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Large and small funds: institutional versus boutique fund effects on unit trust investment performance

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ABSTRACT

Individuals who rely on mutual funds to accumulate wealth need advice on how best to select them (Ciccotello & Grant, 1996). The purpose of the study is to gain insight whether fund size and boutique or institutional fund structure of unit trusts affects returns. It expands the body of knowledge on investment performance factors and equips investors with a tool to make informed decisions when contemplating various fund manager offerings.

Data was collected from the database of the Association for Savings and Investment (ASISA) for South African general equity unit trust returns and fund size information covering a period of 44 quarters from March 2001 to December 2011. Domestic general equity unit trusts were analysed during the period under review. A regression analysis was run to test for fund size as an indicator of investment performance. A parallel study was conducted to test whether boutique funds outperform institutional funds.

The results indicate that fund size has no influence on fund performance. The findings also show that there is no significant difference between the performance of boutique style unit trust funds and institutional unit trust funds. These findings contradict the findings of previous research by (Fama, 1972); (Chen, Hong, Huang, & Kubik, 2004; Ciccotello & Grant, 1996; Droms & Walker, 1996) who found fund size, either positively or negatively have an influence on mutual fund returns while (Gallagher & Martin, 2005) and Schönfeld (2009) concluded that boutique funds offer better returns compared to institutional funds. Investors would be advised to carry out a fund by fund analysis to identify the optimal domestic unit trust investment fund when investing as opposed to an aggregated study.

Keywords

Boutique funds, institutional funds, investment performance, fund size, unit trusts

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.

Sekgabo Molelekoa 7 November 2012

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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

Investors may be curious to know which type of investment manager, whether a boutique or institutional unit trust fund manager, is better equipped to offer superior performance, thereby determining who is the best custodian of their money to deliver superior investment returns. The South African investment market has grown significantly over the years to include foreign investors seeking opportunities through globalisation to diversify their portfolios. According to the Association of Savings and Investment South Africa (ASISA) there were 900 equity unit trust funds in existence, with a combined asset value of about R700 billion at the end of September 2008 (Pillay, Muller, & Ward, 2010) from one fund in June 1965 (Meyer-Pretorius & Wolmarans, 2006). Research into how asset management size and the type of portfolio manager structure influence unit trust performance could prove to be a valuable tool in helping investors that are unfamiliar with the local investment landscape to decide on the best investment strategy. According to Carhart (1997) boutique funds have the advantage of being able to invest in small capitalisation (small cap) shares giving the funds an opportunity to invest in good performing shares that do not constitute a meaningful portion of larger funds.

1.2 Research aim

It would be valuable to investigate whether unit trust fund managers who have the backing of large institutional balance sheets and economies of scale, implying size, deliver better returns than their smaller counterparts. The large unit trust fund managers have the advantage of financial clout but could prove to be sluggish and bureaucratic in a world where the first acquirers of information reap rewards via better quality of research and first move advantage when it comes to buying and selling of shares, making the flexibility of boutiques unit trusts attractive to investors (Gallagher & Martin, 2005). However prominent managers of large institutional funds can obtain exclusive investment opportunities not available to other market participants such as discounts on Initial Public Offerings (IPO) and company executive management contact sessions that might otherwise be unattainable to smaller funds (Ciccotello & Grant, 1996).

Boutique funds have gained popularity in the recent past and have increased competition against traditional institutional funds. For investors, the report will offer information for making investment decisions. For the industry, it will provide key success factors for the management of a successful fund management model. Research into the relationship between fund size and its impact on performance could inform trustees and potential investors of future performance by fund managers.

1.3 Relevance of study

Trustees and the investing public can use the study to understand if a relationship between fund business structure and performance exists in incentivising unit trust fund managers as it has been proven in the United States (Evans, 2008; Khorana, Servaes, & Wedge, 2007) that portfolio manager holdings do have a positive impact on fund performance. The study will build on research by (Chan, Faff, Gallagher, & Looi, 2009; Chen et al., 2004; Pollet & Wilson, 2008) and (Bodson, Cavenaile, & Sougné, 2011) who studied the effect of fund size on investment performance. Their findings were inconsistent and this report will shine some light on the South African aspect of unit trust management. It answers the question whether performance depend on the size. Investors seek to find the most desirable portfolio based on their risk appetite and investment objectives (Sharpe, 1966) so research can also be used by investors who would like to make informed decisions in their investment decision-making process regarding which type of fund manager would best manage their investments considering the sizable inflows that have increased the mean size of funds in the recent past (Chen et al., 2004) and the abundance of choices open to them

Fund managers face the dilemma of scalability because with it comes cost savings which leads to fund performance (Chen et al., 2004). Economies of scale in the investment industry may have agency relationship implications between clients and managers (Chen et al., 2004) because some fees are calculated based on fund size. Therefore investors need to be informed about the implications of entering into such contracts with funds managers.

The study will not focus on a specific fund or company and seeks to answer a broad-based question that could add to the body of knowledge of the South African

unit trust industry. It should provide some novel insights into the field of asset management where performance alpha (α) is the main objective of investment.

The case for the research undertaking is based on the following:

- Mixed results of fund size effects
- The deficiency of academic literature on the subject of institutional and boutique fund performance in South Africa.

1.4 Structure of thesis

In order to answer the research questions set out in chapter 3, this thesis is structured as follows:

Chapter 2 outlines the history, theory and previous research into the unit trust industry. The discussion will centre on the background of unit trusts, conflicting theories about size and fund performance and the characteristics of boutique funds. In chapter 3 research questions are asked and two hypotheses are proposed. Chapter 4 is the methodology section where the data, sampling and analysis technique employed will be expanded. Chapter 5 will be a discussion of the results where the hypotheses introduced in chapter 3 will be tested. A discussion of findings of analysed results will be conducted in chapter 6 chapter 6. The report will conclude in chapter 7 where key implications, suggestions for future research and conclusions will be summarised.

CHAPTER 2: LITERATURE REVIEW

2.1 The South African unit trust industry

Unit trusts are collective investment schemes similar to open-ended investment companies with redeemable shares (mutual funds) in the United States of America (United States) (Hsieh & Hodnett, 2012). Unit trust managers can be segmented into various broad groups – bank managed funds, private managed funds and insurance company managed funds. Investors enter into a contract with the investment company which has appointed an advisory firm to carry out their investment activities on their behalf (Farnsworth & Taylor, 2006). The portfolio manager is employed by the advisory firm (Farnsworth & Taylor, 2006).

The difference between mutual funds as found in the United States and unit trusts in South Africa is that a unit trust is administered by a trust company and a mutual fund is supervised by mutual fund company directors to make the fund managers carry out their fiduciary duties and adhere to mandates that they have been given by investors and policies set by the regulator (Meyer-Pretorius & Wolmarans, 2006). Although the trust company board of directors' responsibility is to uphold the governance of the fund, investors can exercise superior power due to their ability to withdraw their invested funds at any time they are displeased with the fund's performance without surrender penalties (Evans, 2008). Because unit trusts are grouped investments they provide investors with liquidity which makes buying and redeeming units easy (Hsieh & Hodnett, 2012). What started as a single fund in June 1965 (Meyer-Pretorius & Wolmarans, 2006) breached the R1 trillion mark in December 2011 with total assets reaching R1,011,052,913,592.98 as at 31 December 2012 (ASISA, 2011). The United States make up the bulk of the worldwide mutual fund industry, accounting for 50% of assets internationally (Meyer-Pretorius & Wolmarans, 2006).

A distinction can be drawn between institutional-class mutual funds and retail-class mutual funds. Institutional-class mutual funds are intended as an investment medium for retirement funds, companies, non-profit organisations (NPO), endowments, trusts, as well as other large investors, which includes individuals (Baker, Haslem, & Smith, 2009). Since unit trusts were first introduced in South Africa in 1965 the industry now includes fixed income, specialist equity,

international funds, wrap funds and index funds (Meyer-Pretorius & Wolmarans, 2006).

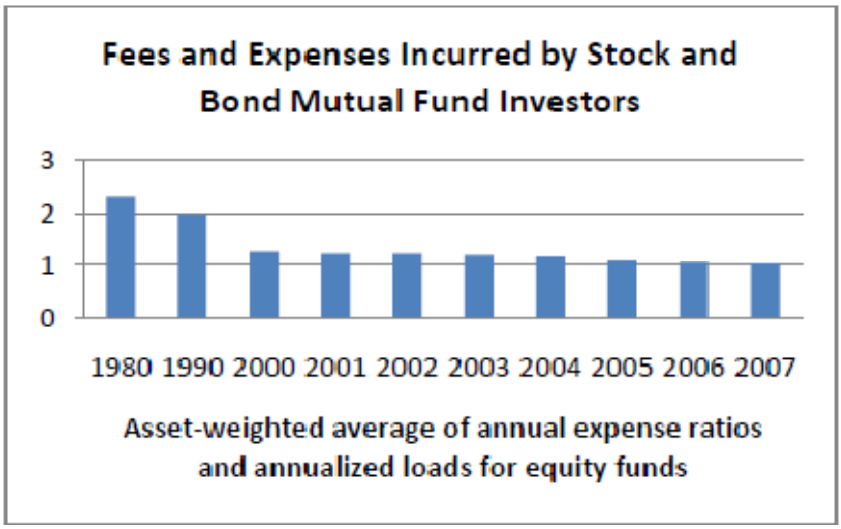
Investors have used various determinants for unit trust investment flows with some of these being “interest rates, fee structures, risk and fund size” (Rudman, 2008). Rudman (2008) found that these determinants were insignificant when it came to the investment decision and concluded that investors were guided by performance and irrationality when it came to deciding where to invest their funds. For purposes of the study, the focus will be on long only funds which have a domestic equity mandate. This allows for the elimination of factors such as asset allocation, investment style and derivative strategies as factors that influence performance alpha (α).

2.2 The cost of investing in unit trusts

The ownership of unit trusts comes with the burden of fees charged by the manager and expenses as quoted on many marketing factsheets.The costs that are incurred in the administration of an investment fund include marketing and distribution, transaction and advisory costs while the investor faces transaction costs, annual fees and hidden costs (Schönfeld, 2009). The cost involved with the buying or selling of a fund is the transaction cost. The fees for buying or selling the units back to the fund range from zero to four percent. Investors who choose to buy an investment through a broker incur an extra layer of load fees (Schönfeld, 2009) which are generally referred to as commission in South Africa. Annual fees are charged by the manager for the day to day running of the business and are typically commonly set as a percentage of assets under management (Schönfeld, 2009).

There are the hidden costs which are not visible to the investor which are incurred when shares are bought and sold within the unit trusts which impacts the value of the investments (Schönfeld, 2009). Aggressively active managers can increase the value of transactions through frequent buying and selling of shares because transaction costs erode the profits that would have otherwise been earned. They form an intrinsic part of the running of the fund so are not reported separately.
Figure 2.1 illustrates that mutual fund costs have been steadily declining over the years with expense ratios The cost charged by mutual funds have been steadily diminishing from just above 2% in 1980 to 1% 2007 (Schönfeld, 2009).

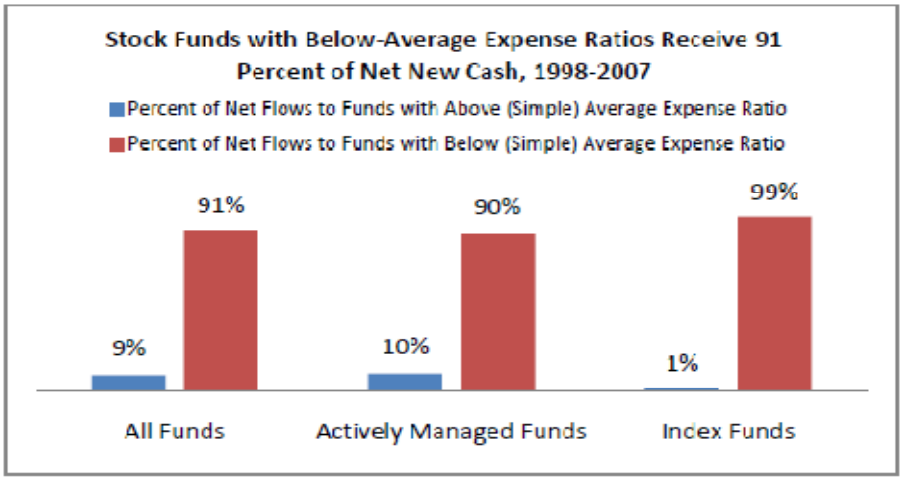
Figure 2-1: Expense ratios of mutual fund investors from 1980 to 2007



Source: Schönfeld, 2009

Research suggests that the reason for the steady decline over the years has been due to increased competition which has forced the margins of asset managers to be squeezed (Schönfeld, 2009). Investors have also become more sophisticated and demand value for money and have greater buying power and access to information than ever before. Investors are choosing to invest their savings with managers who charge competitive rates compared to their peers (Schönfeld, 2009). As figure 2.2 shows, funds that charge below average fees experience the greatest net inflow of new money into their funds (Schönfeld, 2009).

Figure 2.2 Flow of new cash into funds with below and higher than average costs



Source: Schönfeld, 2009

Hidden costs are linked to the manager's level of activity (Kacperczyk, Sialm, & Zheng, 2008). Carhart (1997) in (Schönfeld, 2009) analyses hidden costs linked to the manager's level of activity and found that managers who are highly active detract from their investor's returns and that the hidden costs embedded in the fund will be higher. Gruber and Barber et. al. (as cited in Schönfeld (2009) conclude that good managers tend to have lower management costs than bad managers and do not increase their costs over time because they attract new cash flows into their funds (Schönfeld, 2009). Generally, costs decrease the value of invested capital (Schönfeld, 2009) so investors should be wary of funds that charge fees that are not in line with their competitors especially if their performance is not that different from their peers.

2.3 Reasons for investing in unit trusts

2.3.1 Diversification

Some of the main reasons that people invest in unit trusts is due to their ability to diversify risk and to gain access to professional investment management (Moreno & Rodríguez, 2012) and (Ciccotello & Grant, 1996).It is argued by Fama & French (2010) that "many" funds "have extreme returns by chance" (Fama & French 2010,

p. 1916) and investors lose out on superior returns due to costs (Fama & French 2010) . Company retirement plans (Meyer-Pretorius & Wolmarans, 2006) while they have also proven to be a more cost effective vehicle for funding retirement than individual life insurance products (Meyer-Pretorius & Wolmarans, 2006).

Research on funds is not readily available to retail investors and it seldom reaches investors save for comments presented in the media by industry experts and journalists (Rudman, 2008). Information however is accessed easier by larger institutional investors and asset consultants employed by institutions (Rudman, 2008).

Small capitalisation sector funds gain the most from diversification when fund size and fund family size are taken into consideration (Pollet & Wilson, 2008). An explanation to why large-cap funds diversify at a slower rate in response to growth of their assets is due to liquidity constraints on movement in and out of certain assets under management shares (Pollet & Wilson, 2008).

2.3.2 Manager skill

Professional investment managers are hired by mutual fund investors to select securities (Bergstresser, Chalmers, & Tufano, 2009) with the most active funds charging higher fees but managing to outperform their benchmarks after fees (Bergstresser et al., 2009). The random walks model claims that a security's past price behaviour is not an indicator of the security's future price (Sharpe, 1966) so identifying the manager with the right skills maximises the likelihood of achieving persistency in performance (Barras, Scaillet, & Wermers, 2010). Manager skill can be judged by decomposing fund performance into stock-picking ability and market-timing ability (Kacperczyk, Van Nieuwerburgh, & Veldkamp, 2011). Fama and French (2010) established in their investigation however that few active funds produced returns that cover their costs thus refuting the claim that active fund managers outperform their benchmarks and also nullifying the notion of the need for skill per se being a powerful motivation for professional portfolio management. Hence net α returns are negative for most actively managed funds (Fama & French, 2010).

Manager skill adapts to varying economic conditions where focus changes at different points in time and Kacperczyk et al. (2011) found that superior stock

selection occurs in boom times but market timing skill manifests itself during recessions with the same manager being able to adapt to the prevailing conditions. Timing has not been given as much attention as share selection in previous research because it is typically displayed during recessions which are infrequent occurrences (Kacperczyk et al., 2011). Only a few managers display these abilities and they generally hold more cash during recessions while investing in defensive shares thus electing to derisk their portfolios and invest in cyclical shares during booms suggesting that managers actively adjust their strategies depending on the stage of the business cycle (Kacperczyk et al., 2011). Yu (as cited in Hsieh & Hodnett, 2012) found that active South African unit trust managers are not superior stock selectors and therefore do not contribute significantly to investment style returns.

2.4 Definition of a boutique fund

A definition of a boutique fund is difficult to pin down in reputable academic literature (Schönfeld, 2009). Boutique-style mutual fund companies can be characterised as private and often individual or tightly owned niche style fund management companies (Haslem, 2005). Often the owners have extensive experience in the market and sound reputations within the industry. In boom times, there is generally an increase in new managers and a waning during recessions as most managers tend to have started their careers as employees of institutional management companies during boom times (Haslem, 2012).

The independence of being a privately owned investment manager offers flexibility (Schönfeld, 2009) and immunity from the demands of a large corporate owner that is constantly pushing for higher fund performance and profits (Haslem, 2012). The independence allows portfolio managers to maintain their own distinct investment strategies and processes with histories of patience and rewarding performance over the long haul (Masie, 2008). They are also free to determine their own fees and expenses without the interference of an institutional proprietor (Haslem, 2012). The manager's livelihood is often tied to the success of the fund with vast personal wealth investment in the business and as such is also a reflection of how the owner wants their business to be seen in the market (Haslem, 2012) and the manager-owned structure ensures the alignment of manager and investors incentives and

offers the investor a level of comfort about the longevity of the fund's management (Schönfeld, 2009).

Long-term focus and investment process rather than growing assets under management is the main driving force behind the business model. Hence, one rarely finds portfolio managers leaving to take up higher paying jobs (Haslem, 2012). Client communication through newsletters and other mediums is a useful tool used by boutique managers to stay close to their clients to share valuable insights with them on their different philosophies, strategies and market commentary (Haslem, 2012).

A caveat that needs to be added though is that boutique funds must not necessarily be smaller funds for the philosophy and management style to hold true (Haslem, 2012). Other characteristics in combination with size also exemplify the definition of a boutique fund for the purposes of this research report.

Certain parameters have been used to set the limits for what falls within a boutique fund. These are:

- Relatively small fund sizes (Braham, 2009). In this case, an amount under R1 billion
- Do not have many funds on their platform but are more focussed in their offering (Braham, 2009)
- The existence of an owner manager structure where the owner has an amount of invested capital in the business (Schönfeld, 2009). Often but not always family-run (Braham, 2009)
- Are actively managed (Schönfeld, 2009)
- And/or a founder manager who has an active role in the business operations (Braham, 2009) and (Schönfeld, 2009).

In Australia, investors have also started to channel funds to smaller managers leading to growth in the boutique fund offering. Gallagher & Martin (2005) have found their recent performance has been superior to larger managers. Clients are attracted to their flexibility and their success has introduced numerous new competitors into the sector (Gallagher & Martin, 2005).

One of the big advantages for investors is that boutique funds introduce diversification opportunities to the market by investing in niches that their larger competitors cannot invest in due to their large sizes (Schönfeld, 2009). Volatility is also alleviated by the boutique market because boutique funds spread their holdings of shares across many investors as opposed to a concentration of large institutional funds with few investors (Schönfeld, 2009). Their small size make them a flexible option for investors (Schönfeld, 2009).

Owning a substantial amount of equity in the company insures against their leaving due to pay disgruntlement or higher salaries offered by competitors. The advantage of owning a stake in the business and the independence of working on their own terms in a small establishment are great motivation for long tenures (Schönfeld, 2009) and (Haslem, 2012).

2.5 Fund size as an indicative measure of performance

Past performance tends to determine the growth of a fund's size (Ciccotello & Grant, 1996). Good historical performance tends to lead cash inflows. This leads to some funds eventually growing into large funds because investors are inclined to invest heavily in response to the communications about a fund's past success (Ciccotello & Grant, 1996). However, once too large, those historically well-performing funds, do not outperform their peers. Individuals with aggressive growth appetites would do well to invest in smaller funds to maximise their wealth (Ciccotello & Grant, 1996).

An investigation of the relationship between unit trust performance and the performance of shares listed on the JSE in a paper titled *unit trust funds and stock returns* has been conducted by Anderson (2009). Another similar study by Pillay et al. (2010) examines whether a fund's size has the ability to influence its performance over an equal weighted index. They found that over their study period of 18 years small funds outperformed larger funds on the JSE. The nimbleness of boutiques can be evidenced in their ability to invest in illiquid small capitalisation shares. A large fund faces illiquidity constraints so is restricted from investing in small capitalisation shares (Pillay et al., 2010). This competitive advantage allows a boutique to take large active bets in its best ideas (Chen et al., 2004). Illiquidity detracts from large fund performance by forcing large managers to invest heavily in

mediocre ideas and taking large bets per share than is ideal (Chen et al., 2004). When the research was conducted in the United States mutual fund industry Pollet and Wilson (2008) found this relationship not to be true. In addition, they concluded that a minority of actively managed equity funds can continually perform better than passive investment strategies (Pollet & Wilson, 2008).

Academic research which explores the effect of size on fund performance does not provide specific results with some researchers observing a negative relationship between fund size and performance, others finding a positive effect and some finding no relationship between them (Bodson et al., 2011). Largely, the literature related to the effects of fund size and performance finds a negative relationship between performance and asset size (Bodson et al., 2011). A negative relationship implies that as a fund's size increases its performance deteriorates, while a positive relationship means that growth in fund size and fund performance move in the same direction.

Droms and Walker (1994) did not observe a relationship between fund size and performance in international mutual funds study. Their report used among other explanatory variables to study effects on performance, asset size, expense ratios and turnover rates. Fund size was found to be insignificantly different from zero for both unadjusted and risk-adjusted returns (Droms & Walker, 1994) and (Ciccotello & Grant, 1996).

2.5.1 Fund size and costs

Fund size is not as decisive a determinant of fund performance for passive managers who adopt a buy and hold strategy as it is for managers following an active trading strategy (Chan et al., 2009). The difference stems from transaction costs (Chan et al., 2009). Costs are reduced through economies of scope, however, for fixed income investors who are invested in many fixed income funds (Banko, Beyer, & Dowen, 2010). The relationship does not hold for equity funds (Banko et al., 2010). As cited in Pollet and Wilson (2008), Berk and Green concluded that there was a tipping point where sufficient investment was achieved and investing any more funds into a fund would cease to yield any advantage which is why some funds end up closing their funds to new investment flows.

Funds are reluctant to diversify by investing in more varied stocks as they grow larger but elect to rather increase the stakes of shares that they already own in response to increased assets (Pollet & Wilson, 2008). To counter market impact costs large managers tend to trade in larger capitalisation shares and taking smaller increments in holdings in large capitalisation shares, making smaller investments and keeping trading activity to a minimum (Chan et al., 2009). This strategy leads to portfolios experiencing an opportunity costs because of the limitations that have to be placed on the funds to avoid market impact costs (Chan et al., 2009). Pollet and Wilson (2008) observed that every doubling in fund size caused a disproportionate increase in the number of stocks of just 10% demonstrating that smaller funds are better diversifiers than large funds

In a study by Zera and Madura (2001), a larger fund size was associated with smaller expense ratios which lead to positive performance. They hold that efficiency continually improves with increasing funds under management and predict consolidation in the mutual fund industry in order to continually improve (Zera & Madura, 2001). With increasing size then we may, for example, expect to observe merger activity within the mutual fund industry as funds and fund families attempt exploit the benefits of economies of scale (Zera & Madura, 2001).

Some authors have found the ideal fund size for superior performance, including Indro, Jiang, Hu, & Lee (1999) in Bodson et al. (2011) who maintain that mutual funds must be of a minimum size to allow for the achievement of sufficient returns that substantiate their costs of obtaining and trading information. In addition, their research finds that a point of diminishing marginal returns is reached when the fund grows and exceeds its optimal size (Bodson et al., 2011). In older work done by Collins and Mack (1997) they found that the ideal size for a multi-product portfolio in the United States was between $20 billion and $40 billion. They concluded that a single-product fund could achieve economies of scale with fewer assets under management but that cost efficiencies could be found if they were to add more product lines to their portfolios (Collins & Mack, 1997).

The principle being researched is whether small unit trust asset managers outperform large unit trust asset managers in the South African asset management context. The argument could be made that large funds are more cost effective

vehicles due to efficiencies that are achieved when funds increase (Yan, 2008). On a relative basis, overhead expenses, brokerage and research costs tend to be higher as a percentage to assets under management for smaller portfolios than for larger portfolios (Yan, 2008).

Contrary to the findings by Yan (2008), other researchers such as Perold and Salomon (as cited in Yan (2008) hold that a large asset base makes a fund less flexible and unable to perform due to liquidity challenges faced by a larger fund (Yan, 2008). There is an inverse relationship between fund size and fund performance (Kumlin & Puttonen, 2009). Some large active managers resort to placing a ceiling on their total funds under management in avoiding the risk to performance that a big fund carries (Gallagher & Martin, 2005). The ceilings ensure the regulation of diseconomies of scale when chasing active investment returns (Gallagher & Martin, 2005). The size dilemma is ever present with successful and growing asset managers because their size will eventually lead to a drag on performances (Gallagher & Martin, 2005) and also because existing investors penalise poorly performing managers by withdrawing their investments following a cycle of underperformance (Cashman, Deli, Nardari, & Villupuram, 2012). Poor performance leads to large outflows the same way that superior performance results in large inflows (Cashman et al., 2012) rendering fund size an unpredictable variable that is to some extent controlled by performance.

2.6 Agency theory

"The most widely applied theory in the case of ownership structure of companies is agency theory" (Jones, 2008, p. 5). The agency theory concept explains the relationship between the owner and the individual who has been delegated the controls of the operations of a company. The divergence in owner and manager interests in certain circumstances could cause deviation from firm profit maximisation (Fox & Hamilton, 1994). It is widely believed that owner-managed entities perform better and cheaper than non-owner managed entities (Jones, 2008).

An agency problem also exists between an investor and a portfolio manager where the investor authorises the portfolio manager to administer their investment and

pays the manager for the service (Dybvig, Farnsworth, & Carpenter, 2010). The agency problem brings to the forefront the reason for protecting fund shareholders 'interests and developing the public's confidence in the domestic investment industry (Kong & Tang, 2008). Although long established, the industry still faces the principal-agent problem where investment managers and investors have differing incentives (Kuhnen, 2009). Unit trust managers' profit is generated by collecting management fees (Kuhnen, 2009). The industry norm is to expense management fees as a proportion of fund size, but investors' profit is determined by funds earning high returns (Kuhnen, 2009). Incentive fees are different from management fees in that they are charged based on the performance of the portfolio and are effective marketing resources because, holding all else equal, a greater proportion of new cash flows get invested into incentive-fee funds than into non-incentive-fee funds (Elton, Gruber, & Blake, 2003).

Incentive fees, a management compensation reward scheme that is linked to investment performance relative to a specified benchmark, are often used to compensate investment managers (Elton et al., 2003). Incentive fees are popular with clients and managers because they align both parties interests to one another as the investment performs better so does the manager's compensation because of their greater efforts used to enhance portfolio performance (Elton et al., 2003). Incentive fees also discourage mediocrity in managers by allowing them to, to some extent, "write their own pay check" so they generally have managers with superior skills running them. Therefore, it is a reasonable conclusion that investors would be more willing to dedicate more capital in the funds that charge incentive fees (Elton et al., 2003).

Dybvig et al. (2010) propose the correct incentives to overcome the agency problem by deriving a contract that incentivises the manager to put effort into outperforming while keeping the investor's risk in consideration where they construct a first-best world, second-best world and a third-best world. In the first best case a proportional sharing rule is best for parties (Dybvig et al., 2010). The second-best scenario adds to this by including a bonus which is proportional to the excess return which encourages the manager to work hard to achieve the agreed upon performance target (Dybvig et al., 2010). But there are diminishing returns to this incentive scheme, evidenced by the thirst-best world's manager's tendency to

become overly conservative so as not to compromise the earning of a bonus (Dybvig et al., 2010).

2.7 The manager's ownership influence on performance

Khorana et al. (2007) in their study, entitled *Portfolio manager ownership and fund performance,* conduct research to determine whether higher ownership by portfolio managers is associated with improved future performance where it can be concluded that managerial ownership is a predictor of future returns (Khorana et al., 2007). The study conducted by Khorana et al. (2007) revealed that nearly half of all managers that were studied owned stakes in their funds, though the absolute investment was found to be minor when contrasted to the total fund size. Future risk-adjusted performance was found to be positively related to managerial ownership, and found that performance improved by about 3 basis points for each basis point of managerial ownership Khorana et al., 2007). Fund manager ownership was higher in funds with "better past performance, lower front-end loads, smaller size, longer managerial tenure, and funds affiliated with smaller families" (Khorana *et al*., 2007, p. 179).

Mehran and Stulz (2007) carried out a review that examined conflicts of interest in financial institutions. Their article cites Chen et al. (2007) who compared active funds managed by insurance companies with other mutual funds and they found funds that are managed by insurance companies underperform other mutual funds (Mehran & Stulz, 2007). Alves and Mendes (2010) highlighted the tendency for mutual funds hold overweight positions in shares issued by their parent and having underweight positions in competitor's share, thus eroding the performance of fund investors (Mehran & Stulz, 2007) and highlighting the agency problem of affiliated institutional funds (Alves & Mendes, 2010).

In the United States, governance concerns have necessitated fund managers disclose their holdings to make their investment process transparent and to eliminate the public's and regulatory concerns about front running (Evans, 2008). Unlike South Africa, since March 2005, funds in the United States have had to disclose manager holdings in funds (Evans, 2008) and (Khorana et al., 2007). The ownership is disclosed by the use of various ranges: $0, $1–$10,000, $10,001–$50,000, $50,001–$100,000, $100,001–$500,000, $500,001–$1,000,000, and

above $1,000,000 (Khorana et al., 2007). The disclosures were introduced in regulations set out by the Securities and Exchange Commission (SEC) in 2004 in order to moderate investors' risk following scandals in the industry (Khorana et al., 2007). The lack of South Africa's need to disclose this information means that no data exits to investigate whether this variable would have any significant bearing on fund manager's ability to outperform.

Though there was some criticism of the policy at first, it has been adopted and is now an element of mutual fund investing (Khorana et al., 2007). In Finland, the information is also available at investors' request and is published in the fund's Statement of Additional Information (Kumlin & Puttonen, 2009). Ownership of funds serves as an incentive to achieve superior fund returns as managers become more aggressive in their pursuit of α when their own personal wealth is tied to their fund's upside (Evans, 2008). Many fund managers have a portion of their compensation tied to the returns that they generate (Evans, 2008). Khorana et al. (2007) reached the same conclusion as Evans (2008), finding that fund performance increased by a margin of 2.4 to 5 basis points for every one basis point increase in portfolio manager ownership of their fund. Since the introduction of the disclosure regulations in the United States there has been a move by trustees to insist on ownership in mutual funds by their fund managers (Kumlin & Puttonen, 2009).

Other incentives that have been used to encourage manager performance are monetary compensation which include salaries and bonuses that are linked to fund performance (Khorana et al., 2007). In South Africa, according to recruitment specialists, Robert Walters, a wealth or investment manager with 1-8 plus years of experience can expect to earn R300,000 to R800,000+ per annum excluding bonuses. Precise information is difficult to obtain because all employment contracts are different and are treated confidentially.

The second incentive for favourable performance is dismissal. More precisely, it is the dismissal of the portfolio manager for non-performance of their fund (Khorana et al., 2007).

The third incentive is the dismissal of the fund management company by the board of trustees. This is an indirect method of also dismissing the fund manager (Khorana et al., 2007). An employee will choose to act in a way that decreases their chances of being dismissed while also striving to enhance their performance in order to increase their odds of receiving a bonus (Farnsworth & Taylor, 2006).

The responsibility for the fund's returns lies with the portfolio manager and their incentives are therefore more likely than other factors to affect performance. Furthermore, the fund manager is more likely to be better informed about the future performance of their fund (leading to superior future performance), which could lead the manager to acquire a larger fraction of the fund to benefit from the gains (Khorana et al., 2007). Determinants of manager fund ownership according to (Khorana et al., 2007) were found to be:

- past performance – with better past performance came a higher propensity for manager ownership;
- low costs – funds that had lower front loaded cost experienced higher ownership loyalty;
- Assets under management – the smaller the fund the higher the ownership was found;
- managerial term – the longer a manager had been overseeing the fund the more likely he was to invest in the fund
- Smaller fund families – the larger the family the less likely was the probability for high manager ownership.

In the United States, funds which are run by managers with little personal invested interest have lower style-adjusted returns than do funds where managers hold a substantial value of their wealth in the funds that that they manage (Evans, 2008).

The same reasoning could not be applied to the Finnish mutual fund industry where similar disclosure rules apply (Kumlin & Puttonen, 2009). A relationship between ownership and performance does not exist but instead there is negative relationship between managerial ownership and fund performance when ownership was calculated as a portion of the manager's total wealth because managers were found to invest in funds with high risk profiles but with commensurate lower returns (Kumlin & Puttonen, 2009). Having found that the relationship cannot be assumed

to apply to every economy, a South African study would likely yield unpredictable results when held up to scrutiny.

2.8 Conclusion to literature review

When it comes to fund size and its effect on fund performance, the literature is varied and is highly dependent on the period studied, the domicile of the market and methods adopted to conduct the research.

The South African unit trust industryhas come a long way since its origins in the 1960s in the number of funds available and investors accessing them. With the growth of the industry emerged the boutique fund trend in following the increased availability of skills and manager's desire to be independent.Academic literature on the subject of boutique funds was thin but parameters of what a boutique constitutes for purposes of this research report have been laid out. Though industry costs have been decreasing they still have an impact on investment returns.Even though investors have become more sophisiticated they continue seek out the services of investment professionals.The literature was also inconclusive about portfolio size and its implications on portfolio returns and the subsequent chapters seek to add colour to previous observations and formulate relevant findings.

CHAPTER 3: RESEARCH QUESTIONS AND HYPOTHESES

As evident in the literature a significant amount of research has been conducted over the years, largely in the United States relating to fund size effects on fund performance with contradictory findings and on boutique fund performance versus institutional fund performance with previous research indicating that boutique experience superior investment performance to institutional funds. This particular research focuses on the South African market. To explore these research aims, two questions are derived. To explore the implications of fund size and boutique/institutional performance implications two research hypotheses were introduced.

3.1 Research questions

1. What is the effect of fund size on fund performance?
2. Is fund performance different between institutional and boutique funds?

3.2 Hypotheses

The research questions posed under point 3 were measured under section 3.1 by means of hypothesis testing.

3.2.1 Hypothesis 1

The null hypothesis can be stated as: there is no relationship between a unit trust's fund size and fund performance.

The alternative hypothesis can be stated as: there is a relationship between the unit trust's size of assets under management and fund performance.

$H1_0$: ($\mu_{fs} \neq \mu\alpha$).
$H1_A$: ($\mu_{fs} = \mu_{\alpha}$).

3.2.2 Hypothesis 2

The null hypothesis can be stated as: there no difference between boutique and institutional fund performance

The alternative hypothesis can be stated as: there is a difference between boutique and institutional fund performance

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Unit of analysis

General unit trust funds from Quarter 1 2001 to 31 December 2011 (Quarter 4) were tested because availability of reliable information before then was fragmented and would have compromised the study. There was some survivorship bias (Bu & Lacey, 2007; Pawley, 2006) because some funds had died off during the period through either absorption by other funds or closing of the funds. The portfolio manager information was true for the last period under review because the management tenure information was lacking for some periods therefore tenure could not be established for a period longer than the last reporting quarterly period for funds that reported portfolio manager details but not tenure information.

4.2 Population

The population was the entire domestic general equity funds sector of the domestic unit trust category. Some unit trusts will have changed names, ownership structure or been dissolved. The renaming and merging of funds were managed as and when they occurred throughout the research period.

Selecting to study domestic general equity funds made the comparison between funds with similar mandates more feasible because the funds would be exposed to similar circumstances and have familiar risk and return characteristics (Rudman, 2008). This approach was adopted in order to eliminate anomalies associated with other investment classes in so doing yielding more credible results and eliminating selection bias (Rudman, 2008). Domestic general equity unit trusts were also selected because they represent the largest class of unit trust total assets under management (Anderson, 2009). They also have similar benchmarks and restrictions to investing in South African JSE-listed equities across all sectors and hold equities throughout all periods with not switching into alternative asset classes (Anderson, 2009). However, the funds do aim for different benchmarks with the most common being the All Share Index (ALSI) followed by the Shareholder Weighted All Share Index (SWIX). The funds were contrasted against the ALSI to observe difference in returns. Multi-class funds were not included in the study because they do not have the same drivers and face different risk and performance drivers to domestic long only equity funds (Rudman, 2008).

The results were calculated net of fees because all asset managers have different fee structures. The data formed a time series of 44 quarterly reporting periods. Fund performance was collected on a total return basis to take into account capital appreciation and dividend income (Collinet & Firer, 2003).

4.3 Sample size

A total of 104 domestic unit trust funds (with mergers and name changes included) were examined for the existence of a fund size fund performance relationship.

To analyse the boutique versus institutional fund performance relationship, the sample consisted of 16 for boutique management companies and 39 institutional management companies.

4.4 Sampling method

The whole population of funds that were active during the period were examined for a directional relationship between the stated variables. The reason for taking this period was because it took into account various business cycles and the performance and fund size data contained therein was more reliable than earlier available data. There were 115 active general equity funds listed at 31 December 2011 (ASISA, 2011) but not all of them were examined due to a lack of data for some of them over the period.

4.5 Research instrument

The research was carried out with a two-pronged approach. A quantitative explanatory research approach (Saunders & Lewis, 2012) was adopted to analyse the secondary data of general domestic equity funds that were registered with ASISA. The first investigation was to assess the causal links (Saunders & Lewis, 2012) between fund size and fund performance. The data was used to investigate whether the change in an independent variable, in this case fund size, brought about a change in fund performance which was the dependent variable (Saunders & Lewis, 2012). A time series was run to analyse whether there is predictability in the fund size fund performance relationship and regression analysis was used for testing the strength of the relationship between the two variables.

The second experiment was to test for performance difference between boutique funds and institutional funds. For this a parallel group study (Carlson & Thorne, 1997) between the two groups was carried out. The funds were categorised into boutique and institutional groups. The average returns for each quarterly reporting period across all funds were then calculated in an excel model. Once the averages had been calculated an index was set and based at 1 in the first quarter 2001 and calculated for every subsequent quarter until December 2011. The index was calculated as

$$yt = 1 * (1 + xt)$$

Where y is the index value at quarter t

x is the average return at quartert

Once derived the indices were plotted on a same-scale graph to examine the difference of one from the other. To test for fit different models were used including the use PACF/ACF model and ordinary least squares model. Eventually the ARIMA model was used to test for goodness of fit. For the ALSI total return index performance, the base formulae function in i-Net's i-Graph was used. The index was based just the institutional and boutique indices were.

4.6 Data collection

Total return unit trust fund performance information was collected from MoneyMate and this data was tested using regression analysis to establish the relationship between the dependent and independent variable. A correlation test was then run to establish the strength of the observed relationships established in the regression analysis model.

The initial data was collected from the ASISA database. From that base, the information was built on by using MoneyMate and i-Net Bridge, the Fundsdata website and Morningstar. This database contains quarterly returns, benchmarks, and numerous firm- and product-level attributes for 96 domestic general equity unit trust products managed by asset management firms. Considering the total funds that were available from the study's initiation date to 31 December 2011, there were a total of 216 funds available for analysis.

To keep the findings consistent, all funds that existed and were usable during the period were analysed. Funds that were classified as unusable were those that did not have data available, either for fund size information or performance data information. The funds had to have corresponding fund size and performance data to be usable when testing for the first hypothesis. When testing for boutique and institutional performance difference available fund size data was used as a guide but not an input into statistical modelling. The main concern in that study set was the relative performance of the boutique index against the institutional index. Name changes and mergers were manually consolidated using data from Morningstar.

Fund data, which included quarterly performance figures since 31 March 2001 to 31 December 2011 was collected from MoneyMate to compliment the ASISA database information where it was missing. MoneyMate only displays the performance data of "live" funds and does not display discontinued funds. Where fund performance data was missing due to inconsistency of surviving and dead funds the data was collected from ASISA's website which has archived fund statistic information. The missing data was manually captured onto the performance data sheet. MoneyMate overrides old fund sizes with new fund sizes as and when fund size fluctuates therefore its figures were unusable. Again archived ASISA quarterly fund information was accessed to capture fund sizes over the periods under investigation. The observations were added to the performance data sheet. Initial fund charges were collected from the Fundsdata website and portfolio manager names were collected from MoneyMate. Portfolio manager names were necessary to investigate the links between owner/founder relationships with investment management operations of the fund. Fact sheets and company websites were accessed to collect fund history information which often includes the fund's origins, ownership and management structures.

4.7 Data analysis

To assess whether large funds and small funds behave the same, fund size and performance were grouped into 2 categories – small and large then a time series was run for both.

The confidence interval was set at 95% or a 5% significance level which was considered to be an acceptable level for measuring the p-value because

"deviations exceeding twice the standard deviation are thus formally regarded as significant" (Dallal, 2012, para. 6). Using fund size of under R1 billion and portfolio manager owner/founder relationship information the various funds were divided into two categories – boutique and institutional.

Once the funds had been placed in categories tests were run separately to assess the performance of one versus the other to establish whether boutique funds (institutional funds) outperform institutional funds (boutique funds).

4.8 Limitations

Portfolio manager details can were assumed to be true for the entire period if tenure was not disclosed in MoneyMate.

Fund ownership disclosure rules are not mandated by regulatory bodies in South Africa therefore data collection may be a challenge considering people's desire for privacy.

The population would include long only equity invested funds therefore excludes the holdings of other forms of securities such as cash, bonds and derivatives.

The population is large and could prove to be cumbersome to work with given the limited time constraints.

Mandates are different across funds so they are not directly comparable even though they are all categorised as domestic general equity funds.

There was missing data for fund size and performance data. The missing data was not significant and for this reason where it was missing averages were employed to plug the blank fields.

Mergers and name changes are inconsistent with no database found that gives this information concisely. Some manual consolidation had to be conducted thus (compromising the integrity of the data)

The research will be conducted on South African funds therefore a universal conclusion of the results cannot be inferred.

These results may also depend on the kind of funds analysed, the investment strategy employed by the fund or the performance measure used to calculate the extent of over or underperformance of a fund.

Other characteristics such as daily management and involvement in the business of the founder/owner of boutique funds are not quantifiable.

Chapter 5 presents the results observed.

CHAPTER 5: RESULTS

5.1 Description of sample

Data was analysed from March 2001 to December 2011 an examination of fund performance was carried out. A total of approximately 60 hours over a period of two months was used to organise, collate and clean the data. Data cleaning included:

- Filling in gaps of missing data where it was missing in the initial sample
- Consolidating data from different sources such as MoneyMate, ASISA, Fundsdata and Morning star to fill in missing data
- Manual merging of funds that had undergone transitions during the period under review
- Cross checking of the data across the various information databases for consistency
- Organising data into small funds and large funds
- Organising data into boutique-style funds and institutional funds
- The data is organised in two different ways; data for time series analysis consists of means for fund classifications (whether by size or type of fund) over time.

5.2 Effects of fund size on performance

Aggregated fund size information was analysed for its effect on fund performance using a regression model. Table 5.1 and 5.2 show the summary regression model and ANOVA model respectively.

Table 5.1 Fund size regression model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.006[a]	.000	.000	.0840130

a. Predictors: (Constant), Fund Size

The level of significance (p-value) was 5% and the ANOVA test renders a p-value of 0.769.

Table 5.2: Fund size ANOVA model

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.001	1	.001	.086	.769[a]
	Residual	15.450	2189	.007		
	Total	15.451	2190			

a. Predictors: (Constant), Fund Size

b. Dependent Variable: Performance

To test whether this phenomenon manifests itself in both boutique and intuitional funds the tests were run again but this time the funds were categorised into boutique, institutional and unknown funds. Unknown funds are those that did not fit into either boutique or institutional category due to ambiguities in characteristics. The results from the tests are presented in appendices 2 to 10.

5.2.1 Estimated marginal means

Size

Estimates

Table 5.3 Dependent variable: quarterly performance

Size	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Institutional	3.755	.161	3.423	4.087
Boutique	3.819	.161	3.488	4.151

Pairwise comparisons

Table 5.4 Dependent Variable: Quarterly performance

(I) Size	(J) Size	Mean Difference (I-J)	Std. Error	Sig.a	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Institutional	Boutique	-.065	.228	.779	-.534	.405
Boutique	Institutional	.065	.228	.779	-.405	.534

Table 5.2 demonstrates that size does not have an effect on investment performance because it is higher than a 5% level of significance at 0.769..

Table 5.4 demonstrates the size effects of institutional and boutique funds.

The ANOVA results are presented in table 5.5 below. The results show that while size does not affect performance (F=0.080, df1=1, df2=25, *p*-value=0.779), period (time) does have an effect on performance (F=177.752, df1=25, df2=25, *p*-value=0.000).

Table 5.5 One-way analysis of variance of fund performance on type

Dependent Variable: **Quarterly performance**						
Independent Variables: **Size, Period (Time)**						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Significant/ Not Sig
Corrected Model	3000.395	26	115.400	170.919	.000	
Intercept	745.837	1	745.837	1104.658	.000	
Size	.054	1	.054	.080	.779	Not sig.
Period	3000.341	25	120.014	177.752	.000	Sig.
Error	16.879	25	.675			
Total	3763.111	52				
Corrected Total	3017.274	51				

5.3 Time series of the performance of small funds

As a follow up to the significance of time as a factor affecting fund performance it is of interest to carry out a time series analysis of fund performance. The funds were again separate based on size and a time series analysis carried out. The results for time series analysis of small funds are presented in Table 5.6 below.

Table 5.6 ARIMA model for the performance of small funds

MTB >ARIMA 0 1 1 c3 **Performance - Small funds**

ARIMA Model

Final Estimates of Parameters

Type	Estimate	St. Dev.	t-ratio
MA 1	0.9512	0.0593	16.04

Differencing: 1 regular difference

No. of obs.: Original series 44, after differencing 43

Residuals: SS = 0.270615 (backforecasts excluded)

MS = 0.006443 DF = 42

Modified Box-Pierce (Ljung-Box) Chi-square statistic

Lag	12	24	36	48
Chi-square	8.2(DF=11)	18.2(DF=23)	25.0(DF=35)	* (DF= *)

The time series model table 5.6 is significant (*t*-ratio=16.04, *df*=42). A t-ration greater than 2 is generally indicative of a significant parameter.

The model is

$Y_t = Y_{t-1} + e_t + 0.9512e_{t-1}$.

5.4 Time series of the performance of large funds

The results for the time series model for large funds are presented in Table 5.7 below.

Table 5.7 ARIMA model for the performance of large funds

MTB >ARIMA 0 1 1 **Performance - Large funds**

ARIMA Model

Final Estimates of Parameters

Type	Estimate	St. Dev.	t-ratio
MA 1	0.9519	0.0628	15.17

Differencing: 1 regular difference

No. of obs.: Original series 44, after differencing 43

Residuals: SS = 0.291085 (backforecasts excluded)

MS = 0.006931 DF = 42

Modified Box-Pierce (Ljung-Box) Chi-square statistic

Lag	12	24	36	48
Chi-square	6.8(DF=11)	14.9(DF=23)	21.5(DF=35)	* (DF= *)

The time series model is significant (*t*-ratio=15.17, *df*=42).

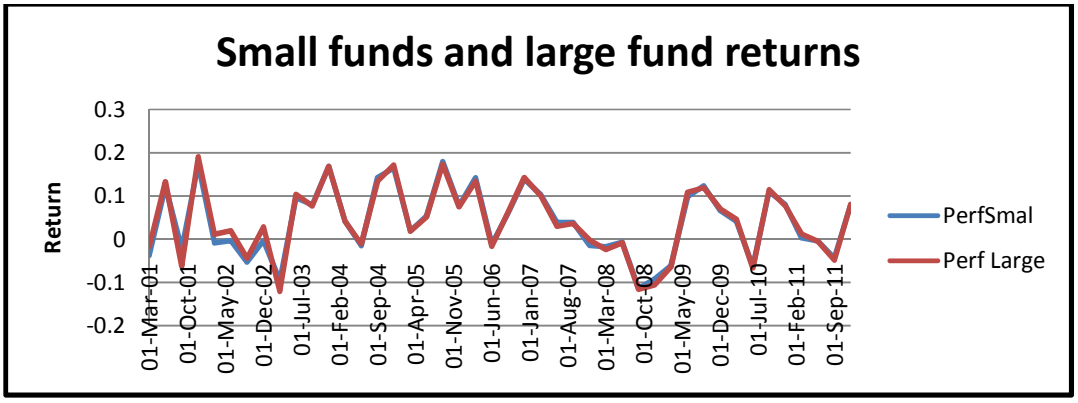
The time series model in table 5.7 is significant (*t*-ratio=15.17, *df*=42). A t-ratio greater than 2 is generally indicative of a significant parameter.

The model is

$Y_t = Y_{t-1} + e_t + 9519e_{t-1}$.

Although this model predicts based on past values it ignores the effects of size on current performance. In a way the regression model with time and size should have better predictive properties than the time series model which consider size alone as a predictor of performance. Figure 5.1 shows the close relationship between small and large fund return behabiour.

Figure 5.1 Small versus large fund returns



Source: ASISA, MoneyMate

5.5 Regression of performance on size alone and time

5.5.1 Regression of performance on size alone (small funds)

Fitting a regression model of Performance for small funds on fund size yields a non-significant model as shown by the ANOVA results below (*F*=3.101, *df1*=1, *df2*=42, *p*-value=0.086).

Regression

Table 5.8 Small funds model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.262[a]	.069	.047	.0767844

a. Predictors: (Constant), Size - Small

Table 5.9 Small funds ANOVA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.018	1	.018	3.101	.086[a]
	Residual	.248	42	.006		
	Total	.266	43			

a. Predictors: (Constant), Size - Small

b. Dependent Variable: Performance - Small

Table 5.10 Small funds Coefficients

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t-test	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.010210073	.030929310		-.330	.743
	Size Small	.000262309	.000148958	.262	1.761	.086

a. Dependent Variable: Performance - Small

5.5.2 Regression of performance on size and time (small funds)

Fitting a regression model of performance for small funds on fund size and time (*t*) yields a significant model as shown by the ANOVA results below (*F*=3.395, *df1*=2, *df2*=41, *p*-value=0.043). Size does affect performance if we take out the confounding effect of time on performance. There is a general decrease in performance over time and if the effect of time is not taken account of when assessing the effect of size on performance a wrong conclusion that size doesn't affect performance will be reached. This therefore means that if we were to do a regression of performance on size at a particular point in time we would get significant influence of size on performance.

Using the standardised coefficients the regresion model is

$$\hat{Y}_t = 0.0004199X_t - 0.0019181t$$

where $\hat{Y}_t$ =estimated performance

$X_t = \text{fund size at time} t$

Time has a negative coefficient indicating that in general the performance is decreasing though at a very negligible rate of 0.0019181. The result of importance is that after adjusting t for the effect of time it can be concluded that fund size affect performance.

Regression

Table 5.11 Size and time model summary - small

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.377[a]	.142	.100	.0745926

a. Predictors: (Constant), t, Size – Small

Table 5.12 Size and time ANOVA model - small

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.038	2	.019	3.395	.043[a]
	Residual	.228	41	.006		
	Total	.266	43			

Table 5.13 Size and time coefficients - small

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t-test	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.002589511	.030814589		.084	.933
	Size(Small)	0.000419976	.000167432	.420	2.508	.016
	t	-0.001918139	.001024641	-.313	-1.872	.068

a. Dependent Variable: Performance - Small

5.5.3 Regression of performance on size alone (large funds)

The model is not significant (*F*=0.427, *df1*=1, *df2*=42, *p*-value=0.517). The coefficients of the model are also not significant.

Regression

Table 5.14 Large funds model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.100[a]	.010	-.013	.0817276

a. Predictors: (Constant), Size (Large Funds)

Table 5.15 Large funds ANOVA model

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.003	1	.003	.427	.517[a]
	Residual	.281	42	.007		
	Total	.283	43			

a. Predictors: (Constant), Size (Large Funds)

b. Dependent Variable: Performance(Large Funds)

Table 5.16 Large funds coefficients model

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t-test	Sig.
		B	Std. Error	Beta		
1	(Constant)	.021	.034		.611	.544
	Size (Large Funds)	1.001E-5	.000	.100	.654	.517

a. Dependent Variable: Performance (large funds)

5.5.4 Regression of Performance on size and time (large funds)

The model is significant (*F*=7.364, *df1*=2, *df2*=41, *p*-value=0.002). The coefficients of the model are also not significant. After adjusting for time we realise that size does indeed affect performance. The equation of the regression model is

$$\hat{Y}_t = 0.000115309X_t - 0.007396932t$$

Again this indicates that there is a slight general decline in performance over time. The *p*-values of the coefficients indicate that both time and size affect performance significantly.

Regression

Table 5.17 Size and time model summary - large

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.514[a]	.264	.228	.0713108

a. Predictors: (constant), t, Size (large funds)

Table 5.18 Size and time ANOVA model - large

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.075	2	.037	7.364	.002[a]
	Residual	.208	41	.005		
	Total	.283	43			

a. Predictors: (constant), t, size (large funds)

b. Dependent variable: Performance(large funds)

Table 5.19 Size and time coefficients - large

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t-test	*p*-value
		B	Std. Error	Beta		
1	(Constant)	-0.030736224	0.032663141		-0.94	0.35
	Size (Large Funds)	0.000115309	0.000031001	1.16	3.72	0.00
	Time (*t*)	-0.007396932	0.001965251	-1.17	-3.76	0.00

a. Dependent Variable: Performance(large funds)

5.6 Effects of fund type (Boutique or Institutional) on performance

In this section the effects of fund size on fund performance was investigated. Individual data for each company was compiled in an excel spreadsheet consisting of three columns where the first column indicated the fund type (Boutique or institutional), the second column had the fund size and the last column consisted of the performance value of the fund. A small portion of the data is presented in the table below and altogether there were 2192 funds considered.

Table 5.20 Data entry format for individual funds

Fund type	Fund Size	Performance
Boutique	7.11	-0.0995
Boutique	6.73	-0.0565
Boutique	23.58	-0.0614
Boutique	26.56	0.0904
Institutional	537.60	-0.0919
Institutional	486.90	-0.084
Institutional	474.68	0.0318

The various funds were classified into boutique funds or institutional funds. Those which there was uncertainty about were left blank because only the funds that were certainly one or the other were to be examined.

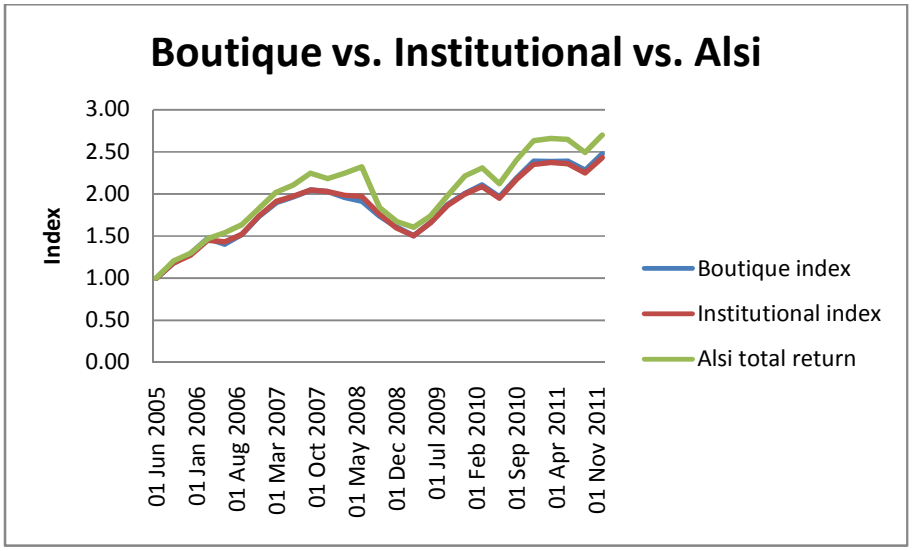
Below is a categorisation of the funds into two distinct groups. The sample comprised 16 boutique style funds companies and 88 institutional funds which are presented in table 5.22. Appendix 12 presents the categorised management companies.

Table 5.21 Categorisation of the sample

Category	Number	Percentage of sample
Boutique	16	15%
Institutional	88	85%

From figure 5.2, it is evident that the Alsi outperformed both the boutique and institutional indices.

Figure 5.2 Performance of the boutique index and institutional index against the Alsi's total return



Source: I-Net, ASISA, MoneyMate

When based to 1 at the same start date of June 2005 it is observed that the boutique index has a slight difference to the institutional index as exhibited in figure 5.2.

Table 5.22 Performance of the boutique index over the institutional index

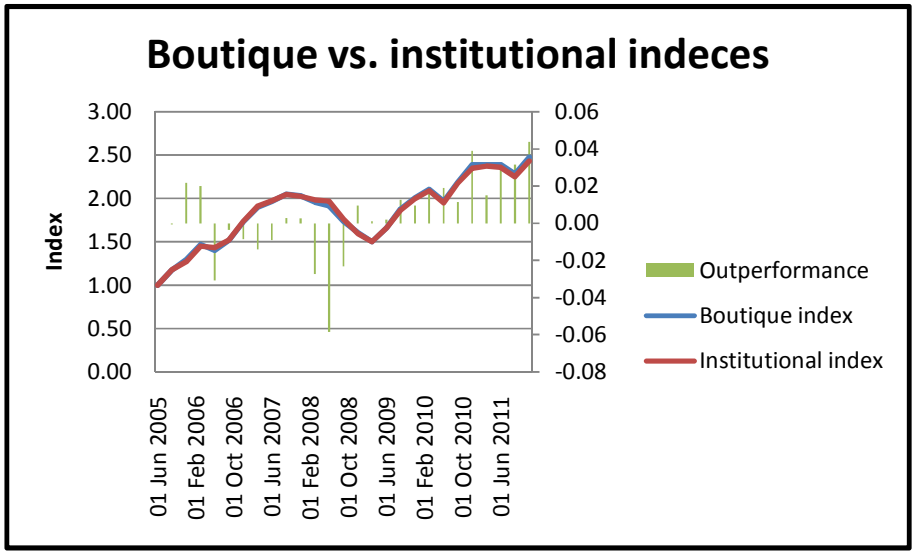
	Boutique index	Institutional index	Outperformance
30 Jun 2005	1.00	1.00	0.00
30 Sep 2005	1.18	1.18	0.00
31 Dec 2005	1.29	1.27	0.02
31 Mar 2006	1.47	1.45	0.02

30 Jun 2006	1.40	1.43	-0.03
30 Sep 2006	1.52	1.52	0.00
31 Dec 2006	1.73	1.74	-0.01
31 Mar 2007	1.90	1.91	-0.01
30 Jun 2007	1.97	1.97	-0.01
30 Sep 2007	2.05	2.05	0.00
31 Dec 2007	2.03	2.03	0.00
31 Mar 2008	1.96	1.99	-0.03
30 Jun 2008	1.91	1.97	-0.06
30 Sep 2008	1.74	1.76	-0.02
31 Dec 2008	1.61	1.60	0.01
31 Mar 2009	1.50	1.50	0.00
30 Jun 2009	1.66	1.66	0.00
30 Sep 2009	1.88	1.87	0.01
31 Dec 2009	2.01	2.00	0.01
31 Mar 2010	2.11	2.09	0.02
30 Jun 2010	1.97	1.95	0.02

30 Sep 2010	2.19	2.18	0.01
31 Dec 2010	2.39	2.35	0.04
31 Mar 2011	2.39	2.37	0.02
30 Jun 2011	2.39	2.36	0.03
30 Sep 2011	2.28	2.25	0.03
31 Dec 2011	2.48	2.43	0.04

Source: ASISA, MoneyMate

Figure 5.3 Boutique versus institutional fund performance



Source: ASISA, MoneyMate

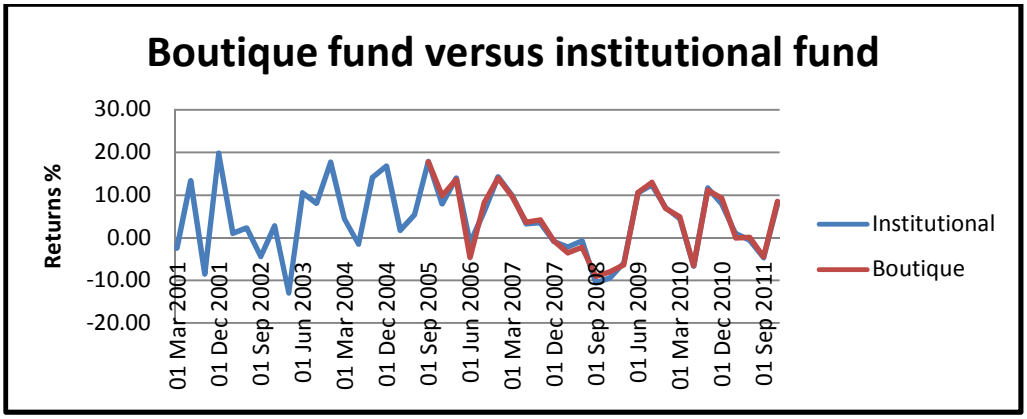
For t = 1 to n: $Difference_t = Boutique\ index_t - Institutional\ index_t$

5.7 Time series analysis

The quarterly time series plots for the institutional and boutique funds performance data for the period 30 March 2001 to 31 Dec 2011 is shown below in figure 5.4. In

the chart it is clear that the two funds follow each other closely in performance. Data for the boutique funds were not available for the period before June 2005.

Figure 5.4 Boutique fund versus institutional fund performance since beginning of study period



Source: ASISA, MoneyMate

5.7.1 Institutional funds

Several models were tried and the final model that fitted the institutional data well has the results in the output table 5.15 below. The Box and Jenkins ARIMA (Autoregressive Integrated Moving Averages) models are used to model time series data. Many tentative models are tried until the model that best fits the data is selected. The parameters of the ARIMA model can be selected based on the autocorrelation function (ACF) for the moving average parts of the model and the partial autocorrelation function (PACF) for the autoregressive parts of the model.

The adequacy of the model can be tested by the Box-Pierce Statistics which evaluates if there are significantly large residuals when the models is fitted. If the Box-Pierce Statistic is significant then it means that the residuals, that is the difference between the model forecast value and the actual observed value, are significantly large hence the model is not of good fit to the data. On the other hand if the Box-Pierce Statistics are not significant then the model is of good fit to the data.

Table 5.23 ARIMA model of institutional fund performance

MTB >ARIMA 0 1 1 c1
ARIMA Model

Final Estimates of Parameters

Type		Estimate	St. Dev.	t-ratio
MA	1	0.9530	0.0613	15.55

Differencing: 1 regular difference

No. of observations: Original series 44, after differencing 43
Residuals: SS = 3018.13 (back forecasts excluded)
MS = 71.86
DF = 42

Modified Box-Pierce (Ljung-Box) Chi-square statistic

Lag	12	24	36	48
Chi-square	6.9(DF=11) [critical is 19.68]			
	15.0(DF=23) [critical is 35.17]			
	21.5(DF=35) [critical is 51.00]			

The model for estimating the performance of an institutional fund is given by

$$Y_t = Y_{t-1} + e_t + 0.9530e_{t-1}$$

where Y_t is the performance value at time *t*,

Y_{t-1} is the performance value at time *t*-1,

e_t is the random error at time *t*, estimated by $Y_t - Y_{t-1}$ or set to zero when Y_t is not yet observed.

e_{t-1} is the random error at time *t*-1, estimated by $Y_{t-1} - Y_{t-2}$.

The model is of good fit to the data as the Modified Box-Pierce Chi-square statistic show non-significant residuals. This means there is not much deviations of the observed values from the estimated values. In other words the models trace the movement of the actual data very well. It is of interest to compare this model with the model for the boutique funds.

5.7.2 Boutique funds

Table 5.24 ARIMA model of boutique fund performance

MTB >ARIMA 0 1 1 c2

ARIMA Model

Final Estimates of Parameters

Type		Estimate	St. Dev.	t-ratio
MA	1	0.6470	0.1538	4.21

Differencing: 1 regular difference

No. of observations: Original series 26, after differencing 25

Residuals: SS = 1504.82 (back forecasts excluded)

MS = 62.70

DF = 24

Modified Box-Pierce (Ljung-Box) Chi-square statistic

Lag	12	24	48
Chi-square	11.1(DF=11) [critical is 19.68]		
	22.5(DF=23) [critical is 35.17]		

The model for estimating the performance of a boutique fund is given by

$$Y_t = Y_{t-1} + e_t + 0.6470e_{t-1}$$

where Y_t is the performance value at time t,

$Y_{t-1}$is the performance value at time *t*-1,

$e_t$is the random error at time *t*, estimated by $Y_t - Y_{t-1}$or set to zero when Y_t is not yet observed.

$e_{t-1}$is the random error at time *t*-1, estimated by $Y_{t-1} - Y_{t-2}$.

The model is of good fit to the data as the Modified Box-Pierce Chi-square statistic show non-significant residuals. This means there is not much deviations of the observed values from the estimated values. In other words the models traces the movement of the actual data very well. It is of interest to compare this model with the model for the boutique funds. The period studied for the

The two models (boutique and institutional) differ slightly on the way they depend on the previous random fluctuation. The institutional funds have a higher dependence (coefficient = 0.9530) on the previous random shock than the boutique funds (coefficient = 0.6470). The models are however similar in the way they depend on past values. They just depend on the most recent fund performance value with at adjustment based on the previous random shock. This means that the volatility of institutional funds is higher than that of boutique funds.

5.7.3 One-Way ANOVA for Fund performance of fund type

Using the data arranged in the format of Table 5.27 to test whether performance is affected by funds type (boutique, intuitional or unknown) tests were with funds categorised as boutique, institutional or unknown. Unknown funds are those that did not fit into either boutique or institutional category due to ambiguities in characteristics. The results from the tests are presented in tables 5.4 below. The appropriate test used was the one-way analysis of variance test (one-way ANOVA) with fund category as the factor affecting fund performance. The results in Tbale 5.4 show that fund type does not affect fund performance (F=0.283, $df1$=2, $df2$=2189, p-value=0.754).

Table 5.25 One-way analysis of variance of fund performance on fund type

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.004	2	.002	.283	.754
Within Groups	15.460	2189	.007		
Total	15.464	2191			

5.7.4 Two-Way ANOVA for fund performance on fund type and time

The analysis on fund type so far has not considered the effect of time on fund performance. In reality the performance of funds vary with time. It is therefore necessary to re-organise the data so that the effect of time on performance can be investigated. The data to carry out the two-ANOVA consists of means of all funds under a particular type of fund at a particular point in time. For the purpose of comparing the institutional funds against the boutique funds the unknown category of funds was dropped. The data considered in this study covers the period spanning from 31 March 2001 to 31 December 2011. However, data for boutique funds were only available from the 30th of September 2005 to 31 December 2011. It is this time window that will be considered in the two-way ANOVA for the comparison of boutique funds and institutional funds.

Table 5.26 Data entry format for mean performance of funds by time and size (type)

Date	Period	Size(Type)	Performance (%)
30 Sep 2005	1	Institutional	17.8740
31 Dec 2005	2	Institutional	7.9102
⋮	⋮	⋮	⋮
30 Sep 2005	1	Boutique	17.8000
31 Dec 2005	2	Boutique	9.8267
⋮	⋮	⋮	⋮
31 Dec 2011		Institutional	8.0428
31 Dec 2011	26	Boutique	8.4779

CHAPTER 6: ANALYSIS OF RESULTS

6.1 Effects of fund size on performance

6.1.1 Hypothesis 1

H0: The null hypothesis can be stated that there is no relationship between a unit trust's fund size and fund performance.

H1: The alternative hypothesis can be stated as: there is a relationship between the unit trust's size of assets under management and fund performance.

Various models were run to determine whether a relationship existed between fund size and performance. The first was a regression model, then an ANOVA test was run and finally coefficients were investigated.

First, a regression model was run using performance data as the dependent variable and fund size as the independent variable. It was found that a linear regression model did not fit because the co-efficient of correlation (R) was 0.006 and the co-efficient of determination (R^2) is 0.000. The model is summarised in table 5.1 of chapter 5.

The ANOVA results (Appendix 1) which assess the overall significance of the model indicate that the model is not of good fit to the data, (p-value=0.769). At the 5% significance level we would conclude that the model is not of good fit to the data. The level of significance (p-value) was 5% and the ANOVA test renders a p-value of 0.769.

Even when fund size effects on boutique funds and institutional funds was considered there was still no discernable conclusion to be made that size influenced performance. The results for the regression of performance on fund size for the combined data indicate that there is no significant relationship between fund size and its performance. The test for the fit of the regression model as indicated in the ANOVA table 5.2 in chapter 5 shows that the linear model is not of good fit (F=0.086, $df1$=1, $df2$=2189, p-value=0.769). Fund size as a predictor of

performance has a very small coefficient which is not significant ($\beta = -3.059 \times 10^{-11}$, *t*=-0.293, p-value =0.769). The findings are similar to those of Pollet and Wilson (2008) who found that no relationship was present for fund size to fund performance but rather that it was the level of activity of the manager that caused a difference in performance. The results derived from the size study contradict those of (Pillay, Muller, & Ward, 2010). Assumptions of the contributors to the contradicting findings could be reduced to the period that was studied. Their study was longer, from 1991 to 2008.

Other regression models were also tried but none fitted the data well. The models that were tried without success are the quadratic, cubic and exponential models. All did not fit the data. This means that as the data stands it is not possible to characterise the performance of a fund based on its size. Regression analysis for the split data (data was split by category, whether institutional, boutique or unknown). All the results indicated that fund size does not determine performance.

Table 5.2 in chapter 5 demonstrates that size does not have an effect on investment performance because it is higher than a 5% level of significance. The period is a better indicator. Although it was not specifically set out for testing it is of interest to not that the period of investment is a better indicator of performance than fund size. The finding warrants probing in subsequent research.

6.2 Regression of performance on size alone (small funds)

Fitting a regression model of Performance for small funds on fund size yields a non-significant model as shown by the ANOVA results below (*F*=3.101, *df1*=1, *df2*=42, *p*-value=0.086). The conclusion can be made that size does not affect performance.

6.3 Regression of performance on size and time (small funds)

Fitting a regression model of Performance for small funds on fund size and time (*t*) yields a significant model as shown by the ANOVA results below (*F*=3.395, *df1*=2, *df2*=41, *p*-value=0.043). Size however does affect performance if the confounding effect of time is stripped out. There is a general decrease in performance over time and if the effect of time is not taken account of when assessing the effect of size on

performance a wrong conclusion that size does not affect performance will be reached. This therefore means that if we were to do a regression of performance on size at a particular pint in time we would get significant influence of size on performance.

Using the standardised coefficients the regresion model is

$$\hat{Y}_t = 0.0004199X_t - 0.0019181t$$

where $\hat{Y}_t$ =estimated performance

$X_t = \text{fund size at time } t$

Time has a negative coefficient indicating that in general the performance is decreasing though at a very negligible rate of 0.0019181. The result of importance is that after adjusting t for the effect of time it can be concluded that fund size affects performance.

6.4 Regression of performance on size alone (large funds)

The model is not significant (*F*=0.427, *df1*=1, *df2*=42, *p*-value=0.517). The coefficients of the model are also not significant. From these results it can be concluded that large fund size has no bearing on performance.

6.5 Regression of performance on size and time (large funds)

The model is significant (*F*=7.364, *df1*=2, *df2*=41, *p*-value=0.002). The coefficients of the model are also not significant. After adjusting for time we realise that size does indeed affect performance. The equation of the regression model is

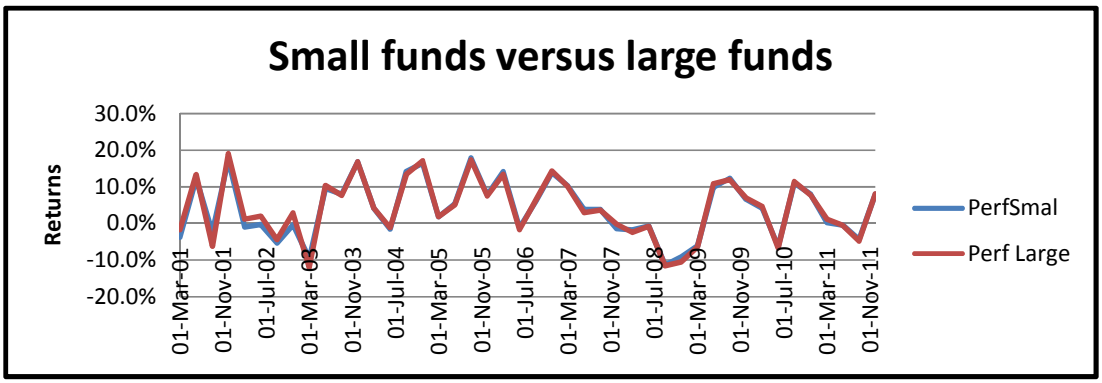
$$\hat{Y}_t = 0.000115309X_t - 0.007396932t$$

Again this indicates that there is a slight general decline in performance over time. The *p*-values of the coefficients indicate that both time and size affect performance significantly.

The time confounding effect could be assumed to be the results of hot hands which allow for good performance over short run periods but once that period works itself out of the system as time passes (Ciccotello & Grant, 1996) .

6.6 Time series analysis of small and large funds

Figure 6.1 Small funds versus large funds returns



Source: ASISA, Moneymate

The trajectories of the two time series (performance of small and large funds) are almost always on top of each other.

The analysis results are in line with (Droms & Walker, 1996) where fund size and mutual fund returns were found not to have a relationship of the period and sample refuting Chen et al. (1992) finding that larger funds performed better than smaller funds. This result contradicts conventional wisdom that increasing asset size detracts from investment results (Droms & Walker, 1996). From all the results analysed using various statistical tools, an inference can be drawn that asset size is a poor predictor of a fund's future performance (Ciccotello & Grant, 1996).

Therefore the first research question posed in chapter 3 under section 3.1(What is the effect of fund size on fund performance?) can be answered. Fund size has no bearing on fund performance. The caveat to add though is that time has a confounding effect on both large and small funds.

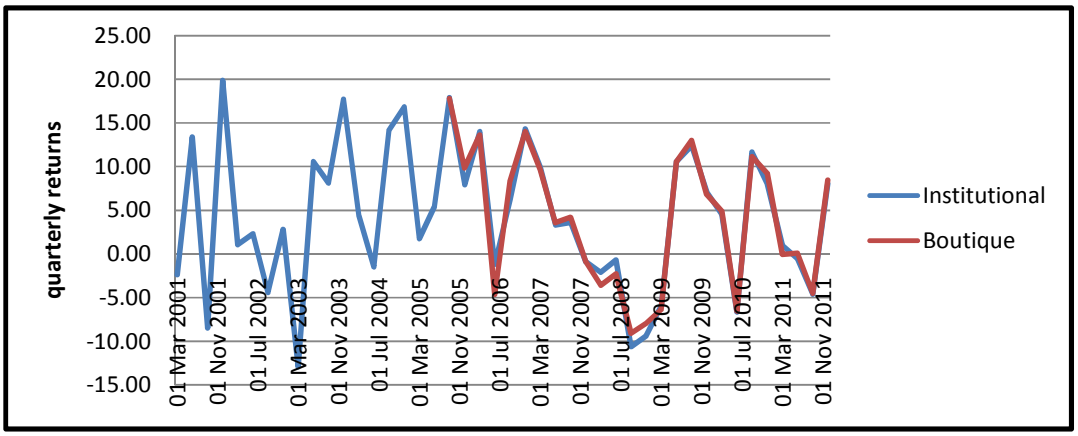
6.7 Boutique fund and institutional fund performance

6.6.1 Hypothesis 2

H0: there no difference between boutique and institutional fund performance
H1: there is a difference between boutique and institutional fund performance.

Boutique funds are a more recent phenomenon with the earliest performance numbers appearing in June 2005 hence the period analysed was from then and there were 26 observations as opposed to 44 for institutional funds.

Figure 6.2 Time series of boutique funds and institutional funds



Source: ASISA, MoneyMate

The institutional funds have a higher dependence (coefficient = 0.9530) on the previous random shock than the boutique funds (coefficient = 0.6470).

Institutional unit trust funds are more volatile than boutique unit trust investments. This observation is in line with that of (Schönfeld, 2009).
The performance of both categories is very similar which is in contrast to those of Schönfeld (2009) who found a clear outperformance of boutique funds over normal funds which have been termed institutional funds in this report.
From figure 5.1, it is evident that the Alsi outperformed both the boutique and institutional indices. This can be reduced to the costs that managers incur when transacting in their portfolios. Costs detract from investment returns and the

detraction is more pronounced in actively managed funds, the subject of our study.

The second question posed in chapter 3, is fund performance different between institutional and boutique funds? can be answered. There is no significant difference so the null second null hypothesis is rejected.

The results did not yield any significant differences in the returns gained by boutique funds when compared to institutional funds. The reason could be that the South African equity investment universe is small compared to the United States where most of the literature has been drawn from and thus making it difficult for vast investment compositions to reveal themselves between the two categories. Averages were used in the study and this would distort the results because the superior and inferior managers would statistically have their performance diluted.

Upon reviewing the results it is evident that it would have been more valuable to investigate the performance of specific funds over time by choosing certain parameters for study.

Table 6.1 Summary of analysis and findings

		Conclusion
Small fund	Large fund	There is no relationship, except when time element is taken out

Source: Own

		Conclusion
Boutique fund Index	Institutional fund Index	Similar returns

Source: Own

CHAPTER 7: CONCLUSION

7.1 Implications

South African domestic equity unit trust return behaviour was studied using fund size and fund manager type by using predetermined criteria (see section 2.4) between March 2001 and December 2011 as a reference. The purpose of the study is to gain insight whether fund size and boutique or institutional fund structure of unit trusts affects returns.

Based on previous researchers' literature, two research questions were formulated and the first hypothesis for the independent variable (fund performance) was proposed and tested in terms of a defined independent variable (fund size, which was segmented into small funds and large funds) was tested to find a statistically significant relationship. The second hypothesis compared two categories to each other to test for different performance patterns. The two categories were boutique funds and institutional funds. The study incorporated the use of regression, and time series models.

The research carried out shows that there is no significant bearing of fund size on domestic unit trust fund performance. The similarity of boutique fund behaviour to institutional fund behaviour is also not evident. There could be pockets of excellence within the respective categories of boutique or institutional funds but investors should actively seek them out. Resolving the hypothesis highlights the need for non-aggregated fund performance investigation and has implications for investors, asset managers and potential boutique fund owners. Inferring that research based on different time periods or different geographic locations such as the United States or Finland would have been the same for the South African would be irresponsible. Therefore carrying out the research was important and informative because it answered the questions posed but also piqued interest in further research.

The study set out to investigate whether fund size has any bearing on unit trust fund performance and whether boutique funds and institutional funds exhibit differences in performance. There was a lack of definitive results although boutique funds yielded marginally better returns than institutional funds with less volatility. Intuitively, it would seem that boutique funds are merely small institutional funds

when looking at the results of the study. For South African general equity to truly be boutique they have to carve out a niche for themselves that would distinguish them from larger corporate players.

Investors would be advised to investigate their potential and existing fund managers more closely for persistency of good performance.

Multi-managers and financial advisers would also need to investigate funds singularly and not assume that boutique equals better in all instances.

7.2 Suggestions for future research

A study of all types of unit trusts would be beneficial to determine whether the effects seen in general equity unit trusts can be translated to the unit trust industry as a whole.

Investigating whether a portfolio manager's holding of their unit trust has any bearing on the fund's resultant performance due to the enhanced alignment of incentives for his own wealth creation. Further, it would be beneficial to investigate what effect the magnitude of this holding has on the fund's performance i.e. is there an optimal ratio or size of investment relative to the fund.

The research only goes as far as investigating whether fund size effects of boutique funds differentiate their performance from institutional funds. The other qualitative factors that go into boutique fund definition are not examined. It could be that daily founder operational management or founder portfolio manager involvement is what is the biggest differentiator of performance.

How costs are accounted for in the sample was not investigated. Examining how costs are applied to boutique and institutional funds would be advisable.

It would add value to the body of knowledge to investigate specific funds against one another instead of using average values across the sample.

7.3 Final remarks

Although the results were not conclusive it was a valuable exercise to examine the effects of size on returns and the contrast between boutique and institutional unit trust fund returns because gaps in the availability of information was identified.

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12ee02e15add%40sessionmgr115&vid=7&hid=110&bquery=TI+(Exposing+survivorship+bias+%22in%22+mutual+fund+data)&bdata=JmRiPWJ1aCZ0eXBlPTEmc2l0ZT1laG9zdC1saXZlJnNjb3BlPXNpdGU%3d

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Appendix 1 Fund size coefficients model

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.029	.002		15.989	.000
	Fund Size	-3.059E-11	.000	-.006	-.293	.769

a. Dependent Variable: Performance

Performance is = to 0.029 – 3.059E-11, therefore it is an insignificant model

Appendix 2 Boutique regression model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.016[a]	.000	-.006	.0783429

a. Predictors: (Constant), Fund Size

Appendix 3 Boutique ANOVA model

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	1	.000	.042	.838[a]
	Residual	1.050	171	.006		
	Total	1.050	172			

Appendix 2 Boutique regression model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.016[a]	.000	-.006	.0783429

Appendix 4 Boutique coefficients model

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.026	.006		4.275	.000
	Fund Size	-2.835E-11	.000	-.016	-.205	.838

a. Dependent Variable: Performance

Appendix 5 Institutional model summary

Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.026[a]	.001	.000	.0842435

a. Predictors: (Constant), Fund Size

b. Category = Institutional

Appendix 6 Institutional ANOVA model

ANOVA[b,c]

Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	.007	1	.007	1.020	.313[a]
	Residual	10.837	1527	.007		
	Total	10.844	1528			

a. Predictors: (Constant), Fund Size

b. Category = Institutional

c. Dependent Variable: Performance

Appendix 7 Institutional coefficients model

Coefficients[a,b]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.029	.002		12.030	.000
	Fund Size	8.746E-7	.000	.026	1.010	.313

a. Category = Institutional

b. Dependent Variable: Performance

Appendix 8 Unknown model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.003[a]	.000	-.002	.0854152

a. Predictors: (Constant), Fund Size

b. Category = unknown

Appendix 9 Unknown ANOVA model

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	1	.000	.005	.945[a]
	Residual	3.553	487	.007		
	Total	3.553	488			

a. Predictors: (Constant), Fund Size

b. Category = unknown

c. Dependent Variable: Performance

Appendix 10 Unknown coefficients model

Coefficients[a,b]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.027	.004		6.983	.000
	Fund Size	-1.065E-11	.000	-.003	-.069	.945

a. Category = unknown

b. Dependent Variable: Performance

Appendix 11 Estimates

Period

Dependent Variable: Quarterly performance

Period	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
19	17.837	.581	16.640	19.034
20	8.868	.581	7.672	10.065
21	13.822	.581	12.625	15.018
22	-2.911	.581	-4.108	-1.714
23	7.249	.581	6.052	8.446
24	14.150	.581	12.953	15.346
25	9.766	.581	8.569	10.963
26	3.436	.581	2.240	4.633
27	3.894	.581	2.697	5.091
28	-.862	.581	-2.058	.335
29	-2.846	.581	-4.043	-1.649
30	-1.489	.581	-2.686	-.292
31	-9.866	.581	-11.062	-8.669
32	-8.670	.581	-9.866	-7.473
33	-6.147	.581	-7.343	-4.950
34	10.591	.581	9.395	11.788
35	12.679	.581	11.483	13.876
36	6.943	.581	5.747	8.140
37	4.684	.581	3.488	5.881
38	-6.599	.581	-7.795	-5.402
39	11.390	.581	10.194	12.587
40	8.628	.581	7.431	9.825
41	.461	.581	-.736	1.657
42	-.232	.581	-1.429	.965
43	-4.576	.581	-5.772	-3.379
44	8.264	.581	7.068	9.461

Appendix 12 Management company index composites

Boutique	Institutional
27 Four Investment Managers	Absa
36ONE	Allan Gray
Aeon Investment Management	Analytics
APS	BJM
Aylett	BoE
Cannon	Community Growth
Clade Investment Management (Pty) Ltd	Coris Capital Investment Scheme
Dynasty Wealth	Coronation
Contego Asset Management	Discovery Life Collective Investments
Fairtree Capital	Element
Flagship IP Management	FNB
Huysamer	Foord
Lynx Fund Managers	Futuregrowth Core Growth
Maestro	Grindrod Bank
Mazi Capital	Imara Asset Management
Truffle	Investec
	Investment Solutions Trust
	Kagiso
	Lion of Africa Managers (Pty) Ltd
	Marriott
	Melville Douglas
	MET Collective Investments
	Momentum Collective Investments Scheme
	Momentum
	Nedgroup Investments
	Oasis Management Company
	Old Mutual
	Personal Trust
	Prudential Portfolio Management
	PSG Unit Trust Management
	RMB Private Bank
	Sanlam
	Sasfin Asset Managers (Pty) Ltd
	Satrix
	SIM
	Sanlam Multi Managers International
	Stanlib
	SYmmETRY
	Verso Multi-Manager

Source: MoneyMate, ASISA, own estimates