.02	6.97%	-2.57%	4.40%	75
	Corion Prosperitas NCIS RIF Hedge Fund	0.75%	0.75%	0.96%	-0.60	0.14	3.89%	-1.20%	2.69%	45
	Old Mutual Volatility Arbitrage Fund	0.62%	0.54%	0.45%	1.73	0.98	2.60%	-0.37%	2.23%	138
	Other	**0.91%**	**0.63%**	**1.88%**	**7.20**	**1.26**	**20.21%**	**-5.96%**	**14.25%**	**598**
	STeFI	**0.57%**	**0.54%**	**0.15%**	**0.63**	**1.17**	**0.65%**	**0.37%**	**1.03%**	**145**

Source: Researcher's Own Data (Microsoft Excel)

5.3. JENSEN'S ALPHA

As discussed previously, the assumption that over the longer term the hedge funds included in the sample have zero exposure to the market, and with it, zero systematic risk simplifies the Jensen's alpha formula. The formula simplifies to where alpha can be calculated by simply subtracting the benchmark rate from the return of the hedge fund. The benchmark is represented by the STeFI rate.

Table 4 reports the Jensen's alpha for long-short equity hedge funds, and these results are based on the geometric mean annual returns of the funds and their benchmark. For the category of long-short equity hedge funds, the majority of these funds were able to outperform their benchmark. More specifically 15 of the 16, or 93.75%, funds included in this category were able to deliver alpha to investors.

The strongest of these performances coming from the Capricorn Sanlam Collective Investments Performer Fund. This fund was able to on average, annually deliver returns of

18.68%, which is 12.78% greater than the STeFI benchmark. The Old Mutual Chronos Fund which had a negative alpha of 0.85%, only marginally underperformed in comparison to the benchmark.

Table 4: Jensen's Alpha of Long-Short Equity Hedge Funds

Fund	Strategy	Benchmark	Return	Alpha
Capricorn Sanlam Collective Investments Performer Fund	Long-Short	5.90%	18.68%	12.78%
Emperor Asset Management Robert Falcon Scott Fund	Long-Short	7.08%	17.11%	10.03%
Fairtree Assegai Long Short Equity Fund	Long-Short	5.88%	16.14%	10.26%
Peregrine High Capital Growth Fund	Long-Short	7.08%	14.93%	7.85%
360NE Hedge Fund	Long-Short	7.09%	13.20%	6.11%
Salient Quants SA Hedge Fund	Long-Short	7.09%	12.87%	5.78%
Laurium Aggressive Long Short Prescient QI Hedge Fund (QIF)	Long-Short	5.98%	12.56%	6.58%
Bateleur Long Short Prescient QI Hedge Fund	Long-Short	7.08%	12.25%	5.17%
Steyn Capital IDS QI Hedge Fund (QIF)	Long-Short	6.04%	12.09%	6.05%
Corontation Presidio Fund	Long-Short	7.08%	11.74%	4.65%
Obsidian Xebec Aggressive Equity Hedge Fund	Long-Short	6.54%	11.04%	4.50%
X-Chequer IDS Flexible Long Short QI Hedge Fund (QIF)	Long-Short	5.72%	10.17%	4.45%
Laurium Long Short Prescient RI Hedge Fund	Long-Short	6.50%	8.73%	2.22%
Matrix NCIS Equity Retail Hedge Fund	Long-Short	6.12%	8.33%	2.20%
Anchor Long Short IDS Retail Hedge Fund	Long-Short	6.05%	7.76%	1.70%
Old Mutual Chronos Fund	Long-Short	5.91%	5.06%	-0.85%

Source: Researcher's Own Data (Microsoft Excel)

Table 5 reports the Jensen's alpha for the market neutral hedge funds included in the sample. Similar to the long-short equity hedge funds, these returns are based on the annualised geometric mean returns. As with the long-short equity hedge funds, the market neutral hedge funds show strong performance with six of the seven funds, or 87.50%, of the funds managing to deliver positive alpha to investors.

Of the eight funds, the strongest performance is by the Capricorn Market Neutral Retail Hedge Fund which on average was able to annually deliver returns in excess of the benchmark by 9.26%. The G3 Tlou Market Neutral Fund which delivered negative alpha, only did so marginally with a negative alpha of 0.11%.

Table 5: Jensen's Alpha of Market Neutral Hedge Funds

Fund	Strategy	Benchmark	Return	Alpha
Capricorn Market Neutral Retail Hedge Fund	Market Neutral	5.88%	15.14%	9.26%
Peregrine Capital Pure Hedge H4 QI Hedge Fund	Market Neutral	7.08%	9.91%	2.83%
Fairtree Equity Market Neutral	Market Neutral	7.08%	8.69%	1.60%
Bateleur Market Neutral Prescient QI Hedge Fund	Market Neutral	6.56%	8.66%	2.11%
Peregrine Capital Dynamic Alpha H4 QI Hedge Fund	Market Neutral	6.58%	8.65%	2.07%
Laurium Market Neutral Prescient RI Hedge Fund	Market Neutral	6.22%	8.24%	2.02%
Old Mutual Aristeia Opportunities Fund	Market Neutral	5.79%	5.93%	0.14%
G3 Tlou Market Neutral Fund	Market Neutral	5.69%	5.58%	-0.11%

Source: Researcher's Own Data (Microsoft Excel)

Table 6 outlines the Jensen's alpha for the hedge funds included in the sample which do not pursue strategies outside that of long-short equity and market neutral strategies. Similar to the above results, these measures of Jensen's alpha are based on the annualised geometric mean of returns for the hedge fund and the STeFI benchmark.

All six funds included in this category showed strong performance relative to the benchmark and on average managed to deliver positive alpha to investors. The performance of this category of hedge funds is led by the Truffle High Growth Hedge Fund which annually on average, delivered a return in excess of the STeFI benchmark of 15.79%. The Old Mutual Volatility Arbitrage Fund which was the weakest of the other strategy funds still managed to deliver a positive alpha of 0.62%.

Table 6: Jensen's Alpha of Other Strategy Hedge Funds

Fund	Strategy	Benchmark	Return	Alpha
Truffle High Growth Hedge Fund	Other	5.67%	21.45%	15.79%
Fairtree Acacia Fund	Other	7.08%	12.19%	5.11%
Matrix NCIS Multi Strategy Retail Hedge Fund	Other	7.09%	10.67%	3.58%
BACCI IDS Protected Equity QI Hedge Fund	Other	5.79%	9.37%	3.58%
Corion Prosperitas NCIS RIF Hedge Fund	Other	6.09%	9.28%	3.19%
Old Mutual Volatility Arbitrage Fund	Other	7.08%	7.70%	0.62%

Source: Researcher's Own Data (Microsoft Excel)

5.4. SECURITY SELECTION AND MARKET TIMING

The previous section showed that compared to the STeFI benchmark, the majority of the hedge funds included in the sample were able to deliver alpha. This section focuses on the attribution of these active returns or alpha to either security selection or superior market timing by the hedge fund.

Figure 4 is a scatter plot illustrating the contribution to active returns that the security selection and market timing decisions of the hedge fund managers had. These are based on the annualised geometric mean returns for the hedge funds. Of the 30 funds, 25 funds' security selection made a positive contribution to the total return of the hedge fund, with five of the funds' security selection decisions negatively impacting the total return of the hedge fund.

With regards to market timing, 27 of the 30 hedge funds asset allocation or market timing efforts positively contributed to the active return of the hedge fund. With the market timing efforts of three of the hedge funds detracting from the active return, there was negative impact on the total return.

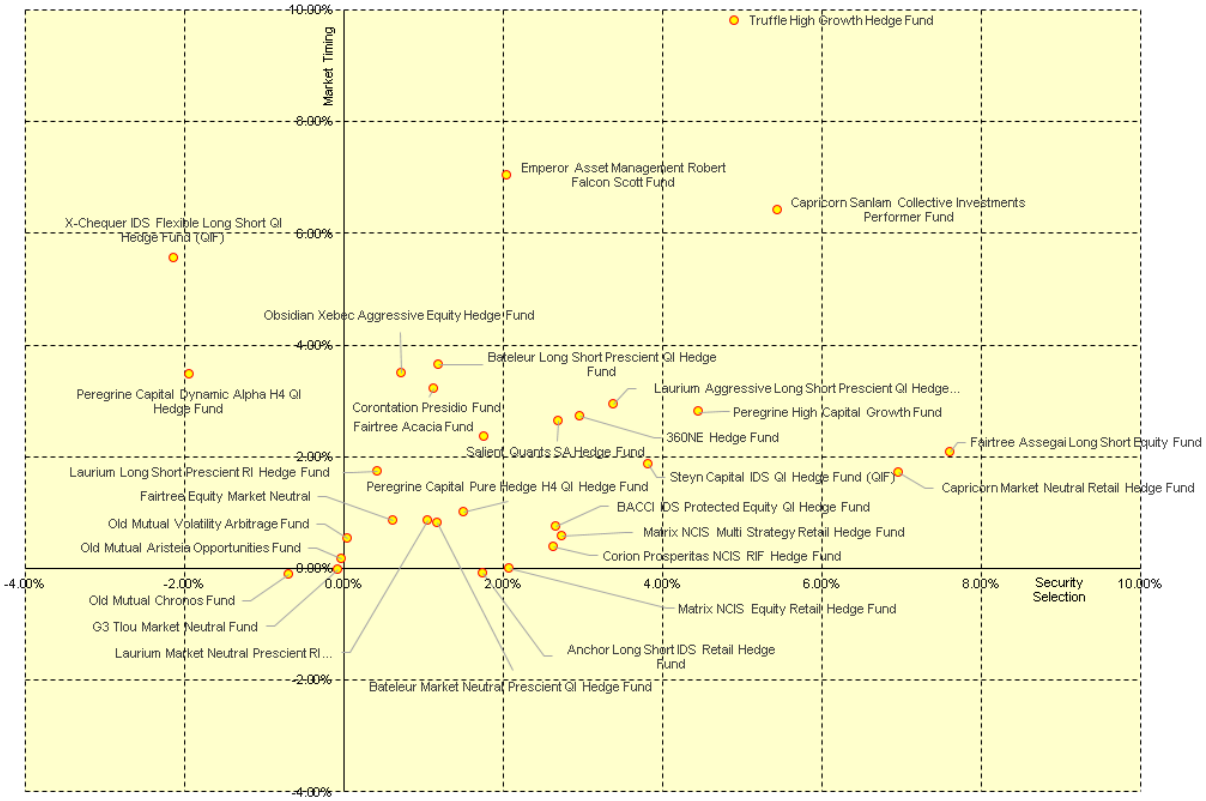

Figure 4: Security Selection versus Market Timing of Hedge Funds

Source: Researcher's Own Data (Microsoft Excel)

The scatter plot shows a large number of the hedge funds clustered together in the range between 0.00-4.00% for both security selection and market timing. Of the 30 hedge funds, 17 (56.67%) fall within this range of the funds. The Capricorn Sanlam Collective Investments Performer Fund represents one of the most balanced performers with an almost equal contribution to returns by both security selection and market timing efforts. The Capricorn Sanlam Collective Investments Performer Fund's security selections contribute 5.44%, with market timing contributing 6.41%.

Contrasting performance is delivered by X-Chequer IDS Flexible Long Short QI Hedge Fund (QIF). This fund's market timing efforts on average annually contributed 5.56% to the active return. This is offset by poor security selection decisions which on average detract 2.13%. Similarly, the Anchor Long Short IDS Retail Hedge Fund makes superior security selection and therefore adds on average 1.74% to the annual active return, and poor market timing on average results in negative impact on the active return of 0.08%.

Table 7 reports the annualised geometric mean return for all long-short equity hedge funds included in the sample broken down by activity. Quadrant I represents the passive portfolio benchmark return represented by the STeFI, the mean annual return for the benchmark was 6.45%. Quadrant II represents the return attributable to the benchmark combined with the return attributable to active market timing, the mean for all long-short equity hedge funds was 9.32%. Quadrant III represents the return attributable to the benchmark combined with the return attributable to security selections made by the hedge funds which deviate from the benchmark. The average long-short equity fund achieved 8.75%. Quadrant IV represents the actual return for the hedge fund, the mean annual actual return for all long-short equity hedge funds was 12.04%.

Based on the information provided above, the annualised mean returns attributable to timing, selection and other are as follows. The active timing decisions undertaken by long-short equity hedge funds on average added 2.88% on top of that of the benchmark. The security selections made achieved, on average, an additional 2.30% in returns. The cross product other term provided 0.41%.

Table 7: Mean Annualised Return by Activity for Long-Short Equity Hedge Funds

Long-Short Equity		Security Selection	
		Actual	Passive
Asset Allocation (Timing)	Actual	(IV) 12.04%	(II) 9.32%
	Passive	(III) 8.75%	(I) 6.45%
Active Returns Due to:			
Timing (II - I)			2.88%
Selection (III - I)			2.30%
Other (IV - III - II + I)			0.41%
Total (IV - I)			**5.59%**

Source: Researcher's Own Data (Microsoft Excel)

Table 8 reports the annualised geometric mean return for all market neutral hedge funds included in the sample broken down by activity. The passive portfolio benchmark return, represented by Quadrant I, achieved on average an annual return of 6.36%. Quadrant II which represents the return resulting from both the benchmark as well as the return attributable to market timing, reports that the average market neutral hedge fund delivered 7.47% annually. Quadrant III reports return attributable to the benchmark combined with the returns due to security selections made by the hedge funds. The average market neutral fund achieved 7.52% annually. Quadrant IV represents the actual return of the hedge funds, the mean annual return, the average market neutral fund annually achieved returns of 8.85%.

Based on the statistics above, the average returns attributable to timing, selection and other are as follows. The active timing decisions undertaken by market neutral hedge funds on average added 1.11%. With regard to security selection, an additional 1.16% was added to total return due to the active decisions made by market neutral hedge fund managers. The cross product other term provided 0.22%.

Table 8: Mean Annualised Return by Activity for Market Neutral Hedge Funds

Market Neutral		Security Selection	
		Actual	Passive
Asset Allocation (Timing)	Actual	8.85%	7.47%
	Passive	7.52%	6.36%
Active Returns Due to:			
Timing (II - I)			1.11%
Selection (III - I)			1.16%
Other (IV - III - II + I)			0.22%
Total (IV - I)			**2.49%**

Source: Researcher's Own Data (Microsoft Excel)

Table 9 shows the annualised geometric mean return for all hedge funds included in the sample which pursue a strategy other than long-short equity and market neutral. The passive portfolio benchmark return, represented by Quadrant I, achieved on average an annual return of 6.47%. The average other strategy hedge fund achieved a return of 8.87%, attributable to market timing or asset allocation efforts combined with the returns attributable to the benchmark, which is reported in Quadrant II. From a security selection and benchmark perspective as reported in Quadrant III, the average other strategy hedge fund achieved a return of 8.92%. The mean actual annual return for all these other strategy hedge funds was 11.78%, as is reported in Quadrant IV.

It follows that the average annual return attributable to active fund management decisions such as timing and selection, can be calculated. On a total level the average hedge fund within this category added 5.31% in active returns above the benchmark. This 5.31% consisted of 2.41% due to market timing activities. Superior security selection decisions contributed 2.46%, while cross product other term added 0.45%.

Table 9: Mean Annualised Return by Activity for Other Strategy Hedge Funds

Other Strategy		Security Selection	
		Actual	Passive
Asset Allocation (Timing)	Actual	11.78%	8.87%
	Passive	8.92%	6.47%
Active Returns Due to:			
Timing (II - I)			2.41%
Selection (III - I)			2.46%
Other (IV - III - II + I)			0.45%
Total (IV - I)			**5.31%**

Source: Researcher's Own Data (Microsoft Excel)

5.4.1. SECURITY SELECTION

The results preceding this section have focused on results pertaining to the descriptive statistics of the sample of hedge funds, as well as the alpha these funds are able to deliver. Further, a summary overview was provided on the returns attributable to active management undertaken by the hedge fund managers relating to market timing and security selection.

The following section will report on the security selection ability of the individual hedge funds. Security selection is the active selection of securities within an asset class, which is the portfolio's actual asset class returns in excess of those asset classes' passive benchmark returns (Brinson et al., 1986). This provides an overview of which funds were able to make superior security selection, as well as the level of return attributable to these decisions.

Figure 5 illustrates the mean annualised portion of active returns attributable to security selection for long-short equity hedge funds. The average long-short equity fund added 2.30% to active returns as a result of security selection. Of the 17 funds included in this category, 15 were able to add positively to the total return of fund through the security selection choices.

The Fairtree Assegai Long Short Equity Fund leading with 7.61% of the annualised return, is attributable to security selection. The Old Mutual Chronos Fund and X-Chequer IDS Flexible Long Short QI Hedge Fund (QIF) are the only two funds which had negative returns attributable to their security selection, with -0.69% and -2.13% respectively.

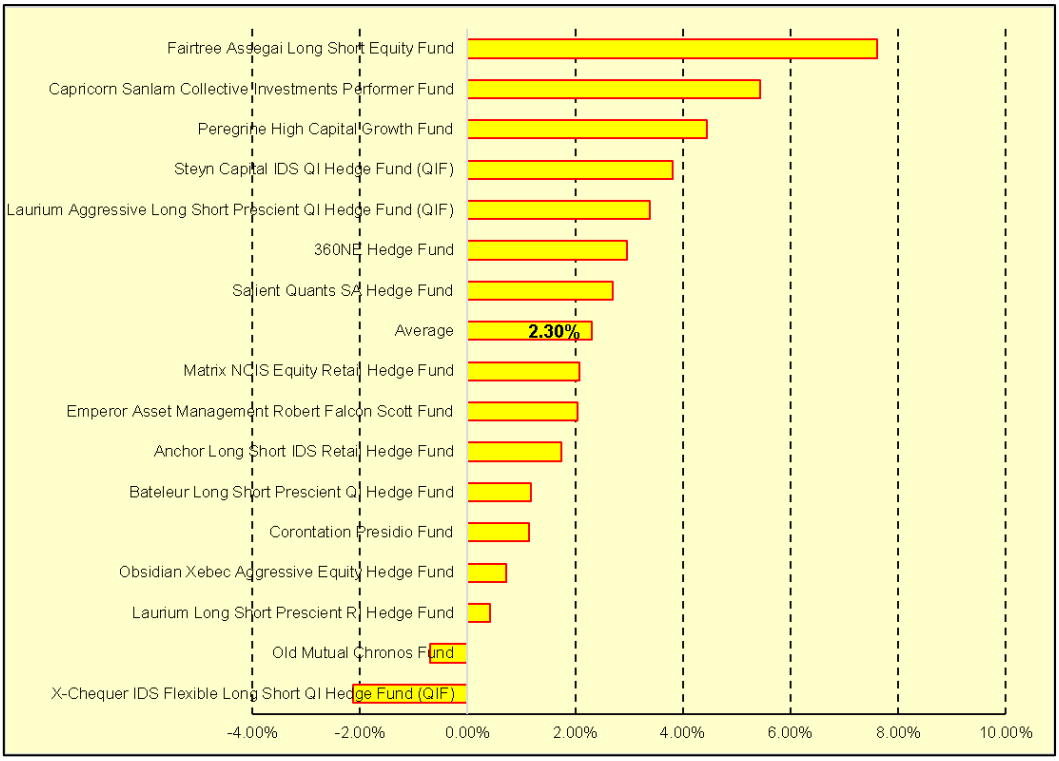

Figure 5: Returns Attributable to Security Selection for Long-Short Equity Hedge Funds

Source: Researcher's Own Data (Microsoft Excel)

Figure 6 illustrates the portion of active returns attributable to security selection for market neutral hedge funds. The average market neutral fund added 1.16% to the total return as a result of security selection. Of the nine funds included in this category, six were able to add positively to the active return of fund through the security selection decisions made. Therefore, only 66.66% of these funds were able to actively select securities which positively impacted returns.

The Capricorn Market Neutral Retail Hedge Fund with an annualised 6.97% return which is attributable to security selection, skewed this average for this market neutral fund's upward. Excluding this fund from the average, the average for market neutral funds dropped from 0.43% from the previous 1.16%.

The Old Mutual Aristeia Opportunities Fund was only marginally negative with security selection contributing -0.03%, similarly, the G3 Tlou Market Neutral Fund's security selection contributed -0.08% annually. Peregrine Capital Dynamic Alpha H4 QI Hedge Fund was the poorest at security selection, as annually, the fund's security selection reduced returns by 1.94%.

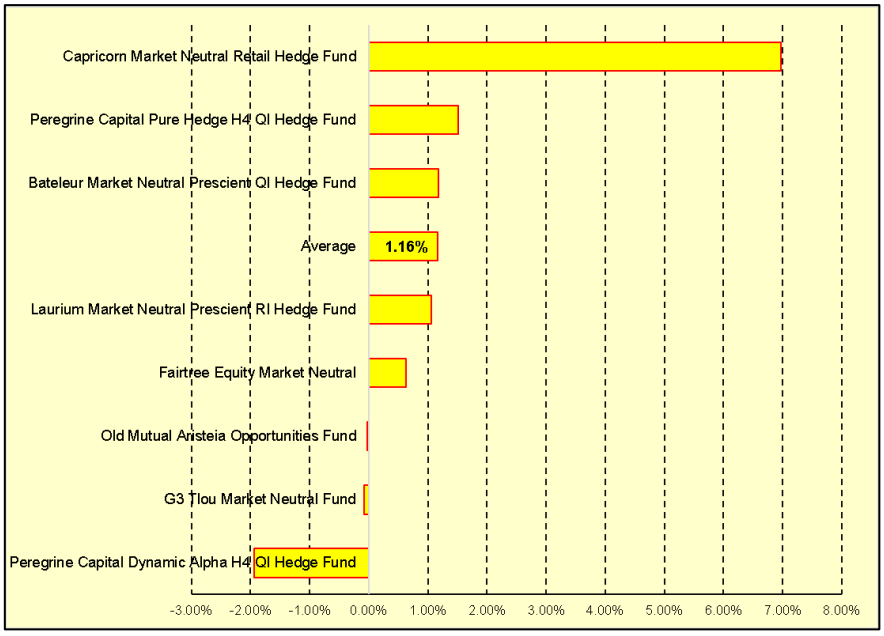

Figure 6: Returns Attributable to Security Selection of Market Neutral Hedge Funds

Source: Researcher's Own Data (Microsoft Excel)

Figure 7 reports the part of active return that was due to security selection for hedge funds included in the sample that followed a strategy other than long-short equity and market neutral. The average part of active return attributable to security selection for this category of hedge funds was 2.46%.

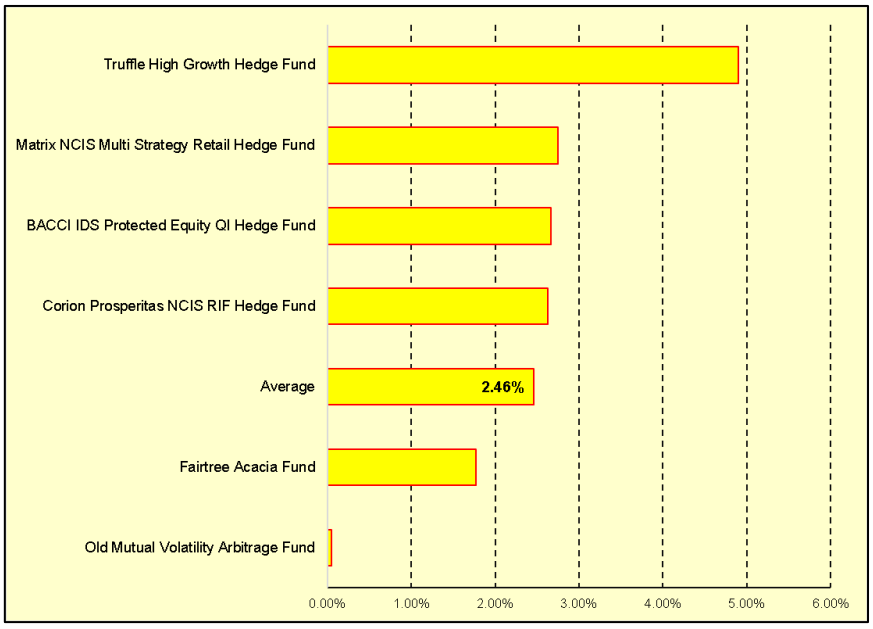

Figure 7: Returns Attributable to Security Selection of Other Strategy Hedge Funds

Source: Researcher's Own Data (Microsoft Excel)

Of the seven funds included in the category, all seven were able to select securities which make a positive contribution to active returns and as result, the total return for hedge the hedge fund. Four of the funds in the category had security selection contributing more to the active returns of the hedge fund than the average for the category of 2.46%. The Truffle High Growth Hedge Fund showed the highest annual return due to its security selection at 4.90%. The poorest performer within this category, but remaining marginally positive, was the Old Mutual Volatility Arbitrage Fund. This fund's security selection added 0.04% to active returns on an annual basis.

5.4.2. MARKET TIMING

Brinson et al. (1986) describe market timing as altering the weights of an asset class relative to that of the benchmark in an attempt to capture excess returns from short fluctuations. The following section reports on how much of the active returns for each individual hedge fund was due to market timing. Therefore, providing an overview of which funds were able to successfully time the market and which funds failed to do so.

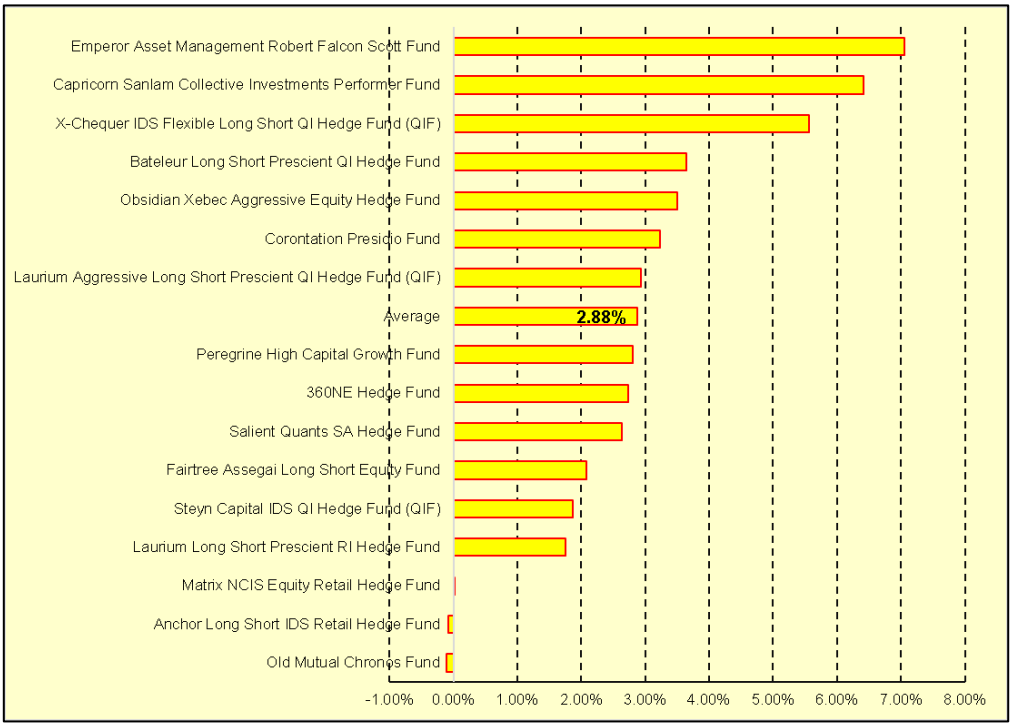

Figure 8: Returns Attributable to Market Timing of Long-Short Equity Hedge Funds

Source: Researcher's Own Data (Microsoft Excel)

Figure 8 reports the portion of active returns which was due to the market timing efforts of the long-short equity hedge fund managers. Of the 17 hedge funds included in this category, 15 were able to achieve positive active returns due to their timing of the market. This equates to

88.23% of the funds being able to time the market. The combined efforts of all long-short equity hedge funds resulting in this strategy of funds, achieved an average annualised return of 2.88% due to market timing.

The Emperor Asset Management Robert Falcon Scott Fund achieved an annualised return of 7.05% due to timing of the market, with it leading this category of funds. All other funds had strong market timing returns except for three. The Matrix NCIS Equity Retail Hedge Fund had zero return which is attributable to market timing. The Anchor Long Short IDS Retail Hedge Fund had marginally negative returns as a results of market timing efforts at -0.08%. The poorest fund with regard to market timing within the long-short equity category was the Old Mutual Chronos Fund whose active return was negatively influenced by 0.11% due to market timing efforts.

Figure 9 reports on how much of annualised active returns was due to market timing of market neutral hedge funds. Of the 9 funds included in this category, eight contributed positively to the active returns of the hedge funds through market timing. Therefore, 88.89% of the market neutral funds were able to positively time the market. The average market neutral fund was able to annually deliver active returns of 1.11% as a result of market timing.

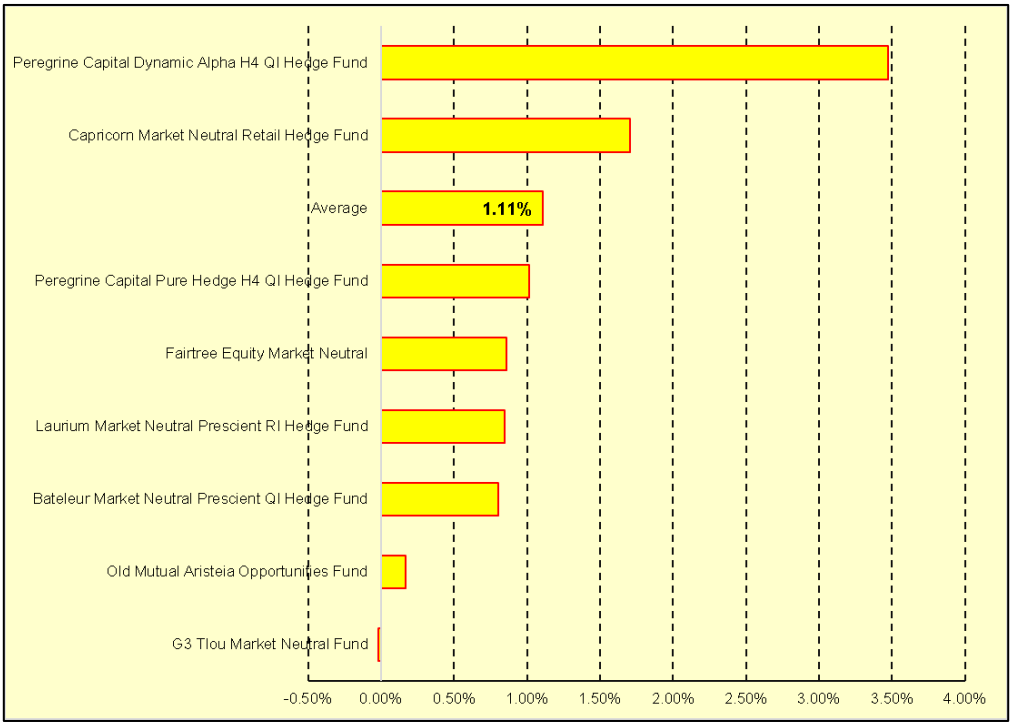

Figure 9: Returns Attributable to Market Timing of Market Neutral Hedge Funds

Source: Researcher's Own Data (Microsoft Excel)

The average of 1.11% is skewed by the strong market timing performance of the Peregrine Capital Dynamic Alpha H4 QI Hedge Fund with an active return due to market timing of 3.47%. This is more than double the closest second fund, Capricorn Market Neutral Retail Hedge Fund, which managed to earn active market timing return of 1.71%. Therefore, the market timing of the Peregrine Capital Dynamic Alpha H4 QI Hedge Fund is skewing the average. Removing the fund from the average, the market neutral funds are able to on an annual basis, deliver active market timing returns of 0.81%. The only market neutral fund not to earn positive market timing active returns is the G3 Tlou Market Neutral Fund, which is marginally negative with 0.02%.

Figure 10 reports the portion of active returns which was attributable to the market timing efforts of other strategy hedge funds. Of the seven hedge funds included in this category, every fund was able to achieve positive active return as a result of market timing efforts by the hedge fund managers. On an average basis, the other strategy hedge funds are able to annually deliver active returns of 2.41% due to market timing.

The Truffle High Growth Hedge Fund delivered strong returns with regard to market timing. This fund annually achieves 9.81% in returns due to the market timing efforts of the hedge fund managers. These strong results skew the average for the category. Disregarding the performance of the Truffle High Growth Hedge Fund, the average reduces from the previous 2.41% to 1.17%.

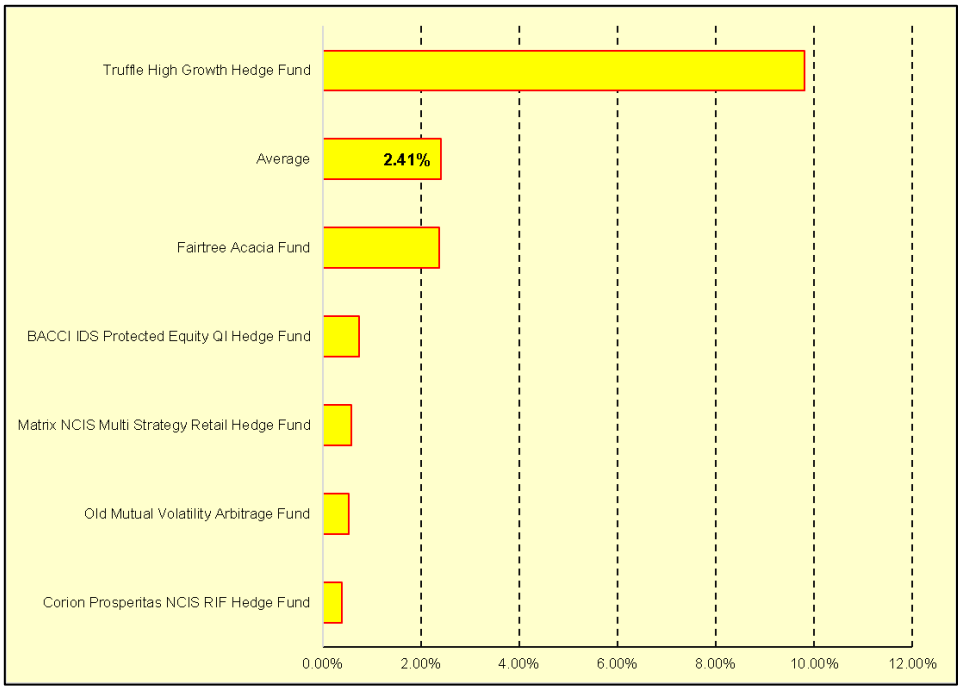

Figure 10: Returns Attributable to Market Timing of Other Strategy Hedge Funds

Source: Researcher's Own Data (Microsoft Excel)

5.5: R-SQUARED

Table 10 reports the R-Squared between the calculated returns and the actual returns of the hedge funds, these results are specifically for the long-short equity hedge funds. The average R-Squared for this category of hedge funds is 72.93%

Table 10: R-Squared of Long-Short Equity Hedge Funds

Fund	Strategy	R-Squared
Obsidian Xebec Aggressive Equity Hedge Fund	Long-Short	91.47%
Capricorn Sanlam Collective Investments Performer Fund	Long-Short	88.40%
Laurium Long Short Prescient RI Hedge Fund	Long-Short	86.07%
Anchor Long Short IDS Retail Hedge Fund	Long-Short	85.90%
Emperor Asset Management Robert Falcon Scott Fund	Long-Short	79.28%
Corontation Presidio Fund	Long-Short	78.46%
Laurium Aggressive Long Short Prescient QI Hedge Fund (QIF)	Long-Short	76.57%
Bateleur Long Short Prescient QI Hedge Fund	Long-Short	75.35%
360NE Hedge Fund	Long-Short	75.22%
X-Chequer IDS Flexible Long Short QI Hedge Fund (QIF)	Long-Short	72.77%
Old Mutual Chronos Fund	Long-Short	71.44%
Salient Quants SA Hedge Fund	Long-Short	63.12%
Peregrine High Capital Growth Fund	Long-Short	62.48%
Fairtree Assegai Long Short Equity Fund	Long-Short	61.91%
Matrix NCIS Equity Retail Hedge Fund	Long-Short	59.00%
Steyn Capital IDS QI Hedge Fund (QIF)	Long-Short	39.44%
Average	Long-Short	72.93%

Source: Researcher's Own Data (Microsoft Excel)

For the Obsidian Xebec Aggressive Equity Hedge Fund 91.47% of variation in the actual return of the hedge fund is explained by the movement of the calculated returns. Some of the poorest R-Squared is from the Matrix NCIS Equity Retail Hedge Fund and Steyn Capital IDS QI Hedge Fund (QIF) whose R-Squared is 59.00% and 39.44% respectively. For the Steyn Capital IDS QI Hedge Fund (QIF) this means that less than 40.00% of the movement in the returns of the hedge fund can be explained through the calculated returns based on the derived weights.

Table 11 illustrates the R-Squared measure for market neutral funds. The average R-Squared for the eight funds in this category was 52.50%. While the model explained the returns of the Capricorn Market Neutral Retail Hedge Fund very well with an R-Squared of 82.13%, results were not as positive for other funds.

Three funds had R-Squared of lower than 50.00%, with the Peregrine Capital Dynamic Alpha H4 QI Hedge Fund only having an R-Squared of 25.34%. This implies that only 25.34% of the variation in the Peregrine Capital Dynamic Alpha H4 QI Hedge Fund's actual returns is explained by the modelled or calculated returns.

The Capricorn Market Neutral Retail Hedge Fund's strong R-Squared skews the average for these funds upward. Excluding this fund with an R-Squared of 82.13% from the average calculation for this category, the average R-Squared drops to below 50.00% from 52.50% to 48.26%.

Table 11: R-Squared of Market Neutral Hedge Funds

Fund	Strategy	R-Squared
Capricorn Market Neutral Retail Hedge Fund	Market Neutral	82.13%
Laurium Market Neutral Prescient RI Hedge Fund	Market Neutral	68.28%
G3 Tlou Market Neutral Fund	Market Neutral	54.33%
Bateleur Market Neutral Prescient QI Hedge Fund	Market Neutral	53.94%
Old Mutual Aristeia Opportunities Fund	Market Neutral	50.63%
Fairtree Equity Market Neutral	Market Neutral	46.50%
Peregrine Capital Pure Hedge H4 QI Hedge Fund	Market Neutral	38.81%
Peregrine Capital Dynamic Alpha H4 QI Hedge Fund	Market Neutral	25.34%
Average	Market Neutral	52.50%

Source: Researcher's Own Data (Microsoft Excel)

Table 12 reports R-Squared between the calculated returns and actual return of the hedge funds for funds following an other strategy. The average R-Squared for these funds is 51.30%. The modelled returns for the Truffle High Growth Hedge Fund explaining 84.68% of the actual returns.

Out of the six funds in this category three had R-Squared of lower than 50%. The poorest of these the Corion Prosperitas NCIS RIF Hedge Fund with an R-Squared of 19.03%.

Table 12: R-Squared of Other Strategy Hedge Funds

Fund	Strategy	R-Squared
Truffle High Growth Hedge Fund	Other	84.68%
BACCI IDS Protected Equity QI Hedge Fund	Other	77.50%
Old Mutual Volatility Arbitrage Fund	Other	61.53%
Matrix NCIS Multi Strategy Retail Hedge Fund	Other	42.97%
Fairtree Acacia Fund	Other	22.11%
Corion Prosperitas NCIS RIF Hedge Fund	Other	19.03%
Average	Other	51.30%

Source: Researcher's Own Data (Microsoft Excel)

5.6. SUMMARY

This chapter outlined the results required to address the research propositions as outlined in Chapter Three. An overview of the descriptive statistics of hedge funds included in the sample was provided to give insight into the returns offered by hedge funds. Especially in comparison to that of the benchmark of these funds, the STeFI.

Also, included in the descriptive statistics was a focus on risk measures such as standard deviation. Further, included was the Jensen's alpha achieved by each fund, as well as which portion of alpha was attributable to security selection and market timing. The chapter concluded with a summary of the R-Squared for each of the funds. This R-Squared acting as a barometer of how well the modelled results for each fund explains the movement in actual returns.

The following chapter focuses on the discussion of the results presented in this chapter, as well as the addressing of the research propositions and topics raised in the literature review.

CHAPTER 6: DISCUSSION OF RESULTS

6.1. INTRODUCTION

The results presented in the previous chapter will be discussed in the remainder of this chapter, specifically with the objective of addressing the research propositions in Chapter Three. The goal is to establish an understanding of whether hedge fund managers possess skill and deliver alpha. Further, if hedge funds are able to deliver alpha, how much of alpha is attributable to security selection and how much to market timing.

Similar to the results section, the addressing of each research proposition will be broken up into the three categories of hedge fund strategies discussed previously. These included long-short equity, market neutral and hedge funds following another strategy, such as multi-strategy.

6.2. RESEARCH PROPOSITION 1

It is proposed that South African long-short equity, market neutral and other strategy hedge funds deliver alpha.

Jensen (1968) stated that performance has two dimensions, namely return and risk. With regard to return, portfolio managers or hedge fund managers strive to increase returns through the successful prediction of future price movement. Relating to risk, portfolio managers or hedge fund managers aim to minimise insurable risk for a portfolio with a specific level of return. Jensen's alpha measures predictive ability of hedge fund managers through the combination of these two dimensions i.e. risk and return.

The predictive ability is best described as the ability to earn returns through the successful prediction of security price movements which are higher than would be associated with a different fund with the same level of risk (Jensen, 1968). Accordingly, based on the above definition of predictive ability, hedge fund managers who were able to deliver positive alpha, possess skill.

Fama (1991) explains that the efficient market hypothesis significantly contradicts the claim of fund managers to possess skill and those who claim to persistently deliver superior risk-adjusted returns such as alpha, particularly if they claim to do so on a continuous basis. In efficient markets where a random walk is present, information flows into the market are random and unpredictable (Malkiel, 2003a). As a result of this, the price changes are random

and unpredictable. Therefore, in efficient markets, price movements do not conform to any pre-existing pattern. It follows that no investors should be able to earn abnormal returns based on a developed trading strategy.

If these claims regarding the efficient market hypothesis hold true, the consequences for hedge fund managers are significant. The skill claimed by hedge fund managers in delivering alpha to investors is deemed irrelevant (Brown, 2011). The result of this is that in efficient markets an uninformed investor buying a diversified portfolio out of the market will obtain a rate of return as generous as an expert investor (Malkiel, 2003a).

Research regarding the ability of hedge funds to deliver alpha has been inconclusive. Work supporting the view that hedge funds deliver alpha is presented by Brown et al. (1999). Similarly, Agarwal and Naik (2000) find that hedge funds deliver alpha of between 6% and 15% on an annual basis. Further research supporting the view that hedge funds deliver alpha include, Fung et al. (2002), Amin and Kat (2003), Stulz (2007), Kosowski et al. (2007) and Ibbotson et al. (2011).

Opposing evidence is presented by Ackermann et al. (1999). The author's research found that on a risk-adjusted basis, most hedge funds struggle to outperform the market. Further, Wagenvoort (2006) states that hedge funds fail to deliver statistically significant alpha to investors. Fung et al. (2008) posit that certain funds do deliver alpha, but the funds meeting this performance criteria are scarce.

It follows that based on the definition above, Jensen's alpha is a result of the predictive ability of hedge fund managers; but whether hedge funds possess this predictive ability is unclear. Based on the definition of Jensen's alpha, it follows that if hedge fund managers are in fact able to deliver alpha over an extended period of time to investors, this would support the view that hedge fund managers possess skill.

Based on the research outlined, it was explored whether hedge funds have the skill to deliver, with the result being inconclusive. Therefore, it is unclear whether hedge funds, especially operating within the South African market, are able to earn superior risk-adjusted returns such as alpha, and if the managers of hedge funds possess skill.

Table 4 reported the Jensen's alpha for long-short equity hedge funds over the period included in the sample. Based on the results, long-short equity hedge funds showed strong performance, resulting in significant alpha being delivered to investors. Out of the 16 hedge funds following the long-short equity strategy, 15 were able to earn returns in excess of their benchmark and deliver alpha to investors. The strongest performing of these funds were

delivering an annualised alpha of 12.78%. The average long-short equity fund is able to deliver an alpha of 5.59% to investors annually.

Similar results were presented in Table 5 for market neutral hedge funds. Over the period of analysis included in the sample, seven of the eight market neutral hedge funds were able to deliver superior risk-adjusted returns in the form of alpha to investors. The strongest of these funds were earning an annualised alpha of 9.26%, while the average market neutral fund was able to deliver alpha of 2.49% annually.

With regard to the other strategy hedge funds, Table 6 reports the alpha delivered by each individual hedge fund. The average alpha delivered by these funds on an annual basis is 5.31%. This strong annualised average alpha for this category of hedge funds is driven by all six of the funds included in this category achieving positive alpha, with the best performing of these funds earning an annualised alpha of 15.79%.

Therefore, 93.75% of long-short equity hedge funds, 87.5% of market neutral hedge funds and 100.00% of other strategy hedge funds deliver alpha to investors. This high proportion of funds outperforming their benchmarks on a risk-adjusted basis shows that overwhelming alpha exists for the sample of hedge funds, including long-short equity, market neutral and other strategy hedge funds.

It follows that there is more complexity to the active versus passive management argument than what is outlined by Malkiel (2003a) in his arguments for market efficiency. It is true that active investment returns on an aggregated level is a zero-sum game, with alpha being zero prior to taking any costs into consideration. Therefore, after taking fees into consideration it becomes a negative sum game for active investors on an aggregated level (Fama & French, 2010; Sharpe, 1991).

Based on the results presented, the conclusion is not that active management is useless. Rather, active fund managers with skill, such as the hedge funds in this sample, are able to earn above average returns. Therefore, if superior performance or inferior performance persists, over time investors need only invest in funds that have outperformed in the past and avoid funds that have underperformed (Ibbotson & Kaplan, 2000).

6.3. RESEARCH PROPOSITION 2

It is proposed that managers of these long-short equity, market neutral and other strategy hedge funds possess skill and accordingly, make superior security selection decisions in order to deliver alpha.

In the context of this study, skill is defined as the general cognitive ability of hedge fund managers to pick stocks and time the market (Kacperczyk et al., 2014). This skill is the use of either, or combination of both, public and private information to deliver superior risk-adjusted returns such as alpha through superior security selection or market timing.

Focusing specifically on stock selection, stock selection involves the picking of individual stocks which the hedge fund manager believes will outperform its peers or the benchmark (Cremers & Petajisto, 2009). Brinson et al. (1986) add that as part of the investment strategy, a portfolio manager or hedge fund manager typically selects individual securities within an asset class different to that of the benchmark, with the objective of achieving superior returns relative to that of the benchmark for that specific asset class.

This research's results regarding the alpha of hedge funds present overwhelming evidence of the ability of hedge funds to deliver alpha, and thereby of hedge fund managers possessing the required skill to outperform their benchmarks on a risk-adjusted basis. Based on this, the second and third research proposition address the source of this alpha i.e. security selection or market timing.

Figure 4 presented a scatterplot of the active returns attributable to security selection and market timing for each of the hedge funds. Visually it is evident that of the 30 funds, a large proportion contribute to their active returns through both security selection and market timing.

Focusing more specifically on the ability of hedge fund managers to make superior security selections, it was determined that on a total level of the 30 hedge funds included in the sample, 25 were able to positively add to active returns through security selection, which equates to 83.33% of all hedge funds in the sample.

Of the hedge funds pursuing a long-short equity strategy, 14 of the 16 funds were able to make superior security selections. These funds adding on average 2.30% to active returns.

Market neutral funds were not performing as strong with regard to security selection, with five of the eights funds adding positively to active returns. The average fund was still adding annualised alpha of 1.16% in comparison to the 2.30% of long-short equity funds.

All six other strategy hedge funds in the sample positively added to active returns due to security selection. The annualised return attributable to security selection for these funds equated to 2.46%.

Further, alpha earned by long-short equity, market neutral and other strategy hedge funds of 41.19%, 46.60% and 46.26% respectively, is attributable to security selection, showing that the contribution of security selection to alpha earned by hedge funds is a significant share.

Results regarding research proposition one showed that overwhelming alpha is present based on the performance of hedge funds. It follows that hedge fund managers who are able to deliver superior risk-adjusted returns such as alpha, possess the required predictive ability and with it, the skill to earn such returns. Based on the results presented, it is evident that long-short equity, market neutral and other strategy hedge funds deliver alpha and that a significant share of this alpha is attributable to the security selection ability of the hedge fund managers.

6.4. RESEARCH PROPOSITION 3

It is proposed that managers of these long-short equity, market neutral and other strategy hedge funds possess skill and accordingly, make market timing decisions in order to deliver alpha.

The second component of skill is the cognitive ability to time the market. Similar to security selection, a combination of public and private information can be combined to deliver superior risk-adjusted returns through market timing (Kacperczyk et al., 2014). Market or factor timing involves time-varying bets on systematic risk factors such as entire industries, sectors of the economy, or more generally, systematic risk bets relative to the benchmark (Cremers & Petajisto, 2009).

As discussed previously, results for all categories of hedge funds showed overwhelming alpha being delivered for investors. Alpha is a result of the predictive ability of hedge fund managers and thereby the skill they possess. The third research propositions address whether these alpha returns and skill are attributable to the timing of the market.

The scatterplot presented in Figure 4 illustrated the contribution to active returns for security selection and market timing of all hedge funds included in the sample. Similarly, regarding the security selection ability of hedge funds, the scatterplot evidently shows a significant share of the hedge funds are able to add to their active returns through market timing decisions.

Looking across the entire sample of hedge funds, 27 of the 30 hedge funds were able to time the market in such a way that it positively contributed to active returns. Therefore, 90.00% of the hedge funds were able to time the market, these adding to their alpha 2.31% on an annualised basis.

In the category of long-short equity hedge funds, 14 of the 16 funds were able to time the market. The average long-short equity hedge fund was adding 2.88% to active returns on an annual basis due to market timing.

Market neutral funds showed stronger performance with regard to market timing than security selection, with 7 of the 8 funds in this category earning positive returns due to market timing. The average market neutral funds were adding 1.11% to active returns due to market timing efforts.

The strong performance of other strategy hedge funds was continuing with regard to market timing. All other strategy hedge funds included in the sample have positive returns as a result of market timing, the average fund adding 2.41% to alpha on an annual basis.

In addition to this, alpha earned by long-short equity, market neutral and other strategy hedge funds, 51.41%, 44.45% and 45.31% respectively are attributable to market timing activity. Therefore, the share of alpha delivered due to market timing activity of hedge fund managers is a significant share of total alpha.

Research proposition one showed that hedge funds deliver overwhelming alpha to investors. Research propositions two and three aimed to address the sources of that alpha. While a large portion of alpha is attributable to superior security selection of hedge funds managers, these hedge fund managers are also able to time market. Thereby further boosting active returns. This is supported by the high proportion of alpha attributable to market timing i.e. 51.41%, 44.45% and 45.31% for long-short equity, market neutral and other strategy hedge funds respectively.

6.5. SUMMARY

During this chapter, the results presented in Chapter Five were discussed and outlined in terms of the research propositions. Research proposition one proposed that hedge fund managers of the various strategies included in the sample are able to deliver alpha, and thereby possess skill. Based on the results, hedge funds has delivered overwhelming alpha over an extended period of time, which is shown by the annualised return of these funds. These results presenting strong evidence of the skill possessed by hedge fund managers.

Research proposition two and three focused more specifically on the sources of alpha for hedge funds. The skill hedge fund managers possess consists of two components, namely security selection and market timing. It is put forward by research proposition two that hedge fund managers do possess skill and are able to earn alpha as a result of their superior security selection capabilities. The results of the study strongly supporting this proposition.

According to research proposition three, the hedge fund managers who do possess skill are able to deliver alpha due to their ability to time the market. Strong market timing contributes to active returns, also supporting this proposition.

CHAPTER 7: CONCLUSION

7.1. INTRODUCTION

This study investigated the alpha, and sources of alpha for hedge funds across long-short equity strategy, market neutral strategy and funds grouped as other strategy. The performance of hedge funds was investigated relative to their benchmark of the STeFI as to establish firstly, whether these funds are able to deliver alpha.

Through the use of the model introduced by Brinson et al. (1986), the active returns of hedge funds were attributed to either security selection or market timing. Thereby not only the performance and ability to deliver alpha were researched, but also the source of these active returns.

The previous two chapters focused on presenting the results as well as addressing the research propositions. This chapter will summarise the findings, while also providing an overview of the limitations of the research and some thoughts on possible future studies.

7.2. SUMMARY OF THE FINDINGS

Over the last twelve years since February 2005 until February 2017, hedge funds have been able to add significant value to the assets under their management. This is shown by not only their absolute returns in each respective year, but is supported by their levels of annualised return over this twelve-year period. This strong performance is supported by overwhelming alpha present among the performance of hedge funds. Of the sample of 30 hedge funds, 28 were able to earn positive alpha on an annualised basis over the entire period of the study, with the average annual alpha earned across all the funds equating to 4.71%.

Furthermore, the objective was to understand that if hedge fund managers were able to outperform their benchmarks on a risk-adjusted basis, what the source of this performance is. Whether this alpha is due to security selection or market timing.

It was found that both security selection and market timing make significant contributions to the total alpha earned by hedge funds. With most funds being able to earn positive active returns as a result of both security selection and market timing, 80.00% of the hedge funds in the sample are able to earn both positive security selection and market timing active returns.

Focusing on the security selection ability of hedge funds, 25 of the 30 hedge funds earn positive active return and thereby positively impact alpha through security selection. The other strategy hedge funds with the strongest security selection skill. These hedge funds on average adding 2.41% to alpha on an annual basis through security selection, which is followed by long-short equity with 2.30% and lastly market neutral hedge funds with 1.16%. Security selection on average contributes to 43.10% of the alpha for a hedge fund.

With regard to market timing, 27 0f the 30 hedge funds, or 90.00% are able to positively impact their alpha through market timing efforts. Long-short equity hedge funds lead with regard to market timing performance, the average long-short equity hedge fund adding 2.88% to active returns as a result of timing of the market. This is followed by other strategy hedge funds which earn 2.41% due to market timing and then lastly, again market neutral funds with 1.16%. Market timing on average contributes 49.06% of the alpha for hedge funds. The remaining 7.85% is due to the influence of the cross-product term.

Therefore, hedge funds offer superior returns to their benchmarks due to their ability to deliver overwhelming alpha. This alpha is not only attributable to either security selection or market timing, but rather both contribute collectively to the performance of these funds.

7.3. LIMITATIONS OF THE RESEARCH

One of the main limitations of the research was the use of the derived weights or exposures of the hedge funds, rather than their actual holdings over the period of the study. As discussed previously, hedge funds have no obligation to report their investment strategies or holdings to the general public (Wagenvoort, 2006), therefore holdings had to be derived in order to apply the determinants of the portfolio performance model as developed by Brinson et al. (1986).

The R-Squared as reported in Table 10 through 12 acts as measure for the accuracy of the model used to calculate the return of the funds. While 19 of the 30 hedge funds had an R-Squared of higher than 60.00%, the conclusions drawn regarding the security selection and market timing of hedge funds would have been more significant if based on the true holdings of these funds.

A further limitation of the research is the influence of survivorship bias. Survivorship bias results from liquidated funds or funds no longer operating, not being included in the sample (Fung & Hsieh, 2002). The exclusion of these funds possibly skewing the performance of hedge funds upward.

Other factors influencing the performance of funds not being considered are a further possible limitation associated with this research. Research shows that macroeconomic variables play a significant role in explaining the performance of funds (Banegas et al., 2013). In addition to this, other research shows that the size of the fund, represented by assets under management, could also play a significant role in determining the performance of the fund (Stambaugh & Taylor, 2014). Therefore, this research's main focus on the role of market timing and security selection in the determining the performance of hedge funds, could have overlooked these influential factors.

The sampling method employed is a further limitation to this research. The convenience sampling method employed is a non-probability sampling method. The use of this sampling method could inhibit the ability to make the same conclusions regarding the population of hedge funds due to the sample possibly not being representative of the entire population.

Linking to this is the limitation around the limited number of hedge funds included in the sample. The voluntary nature of hedge fund return reporting has made the lack of access to more hedge fund data a limitation, with only 30 hedge funds included in the sample.

Lastly, a limitation is the appropriateness of the Jensen's alpha as a performance measure for hedge funds which typically have a non-normal distribution. Botha (2007) emphasises the various return distributions associated with hedge fund returns. It is argued that hedge fund returns are not only non-normal, but they also possess non-negligible higher statistical moments. Not only are the majority of traditional performance measures such as the Jensen's alpha (Jensen, 1968) based on the mean-variance paradigm, they are also dependent on normal distributions. These measures then do not take these higher statistical moments into consideration (Botha, 2007).

7.4. SUGGESTIONS FOR FUTURE RESEARCH

Based on the findings and limitations of this research, possible future research may include similar analyses of the performance of hedge funds and the attribution of their returns to security selection and market timing based only on the true holdings of these hedge funds, if that data could be obtained. Possibly also including a larger sample of hedge funds.

Similar to the Brinson et al.'s (1986) model for attributing returns to security selection and market timing was applied for this research. Future research could look to research hedge fund returns based on the model developed by Kacperczyk et al. (2014). This model aims to measure the time-varying skill of fund managers.

Kacperczyk et al. (2014) introduce a new measure of skill which weighs fund's market timing more during a recession, and security selection more during an economic expansion or boom. This combined measure shows more persistence than either security selection or market timing alone, and could provide valuable insights into the performance of South African hedge funds.

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APPENDIX 1: ETHICAL CLEARANCE

Gordon Institute of Business Science
University of Pretoria

06 July 2017

Elmar Grater

Dear Elmar,

Please be advised that your application for Ethical Clearance has been approved.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards

GIBS MBA Research Ethical Clearance Committee

Gordon Institute of Business Science
Reg. No. 99/19816/08
26 Melville Road, Illovo, Johannesburg
PO Box 787602, Sandton, 2146, South Africa
telephone (+27) 11 771 4000
fax (+27) 11 771 4177
website **gibs.co.za**
University of Pretoria