UNIVERSITY OF CAPE TOWN

THE COST AND VALUE-ADD OF USING A FINANCIAL ADVISOR

Author: Abdallah Moosa (MSXABD002)

Supervisor: Darron West

Research dissertation presented for the approval of the University of Cape Town Senate in fulfilment of part of the requirements for the degree of Master of Commerce specialising in Finance (in the field of Financial Management) in approved courses and a minor dissertation. The other part of the requirement for this qualification was the completion of a programme of courses.

Faculty of Commerce

Declaration

I, Abdallah Moosa, hereby declare that the work on which this dissertation is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

I empower the university to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

Signed by candidate

Signature: .....

Abstract

This study investigates the quantitative value of advice added by financial advisors in South Africa; where value is measured through return differentials between advised and non-advised investors. A sample of 3189 individual investors from a large South African investment manager was analysed over a period of approximately five years, from 4 August 2014 to 31 July 2019.

The primary focus of this study is to determine whether financial advisors create value for investors relative to the cost of advice, by investigating if a significant difference exists between the net of advisor fee returns earned by advised and non-advised investors. It also examines investor trading behaviour and assesses if any significant correlations exist between the number of trades made and returns earned.

Current South African literature has a limited consideration of the cost of advice when considering the overall value added by financial advisors and has been found to consider a limited range of investment funds and asset classes.

This study examines a range of ten investment funds that cover a range of asset classes and examines investment performance both before and after advice fees. The data is also analysed to examine the trading behaviour differences with the correlation between trading and investment returns also examined.

The results of this study show that overall, the returns generated by non-advised investors are not significantly different from the returns generated by advised investors before advisor fees are considered.

When advisor fees are considered, the impact of advisor fees creates a significant difference in performance between advised and non-advised investors; leading to non-advised investors performing the same or better after fees are considered.

The trading behaviour showed that advised investors made statistically significantly fewer trades than non-advised investors. The results did not show strong evidence of

return differentials arising from the timing of trade decisions, for either advised or non-advised investors.

Keywords: Financial advisor; cost of advice; value add; trading behaviour

Table of Contents

1. Introduction

Individual investors in South Africa must navigate many decisions and choices when attempting to save and invest for their future. Complex decisions regarding investment vehicle options, risk-reward trade-offs, fund manager selection, fees and tax amongst others must be made. Many individuals are not adequately equipped to make these decisions and generally seek the guidance of a financial advisor.

Financial advisors are required to meet regulatory requirements before they can give advice. Aside from this, advisors have different levels of qualifications and experience, and offer different levels of advice. Some offer basic advice on investment fund selection while others offer their clients an in-depth financial assessment typically known as a 'full needs analysis'. Some advisors lack independence as they are representatives of product providers and are incentivised to sell investment products of the provider that they are tied to; while others are not tied to a single product provider and are deemed more independent.

The primary focus of this study is to determine whether financial advisors create value for investors relative to the cost of advice. Value in this study has a very narrow focus by only considering quantitative value, measured through return differentials between advised and non-advised investors. This study also analyses the trading behaviour of investors to assess whether trading behaviour contributes to the differences in returns earned by advised and non-advised investors.

Data containing a sample of 3189 individual investors from a large South African investment manager is assessed and covers a period of approximately five years. The sample contains investors that are both advised and non-advised, and are invested across ten investment funds that cover a range of asset classes.

An analysis of the relevant literature in the next section explores the factors that affect the individual investor, such as financial literacy, behavioural biases and

information and choice-overload. It also explores the value of financial advice and conflict of interest.

2. Literature Review

The literature review explores the value added by financial advisors on investor returns. Prior literature covering the value of financial advice is discussed. Factors such as financial literacy, behavioural biases, information and choice over-load and conflicts of interest are also reviewed. These areas were explored in order to gain an understanding of the challenges and opportunities faced by investors.

2.1 Study by Allie, West & Willows

The study "The value of financial advice" by Allie, West and Willows (2015) investigated the value added by financial advisors on the investment performance of advised and non-advised investors in South Africa. A sample of 4142 investors invested in a single equity fund was analysed over a period of 10 years, from January 2005 to December 2014. The analysis was carried out on returns and trading behaviour.

The results showed that there was no statistical difference between the returns generated between advised and non-advised investors. Advised investors were also found to trade significantly more than non-advised investors. "Increased trading activity by advised investors might be a function of the financial advisor's need to be seen to be active, or of the financial advisor's need to rebalance his/her client's portfolio of investments. However, trading activity was found to be negatively correlated with performance, and neither advised nor non-advised investors matched or outperformed the underlying fund's performance by their trading activity" (Allie, West & Willows, 2015).

The study by Allie, West and Willows (2015) had a narrow focus on one asset class (equity) and did not consider the fees charged by financial advisors; however, both aspects were recommended as areas for future research.

2.2 The value of financial advice

A study by Hackethal, Haliassos and Jappelli (2011) reviewed investor data from both a large German brokerage and a major bank to obtain a perspective on the role of financial advice on individual portfolio performance. From the brokerage, 32751 individual customers were randomly selected, while 4447 clients of a German branch-based commercial bank were selected. Both datasets covered 34 months, from January 2003 to October 2005. The study found that "advisors are matched with richer, older, more experienced, self-employed, female investors rather than with poorer, younger, inexperienced and male ones" (Hackethal, Haliassos & Jappelli, 2011:510). It also found that, in both datasets, "advised accounts offer on average lower net returns and inferior risk-return tradeoffs (Sharpe ratios). Trading costs contribute to outcomes, as advised accounts feature higher turnover, consistent with commissions being the main source of advisor income" (Hackethal, Haliassos & Jappelli, 2011:509).

In their paper presented at the Actuarial Society of South Africa Convention, Dutkiewicz, Levin and Dukhi (2007) presented a framework to provide context for advice and its value, described by four extreme positions. The first and most desirable position outlined is one where a full needs analysis is performed by an advisor to cater for the investor's full financial needs. In addition, this advice should be positive in value even after the cost of the advice. The fourth position is the case where advisors generate positive value that is less than the cost of advice, "on a net basis the consumer's financial well-being is negatively impacted" (Dutkiewicz, Levin & Dukhi, 2007). Dutkiewicz, Levin and Dukhi (2007) suggest that lowering the cost of advice would be one way of shifting the experience back to a positive value.

Position two represents an investor that does not receive advice but still has some level of financial literacy that enables them to generate positive value by themselves. Position three represents an investor experience without receiving advice and where negative value is generated as a result. "Consumers are either self-servicing, or take

no action with respect to their financial affairs, and this harms their financial well-being" (Dutkiewicz, Levin & Dukhi, 2007).

Dutkiewicz, Levin and Dukhi (2007) highlight the difficulty involved in defining advice as value adding or not, and therefore have defined measures of value that could each have a positive or negative value at different points in time. These measures include *Real Value* and is defined as the financial impact on the consumer in real monetary terms, with *Net Real Value Added* being the value added after the cost of the advice. *Perceived Value* extends the concept of *Real Value* by also considering qualitative characteristics of the consumer, such as their perceptions, behaviour and the nature of the accumulated funds.

Dutkiewicz, Levin and Dukhi (2007) outline the costs entailed to run a typical independent advice practice. They consider the numerous activities, administrative and compliance duties required by Financial Advisory and Intermediary Services (FAIS) Act. They conclude that "the financial advice industry is not excessively well remunerated. The salaries and hourly costs suggest a market-related income given the level of qualifications now required by advisers under the FAIS Act" (Dutkiewicz, Levin & Dukhi, 2007).

Dutkiewicz, Levin and Dukhi (2007) conclude their paper by highlighting that while consumers should be wary of excessive costs that can erode savings, they should not avoid investment advice and investing because of this; instead, a balanced approach should be taken. "While costs are clearly very important, merely comparing values with and without costs and highlighting the reduction in maturity value as a result of costs, can be misleading as it does not take account of the value of the advice" (Dutkiewicz, Levin & Dukhi, 2007).

2.3 Financial literacy

A study by Cole and Shastry (2008) examined census data in the United States to assess the effects of education on financial market participation, as measured by investment income generated by participants. They found that "education significantly increases investment income" (Cole & Shastry, 2008). More specifically, it was found that the increase in cognitive ability through education is what increases market participation and not financial literacy education.

Willis (2008) finds at least four intractable barriers that keep financial education from being an effective tool consumers can use to make financially enhancing decisions.

First is the "informational asymmetry between sellers and consumers created by the complexity of financial products and the speed with which they change" (Willis, 2008). Teaching material may be outdated by the time it is used and perhaps even misleading, as providers may have updated their product offerings to stay competitive. This also "affects the government's ability to regulate these financial products substantively, as well as its ability to understand the products well enough to educate people about them" (Willis, 2008). Any 'rules of thumb' or 'conventional wisdom' may also become outdated or misleading if products have adapted to changes in regulation.

Secondly, consumers lack the knowledge, comprehension and numerical skills to make financial decisions that leave them better off (Willis, 2008). The challenge of understanding industry acronyms and jargon is compounded further if consumers lack basic skills in mathematics or the ability to read comprehensively. This compromises the consumers' ability to extract information and assess which course of action will leave them better off. "Probabilities are another area, however, in which most people have poor arithmetic intuitions. Consumers must acquire not only the particular knowledge and skills described above, but also the ability to employ all of

them at once" (Willis, 2008). Willis (2011) has also argued that financial education campaigns would need to be tailored to a specific audience to be effective, as advice applicable to some will not be applicable to all. This would be very costly and impractical.

Thirdly, "Psychologists and behavioral economists have catalogued a host of "biases" apart from skill or information deficits that can interfere with decision making" (Willis, 2008). Lastly, there are a variety of costs associated with providing financial-literacy education. These include costs in time, expense and the inefficient use of labour (Willis, 2008).

"Even if every consumer could become her own expert financial advisor, providing free financial advisors would be far less expensive. Human-capital resources are most efficiently used when, to some optimal degree, people perform those tasks for which they are best suited, whether through training or predilection" (Willis, 2008).

2.4 Behavioural biases

This discussion focusses on the behavioural biases that include emotional and cognitive biases individuals are faced with in the context of financial or investment decision making.

Kahneman and Tversky (1979) found empirical evidence that people had an irrational tendency to be less willing to gamble with gains than with losses. For the group in their study, the loss in value from a loss was more than the gain in value from the same size monetary gain. Losses had more emotional impact than the same amount of gains. This formed the basis of their alternative model for decision making under risk, called *prospect theory*. It suggests that people are risk-averse when facing gains and risk-seeking when facing losses, relative to a reference point. It attempts to explain why people make asymmetric choices when faced with similar possible gains and losses, relative to a reference point. Prospect theory "helps explain how loss aversion and an inability to ignore sunk costs lead people to act in ways that are not in their best interest. The sting of losing money, for example, often leads investors to pull out of the stock market unwisely when prices dip" (Belsky & Gilovich, 2010).

"The experience of conflict is the price one pays for the freedom to choose" (Tversky & Shafir, 1992). Tversky and Shafir (1992) found that the conflict or pain one experiences when faced with making a choice arises when there are many (attractive) options available and one does not know how to make a trade-off based on costs versus benefits or risk versus value. In the face of this conflict, studies showed that individuals are more likely to defer choice, seek new alternatives or choose the default option. This is further complicated by the presence of uncertainty about the consequences of one's actions, along with the anticipation of conflict and regret.

"In choosing among alternatives individuals display a bias towards sticking with the status quo" (Samuelson & Zeckhauser, 1988). Samuelson and Zeckhauser (1988) found, through a series of experiments, that people disproportionately stick with the

status quo. People tend to be biased towards doing nothing or maintaining their current or previous decision and therefore decide or judge in a way that keeps things the same. This bias was labelled the *status quo bias*.

Shefrin and Statman (1985) describe the *disposition effect* as the tendency of investors to sell winners too early and ride losers too long. Investors are unwilling to face the bad news of losing stocks and hold on to them causing the disposition effect. They used four elements in their behavioural model to study this effect: *prospect theory*, *mental accounting*, *regret aversion* and *self-control*.

"Prospect theory predicts a disposition to sell winners and ride losers when the proceeds realized are held, as opposed to being rolled over into another gamble" (Shefrin & Statman, 1985). When faced with an investment position that has made a loss, investors were found to be risk-seeking when it comes to the gamble between breaking even or experiencing further losses. The result is that investors tend to hold on to losing positions for longer, despite poor odds of recovering losses.

Thaler (1985) attempts to explain how the use of a mental accounting system by individuals or households induces them to violate simple economic principles, such as the interchangeability of money. It was found that decision makers showed a tendency to separate related events and decisions; and found it difficult to aggregate events into net gains or losses. Instead, they set up mental accounts and view individual decisions as relating to one of these accounts. They then "apply prospect theoretic decision rules to each account by ignoring possible interaction" (Shefrin & Statman, 1985).

Thaler and Johnson (1990) investigated how risk-taking behaviour is affected by prior gains and losses, given that decisions are rarely made without consideration of past experience. They found that "under some circumstances a prior gain can increase subjects' willingness to accept gambles" (Thaler & Johnson, 1990). They labelled this the *house money effect*. They propose that this is because after a gain, if subsequent losses are smaller than the original gain, they can be integrated with the

prior gain, resulting in a net gain. This then mitigates the influence of loss aversion and allows for risk-seeking behaviour to follow.

In contrast, they found that decision makers that experienced prior losses were less willing to take on risk and instead found opportunities to break-even more attractive. They labelled this the *break-even effect*. Conversely, these decision makers did not integrate their losses with prior events or outcomes and increased risk aversion may result; unless faced with an opportunity to break-even which is then deemed acceptable. This finding aligns with Prospect Theory, where individuals were found to be risk-seeking when facing losses where the individual has an opportunity to get back to the original reference or break-even point.

Thaler and Shefrin (1981) describe the self-control problem as the conflict that arises through the interaction between an individual's two roles – a farsighted planner and a short-sighted doer. The planner desires to save for later consumption, is concerned with lifetime utility and seeks to complete unpleasant tasks now. In contrast, the doer seeks to consume now and procrastinates on unpleasant tasks. This leads to the conflict between short-term and long-term preferences since individuals are influenced by both long-term rational concerns and by more short-term emotional factors. Thaler and Shefrin (1981) found that saving money from a monthly salary required much more self-control from individuals than from a lump sum or bonus payment.

De Bondt and Thaler (1995) state that "perhaps the most robust finding in the psychology of judgement is that people are overconfident" and this leads them to overestimate the reliability of their knowledge. As a result, they also overestimate their abilities.

Heath and Tversky (1991) found that people are more confident in their predictions in fields where they have a self-declared expertise. "Competence or expertise, therefore, helps people take credit when they succeed and sometimes provides protection against blame when they fail. Ignorance or incompetence, on the other

hand, prevents people from taking credit for success and exposes them to blame in case of failure" (Heath & Tversky, 1991).

Kent, Hirshleifer and Avanidhar (1998) argue that investment analysts and investors suffer from both overconfidence and *self-attribution bias*. "The psychological evidence indicates that people tend to credit themselves for past success, and blame external factors for failure" (Kent, Hirshleifer & Avanidhar, 1998). Self-attribution bias occurs when people attribute successful outcomes to their own skill while blaming unsuccessful outcomes on misfortune or bad luck.

Barber and Odean (2001) found empirically that overconfident investors trade too much, and that men are more overconfident than woman. As a result, men trade more and perform worse than woman because they overestimate the precision of their information and therefore overestimate their expected gains from trading.

2.5 Information & choice over-load

South African retail investors have access to over 1600 different investment funds to invest in according to statistics published as at 31 March 2020 by the Association for Savings and Investment South Africa (ASISA). These are provided through 'Collective Investment Schemes' (CIS), previously known as 'Unit Trusts', and cover local and foreign asset classes such as equities, income, property and multi-asset. These funds are managed by over 280 different fund managers, each defined by their own brand and history. The individual funds each carry their own fee structure, performance benchmark and performance track record.

Retail investors considering an investment into a South African equity CIS will have a bouquet of about 230 different funds to choose from, managed by about 117 managers. One could further categorise these equity funds into seven distinct classifications (including an unclassified category), which distinguishes the underlying shares by either their market capitalisation size (market cap) or their industry sector – such as Financial, General, Industrial, Resources etc.

In trying to choose a single fund or a selection of funds to invest in, the investor faces many options and a plethora of factors to consider. While having many funds to choose from may seem desirable, it sometimes leads to the decision making process becoming more difficult and frustrating (Iyengar & Lepper, 2000).

A study was carried out by Iyengar and Lepper (2000) where participants were tasked with choosing a single chocolate from a display of 30. It was found that participants enjoyed having a wide selection to choose from. However, after sampling their chosen chocolate, participants were "dissatisfied and regretful of the choices they made and were subsequently considerably less likely to choose chocolates rather than money as compensation for their participation" (Iyengar & Lepper, 2000). Carrying out the same experiment with a display of 6 chocolates, participants found

the decision-making process easier, less frustrating and were more satisfied with their chosen chocolate despite it being less enjoyable choosing from a limited selection.

While choosing a chocolate is trivial compared to choosing an investment fund, facing a *choice overload* may lead to a poor decision making experience or no decision at all. Anderson (2003) describes a path to decision avoidance arising when faced with making a difficult decision and "when it is unclear which option best meets one's important goals, one may either anticipate regret if preferences are not met by his or her choice or simply choose an avoidant option (especially deferral) in hopes of escaping the decision, mitigating negative emotion, or later discovering a clearly superior option" (Anderson, 2003).

"The stakes involved produce stress, and stress occupies mental resources, which can result in a failure to consider all pertinent dimensions of the decision" (Willis, 2011). The choice overload can lead to consumers opting for oversimplified decision strategies which fail to consider all dimensions of the decision (Willis, 2011).

2.6 Conflict of interest

"Conflicts of interest occur when individuals' professional responsibilities diverge from their personal interests (or when different professional responsibilities clash)" (Cain, Loewenstein & Moore, 2005:1).

A laboratory experiment conducted by Cain, Loewenstein & Moore (2005) sought to assess if, in the context of an expert giving advice, disclosure of an inherent conflict of interest was effective as a mitigating solution. "It stands to reason that knowledge of a conflict of interest should permit recipients of biased advice to discount that advice and make better subsequent decisions" (Cain, Loewenstein & Moore, 2005:3). The results of the experiment found that disclosure benefited the providers of information but not its recipients. The researchers did not believe that this result would hold in general but rather that it should challenge the belief that disclosure is an effective remedy for the problems caused by conflicts of interest (Cain,

Loewenstein & Moore, 2005:20). It is suggested that disclosure may be more effective in cases where the recipient of advice has more professional experience and therefore has a better idea of how the conflict of interest will affect their advisor (Cain, Loewenstein & Moore, 2005:20).

2.7 Conclusion

The areas and studies explored in the literature review have highlighted the challenges investors face when it comes to financial decision making. Despite having some financial education, Willis (2008) has highlighted the barriers that prevent this knowledge from being useful for investors.

Given the vast range of investment funds to choose from in the South African context, Anderson (2003) found that individuals may anticipate regret or choose to do nothing to escape making a decision. Along with a host of behavioural biases that investors may be unaware of, these factors make it challenging for investors to be self-advised.

While seeking the assistance of a financial advisor may overcome some of these challenges, it also introduces challenges of its own. Allie, West and Willows (2015) found no statistical difference between the returns generated between advised and non-advised investors. They also found that advised investors traded more than non-advised investors and this trading activity was found to be negatively correlated with performance.

Hackethal, Haliassos and Jappelli (2011) found that advised investors had on average lower net returns due to trading costs and that this was consistent with commissions being the main source of advisor income. This highlights the conflict of interest issue faced by investors using an advisor whose income is determined by the allocation and trading associated with the underlying funds.

3. Data & Methodology

This section sets out the research questions, approach, data and methodology. The ideas and methods used here were developed from work done by Allie, West and Willows (2015) which study was used as a starting point.

Allie, West and Willows (2015) made use of a sample of data from a large South African investment house and examined investors in one investment fund. The testing method assessed gross return differences between advised and non-advised investors in this fund. It also considered trading behaviour by assessing the difference in the number of overall trades and the correlation between trades and returns.

For this study, the approach was expanded to assess investors across ten investment funds. The testing method considered both gross and net of advisor fee return differences, between advised and non-advised investors. The trading behaviour analysis was expanded to consider trades in more detail and investigated different trade types separately.

3.1 Research questions

The primary focus of this study is to determine whether financial advisors create value for investors relative to the cost of advice. Financial advisors create value for investors that is both qualitative and quantitative in nature. Quantitative value considers investment returns, which are easily measurable. Qualitative value, however, is less easily measurable and considers aspects such as the financial planning process and protection against making poor financial decisions which are often driven by emotional responses. This study has a very narrow focus by only considering quantitative value measured through return differentials between advised and non-advised investors. In order to investigate this, the returns and trading behaviour of advised and non-advised investors need to be assessed.

3.1.1 Return analysis

Investment returns can be used as a quantitative measure of whether financial advice adds or detracts value for investors. Here value is defined as out-performance or under-performance for an advised investor compared to a non-advised investor. While returns are not the only area that advisors can add value, it is a measurable and objective metric.

This study analyses two investment return types. Returns that are net of all fees but gross of advisor fees – referred to as 'gross returns'; and returns that are net of all fees and net of advisor fees – referred to as 'net returns'. Advisor fees consist of all fees charged by the financial advisor, including initial and on-going fees that are either expressed as fixed monetary (ZAR) amounts or as a percentage of assets under advice. These fees are isolated in order to determine what the value of advice is relative to its cost.

It is reasonable to expect that advised investors make decisions based on the advice given by their advisor, and that non-advised investors make their own investment decisions. If both groups of investors are invested in the same underlying fund, in the same fee class, over the same period ("investigation period"), then differences in returns achieved can only arise from the timing of trade decisions (all else being equal). In addition to assessing return differences between the two groups, advised and non-advised investors, this study also considers whether there is a difference in the gross returns earned by investors compared to the underlying fund return. This would show if investors are generating excess gross returns versus the fund by the timing of their trades.

This study considers the investment horizon that investors have access to by assessing funds constituting all major asset classes.

The following questions arise from the return analysis:

1. Is there a difference in the gross returns earned by advised and non-advised investors, over the investigation period?
2. Is there a difference in the gross returns earned by advised investors compared to the fund return, as well as non-advised investors compared to the fund return, over the investigation period?

The answers to these two questions help explain the drivers for the answer to the primary question:

3. Is there a difference between the net of advisor fee returns earned by advised and non-advised investors, over the investigation period?

3.1.2 Trading behaviour analysis

If the return differentials (before advice fees) between advised and non-advised investors can arise from the timing of trade decisions (all else being equal), further analysis on trading behaviour could explain how the return differences are generated.

The following questions arise from the trading behaviour analysis:

4. Is there a difference between the number of trades made by advised and non-advised investors, over the investigation period?
5. Is there a correlation between the number of trades made and the gross returns earned, by both advised and non-advised investors, over the investigation period?

3.2 Research approach & data

3.2.1 Acquiring data

The data was requested and obtained from one of South Africa's largest investment managers ("data provider"), making use of a data sharing agreement to protect the privacy and data security of all parties. The data provided was scrubbed of all personal identifiers. The data provider offers investors a range of investment funds to suit various risks profiles and return objectives.

The data request consisted of two datasets, one consisting of transaction/trade data and the other market value data. The data was detailed enough to calculate returns for each investor, as well as to analyse the trading behaviour. The data request covered a period of approximately five years, from 4 August 2014 to 31 July 2019 (the "investigation period"). The initial dataset included investor funds invested in local and foreign asset classes, such as equity, multi-asset, income and property.

The transaction dataset contained details of each investor transaction, such as transaction amount, transaction date, transaction type (to distinguish purchase and redemption trades), transaction detail (describing what the transaction was for), fund name, etc. The market value dataset contained investor market values at a fund level, at the start and end of the investigation period. It also included the investor type, product type and an indicator showing whether the investor was advised or not. For both datasets, each data item was linked to a unique investor via an investor reference number. These reference numbers were randomly generated by the data provider, to ensure that no personal information was disclosed.

Investors whose advisor indicator changed at any time during the period (i.e. non-advised to advised or vice versa) were excluded from the dataset as per the data request to data provider. The initial dataset contained 5745 unique investor investment funds, comprising of 2443 non-advised and 3302 advised investors.

3.2.2 Data processing

3.2.2.1 Refining initial datasets

The initial dataset was then filtered to make it suitable for answering the research questions. Data integrity checks were performed to assess the quality of the data and to identify any errors.

This study attempts to isolate human behaviour through the decisions of investors with or without the advice of an advisor. Therefore the 'investor type' field in the initial dataset was used to exclude all corporate or juristic investors so that only individual investors remained.

The initial dataset included all investors that either had a fund market value greater than zero at the start of the investigation period or made a new investment in a fund sometime during the investigation period. In order to ensure comparability of the calculated results across investors, investors that were not invested throughout the investigation period were excluded. Investors were only included in the revised dataset if they had a non-zero market value at both the start and end of the investigation period. As a result, existing investors that redeemed all of their funds during the investigation period or made new investments made into funds during the investigation period were excluded from the revised dataset.

The type of investment vehicle or product attracts a specific set of financial advice and trading pattern. For example, a living annuity product will require advice around a drawdown rate (subject to applicable legislation) and would consequently have an associated trading pattern. To ensure comparability of trading behaviour between investors, only unit trust investments were considered, and consequently the 'product type' field was used to exclude all other investment types from the revised dataset.

The above data exclusions and revisions reduced the initial dataset to 3714 unique investor investment funds, comprising of 1212 non-advised and 2502 advised

investors – a ratio of approximately 1 non-advised investor for every 2 advised investors.

3.2.2.2 Calculating investor returns

The revised dataset was used to calculate the internal rate of return for each investor, both gross and net of advisor fees. All investor cash flows or trades were accounted for when calculating returns. The XIRR function in Microsoft Excel (where XIRR stands for 'extended internal rate of return') was used to calculate the internal rate of return; since it is able to use non-periodic cash flow values. Cash flows are non-periodic because investors in unit trust investments can make purchase trades (to invest) or redemption trades (to withdraw) at any given time. The XIRR function makes use of an iterative technique for calculating the internal rate of return, by using a changing rate and starting with a guess. The function cycles though the calculation until the return is accurate within 0.000001 percent. If no result is found after 100 attempts, an error value is returned. An example of how the XIRR was used is included in Appendix 1.

A count of the investors in the revised dataset was split between advised and non-advised and then further split by fund and fund class. As a result, the number of investors were sparsely spread across certain funds when compared to others. Funds with less than 20 advised or non-advised investors were excluded, leaving only 10 unique fund type and fee class combinations in the final dataset.

The calculated investor returns for these funds were reviewed on an investor basis to identify any outliers or anomalies. A high-level estimate of each investor return was calculated using the opening and closing market values, total purchase and total redemption amounts, assuming cashflows occurred halfway through the period. Each calculated internal rate of return was assessed for reasonability by comparing it to the high-level return estimate. Where the differences were large, a further investigation was done to assess the reasonability of the market values and transaction values used. Where it was found that transactions could be incorrect or

missing, leading to an irregular return, this investor fund was excluded as an outlier or anomaly.

3.2.2.3 Underlying investment funds

The final sample contained 3189 unique investor investment funds, comprising of 1005 non-advised and 2184 advised investors. Table 1 shows the split of these investor funds by asset class and fund type.

Table 1 The number of unique investors, categorised by advice status and fund type

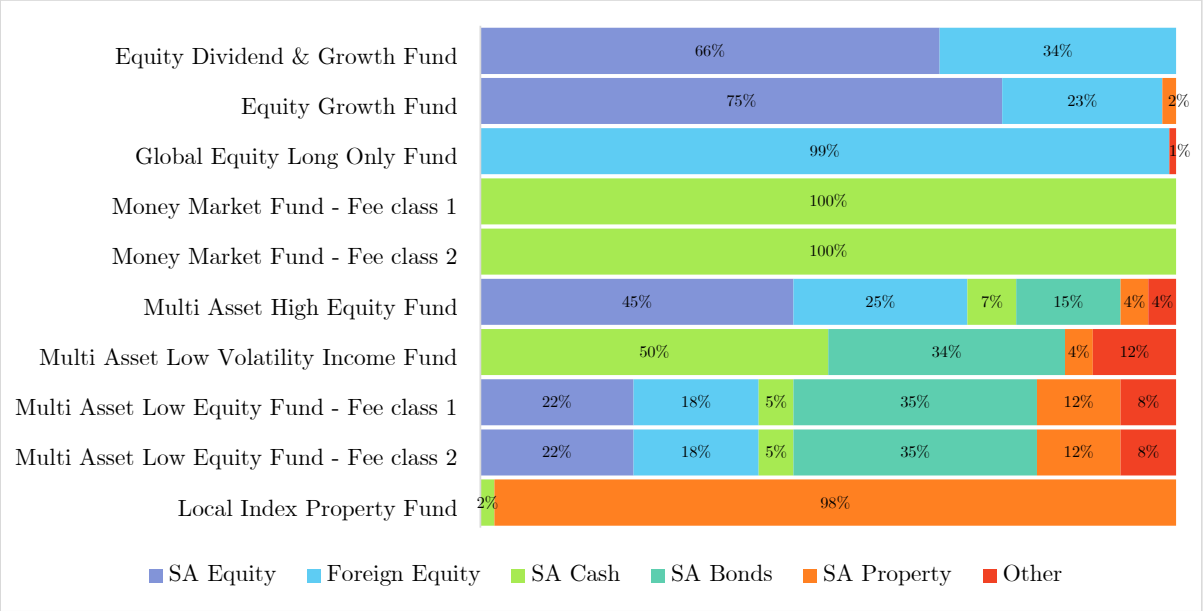
		Number of investors		
Asset Class	Fund Name	Non-Advised	Advised	Total
Equity	Equity Dividend & Growth Fund	159	278	437
Equity	Equity Growth Fund	190	127	317
Global Equity	Global Equity Long Only Fund	21	95	116
Income	Money Market Fund - Fee class 1	102	172	274
Income	Money Market Fund - Fee class 2	60	132	192
Multi-Asset	Multi Asset High Equity Fund	127	226	353
Multi-Asset	Multi Asset Low Volatility Income Fund	32	241	273
Multi-Asset	Multi Asset Low Equity Fund - Fee class 1	207	753	960
Multi-Asset	Multi Asset Low Equity Fund - Fee class 2	40	104	144
Property	Local Index Property Fund	67	56	123
	Total	1005	2184	3189

In the final dataset, the number of investors in funds Global Equity Long, Money Market (fee class 2), Multi Asset Low Volatility Income, Multi Asset Low Equity (fee class 2) and Local Index Property are fewer relative to the remaining funds. The ratio of advised to non-advised investors varies across funds but is on average just less than a ratio of 3 to 1 on a fund level. Both the absolute sample size and the relative size disparity between advised and non-advised investors has been recognised and allowed for in this study (see 3.3.3).

The funds included in the final dataset, shown in Table 1, cover a range of asset classes. For both the Money Market and Multi Asset Low Equity funds, the sample includes two different fee classes for each fund. The fee class applies different annual management and service fees to each fund. In each case, fee class 2 has lower fees

than fee class 1. The different fee classes do not affect the results of this study as it is allowed for by performing the analysis on returns that are net of all fees except advisor fees. The underlying asset allocation for each fund is shown in Figure 1.

Figure 1 Asset allocation of the underlying funds as at 31 July 2019



('SA' stands for South African)

The data provider has designated each fund with a risk rating. The Equity, Global Equity and Property funds are considered high-risk funds, suited to investors with a higher risk tolerance. The Multi-Asset funds are considered medium-risk, except for the Multi Asset Low Volatility Income Fund which is considered low-to-medium-risk. The Money Market funds being fully invested in cash are considered low-risk. The risk rating given to a fund is driven by the asset allocation of the fund as well as the variability and volatility of returns historically experienced by the underlying asset classes. The higher the risk rating, the higher the variability and volatility of the fund's expected return.

The averages of the gross and net of advisor fee returns per fund, for both advised and non-advised investors, are shown in Table 2.

Table 2 Annualised fund and investor returns, gross and net of advisor fees, categorised by advice status and fund type

Fund Name	Fund return	Average gross return		Average net return	
		Non-Advised	Advised	Non-Advised	Advised
Equity Dividend & Growth Fund	3.90%	3.84%	3.64%	3.84%	3.10%
Equity Growth Fund	4.30%	4.31%	4.68%	4.31%	4.17%
Global Equity Long Only Fund	10.10%	10.12%	10.69%	10.12%	10.58%
Money Market Fund - Fee class 1	7.00%	6.31%	6.21%	6.31%	6.21%
Money Market Fund - Fee class 2	7.20%	6.92%	6.73%	6.92%	6.68%
Multi Asset High Equity Fund	6.00%	5.76%	6.06%	5.76%	5.52%
Multi Asset Low Volatility Income Fund	7.00%	5.44%	6.32%	5.44%	5.98%
Multi Asset Low Equity Fund - Fee class 1	5.20%	5.15%	5.12%	5.15%	4.56%
Multi Asset Low Equity Fund - Fee class 2	5.50%	5.63%	5.47%	5.63%	4.95%
Local Index Property Fund	4.60%	4.40%	4.87%	4.40%	4.71%

The returns shown are annualised over the investigation period and are net of all fees except advisor fees, where these are shown as gross and net respectively.

3.2.2.4 Calculating active trades

In order to analyse trading behaviour between investor groups, the trading patterns of investors need to be determined. The transaction dataset contained detailed data for each trade type. For this analysis, the key consideration is trades that are a result of an active investment decision by the investor, termed 'active trades'. Trades that are regular in occurrence (whether under advice or not) such as debit order purchases or pre-determined regular redemptions, if counted in full would distort the count of active trades for either investor group; as these series of trades are not a result of multiple active investment decisions. Instead, it is reasonable to assume that each series of regular trades is initiated by one active trade or investment decision. If an investor had a series of monthly purchase debit orders, only the initial decision to initiate the debit order instruction would count as an active decision.

An exploratory investigation into the count of trades that included trades for advisor fee redemptions highlighted that these trades accounted for a significant portion of total redemption trades for advised investors. In order to ensure comparability of results between advised and non-advised investors, fee redemption trades were

excluded as non-advised investors do not incur these redemption trades. Furthermore, the trading behaviour analysis considers the relationship between active trades and gross of advisor fee returns, to further ensure comparability of the analysis between investor groups.

Trades related to reinvestment of income or dividends, through distributions by the underlying funds, were excluded as they do not relate to an active decision made by the investor.

In order to summarise the transaction data into a count of active trades per investor, all trades were counted as active trades, except for fee redemption and reinvestment of income or dividend trades which were excluded and regular trades which counted as one active investment decision. Table 3 summarises the total and average number of active trades per investor.

Table 3 Number of active trades per investor, categorised by advice status and fund type

	Total number of active trades		Average number of active trades	
Fund Name	Non-Advised	Advised	Non-Advised	Advised
Equity Dividend & Growth Fund	460	855	2.89	3.08
Equity Growth Fund	558	348	2.94	2.74
Global Equity Long Only Fund	59	62	2.81	0.65
Money Market Fund - Fee class 1	1 422	832	13.94	4.84
Money Market Fund - Fee class 2	280	333	4.67	2.52
Multi Asset High Equity Fund	462	862	3.64	3.81
Multi Asset Low Volatility Income Fund	107	1 239	3.34	5.14
Multi Asset Low Equity Fund - Fee class 1	673	2 640	3.25	3.51
Multi Asset Low Equity Fund - Fee class 2	354	236	8.85	2.27
Local Index Property Fund	118	65	1.76	1.16

The total and average active trades shown include purchase and redemption trades, where each trade is related to one active investment decision taken by the investor, over the investigation period.

The active trades shown in Table 3 are split between active purchase and redemption trades shown in Table 4 and Table 5 respectively.

Table 4: Number of active purchase trades per investor, categorised by advice status and fund type

Fund Name	Total number of active purchase trades		Average number of active purchase trades	
	Non-Advised	Advised	Non-Advised	Advised
Equity Dividend & Growth Fund	253	569	1.59	2.05
Equity Growth Fund	322	230	1.69	1.81
Global Equity Long Only Fund	43	38	2.05	0.40
Money Market Fund - Fee class 1	637	286	6.25	1.66
Money Market Fund - Fee class 2	82	80	1.37	0.61
Multi Asset High Equity Fund	259	541	2.04	2.39
Multi Asset Low Volatility Income Fund	32	446	1.00	1.85
Multi Asset Low Equity Fund - Fee class 1	292	1 324	1.41	1.76
Multi Asset Low Equity Fund - Fee class 2	280	57	7.00	0.55
Local Index Property Fund	68	24	1.01	0.43

The total and average active trades shown include only purchase trades, where each trade is related to one active investment decision taken by the investor, over the investigation period.

Table 5: Number of active redemption trades per investor, categorised by advice status and fund type

Fund Name	Total number of active redemption trades		Average number of active redemption trades	
	Non-Advised	Advised	Non-Advised	Advised
Equity Dividend & Growth Fund	207	286	1.30	1.03
Equity Growth Fund	236	118	1.24	0.93
Global Equity Long Only Fund	16	24	0.76	0.25
Money Market Fund - Fee class 1	785	546	7.70	3.17
Money Market Fund - Fee class 2	198	253	3.30	1.92
Multi Asset High Equity Fund	203	321	1.60	1.42
Multi Asset Low Volatility Income Fund	75	793	2.34	3.29
Multi Asset Low Equity Fund - Fee class 1	381	1 316	1.84	1.75
Multi Asset Low Equity Fund - Fee class 2	74	179	1.85	1.72
Local Index Property Fund	50	41	0.75	0.73

The total and average active trades shown include only redemption trades, where each trade is related to one active investment decision taken by the investor, over the investigation period.

3.2.3 Limitations

The data used in this study was limited in that it was only from one investment house, comprising only of funds managed by them. While the data covered advised and non-advised investors across ten funds, the results of this study cannot take into account the effect of advice on other funds investors may have with other investment houses, nor can it consider the effect of advice in respect of the reallocation of funds from one house to another.

The results of this study cannot take into account the type, extent or nature of advice that was provided by the advisor to the investor. It also cannot account for the advisor's level of experience, qualifications, skillset, independence status or whether any conflicts of interest exist.

The data provider could only provide data covering a period of approximately five years, due to a system change in the past. Merging data from two different systems was considered in order to cover a longer period. However, the risk of potential data anomalies and errors in the combined dataset was deemed to outweigh the benefit of a longer investigation period. The compromise made on the investigation period would be offset by the in-depth consideration of the available data – by considering multiple funds, a detailed analysis on the trading behaviour, the consideration of advice fees and its impact on investor returns.

3.3 Research method

All statistical analysis and testing for this study were carried out using R, a language and environment for statistical computing and graphics.

3.3.1 Approach for testing

For each investor in the final dataset, summarised in Table 1, the following statistics have been calculated using the methodology set out in 3.2.2:

- Gross of advisor fee return, annualised over the investigation period
- Net of advisor fee return, annualised over the investigation period
- Total number of active trades, number of active purchase trades and number of active redemption trades over the investigation period

For each group of advised and non-advised investors, these statistical datasets are compared using statistical hypothesis testing in order to answer the research questions set out in 3.1.

3.3.2 Testing for normality

In order to decide on an appropriate statistical method to use for hypothesis testing purposes, the underlying distributions of the return and trade datasets need to be assessed. Only the gross return dataset was considered here as it stands to reason that the net return dataset will follow the same distribution.

Parametric statistical tests are based on the assumption that the underlying data follows a normal or Gaussian distribution, and therefore it is essential to test the data for normality before considering the use of parametric tests.

The datasets were summarised into a diagram for each fund in order to highlight the shape of the distribution. A visual inspection was carried out to assess for normality. For the trading data , a visual inspection confirms that the data does not follow a normal distribution (see Appendix 2). For the return data, a symmetrical

distribution was evident for most funds and therefore it is more subjective to assess normality from a visual inspection (see Appendix 3). In order to supplement the visual inspection, statistical tests for normality were also carried out on the return data.

Two normality tests were performed, namely the Kolmogorov-Smirnov and the Shapiro-Wilk tests. The null hypothesis for both tests is:

H_0: The return data of the advised and non-advised returns are normally distributed

These tests were performed for advised and non-advised investors separately, for each fund type. The R code that was used for to perform these tests can be found in Appendix 1. The results are detailed in Appendix 4. Under the Kolmogorov-Smirnov test, the null hypothesis for all funds and both advised and non-advised investors was rejected at a 95% confidence level.

Under the Shapiro-Wilk test, the null hypothesis was rejected at a 95% confidence level for all funds except for non-advised investors in the Global Equity Long Only Fund. For this fund, the number of non-advised investors was small with a sample of only 21 investors. Normality tests are a better measure in assessing normality compared to visual tests, but they are not without shortcomings. "For small sample sizes, normality tests have little power to reject the null hypothesis and therefore small samples most often pass normality tests" (Oztuna, Elhan & Tuccar, 2006). Therefore, it is reasonable to conclude that the test had insufficient power given the small sample size.

Overall, it is concluded that both the return and trade datasets are not normally distributed and as a result parametric statistical tests cannot be used. Therefore, non-parametric statistical tests will be used to evaluate the research questions, as these tests do not assume anything about the underlying distribution of the data.

3.3.3 Non-parametric statistical tests

Two non-parametric statistical tests are used to test if return and trading differences are statistically significant between advised and non-advised investors, and are detailed in turn below. The R code used to perform these tests can be found in Appendix 1.

The Wilcoxon Rank Sum Test (also known as the Mann-Whitney U-test) has a null hypothesis stating that two populations have the same distribution and median. If the null hypothesis is rejected, then there is evidence that one of the distributions is shifted to the right or left of the other and therefore there is evidence that the medians of the two populations differ.

The Wilcoxon Rank Sum Test is used to assess whether the difference in returns earned by an advised investor versus a non-advised investor is statistically significant, i.e. to test whether the difference in returns earned is due to chance or not. It is also used to assess if there is a significant difference between the number of trades made by advised and non-advised investors. This test can be carried out on very small sample sizes (Smalheiser, 2011:154). It can also be used when comparing two unequal sample sizes.

Spearman's Rank Correlation "rho" is used to measure the strength and direction of the relationship between two variables. The null hypothesis used is that there is no correlation between the number of active trades made and the gross return earned by investors. If the null hypothesis is rejected, then there is evidence that a statistically significant relationship exists.

The sign of the correlation coefficient will indicate whether the relationship is positive or negative, i.e. whether additional trades result in an increase or decrease in gross returns earned by the investor. It is worth noting that correlation alone does not indicate a causal relationship.

The value of the correlation coefficient ignoring the sign will indicate the strength of the relationship, which can be characterised as follows:

Rho correlation value (r)	Strength of relationship
$r = 0$	No relationship
$0 < r < 0.30$	Very weak
$0.30 \leq r < 0.50$	Weak
$0.50 \leq r < 0.70$	Moderate
$0.70 \leq r < 1$	Strong
$r = 1$	Perfect

4. Results

This section sets out the results of the statistical hypothesis testing and is shown under the question headings detailed in 3.1. Inferences from these results will be considered in section 5 under Conclusion & Recommendations.

1. *Is there a difference in the gross returns earned by advised and non-advised investors, over the investigation period?*

Table 6 Testing of gross return differences, advised versus non-advised investors

	Wilcoxon Rank Sum Test		Average gross return	
Fund Name	W Statistic	p-value	Non-Advised	Advised
Equity Dividend & Growth Fund	20764	0.2925	3.84%	3.64%
Equity Growth Fund	10834	0.1237	4.31%	4.68%
Global Equity Long Only Fund	969	0.8407	10.12%	10.69%
Money Market Fund - Fee class 1	8764	0.9899	6.31%	6.21%
Money Market Fund - Fee class 2	4640	0.0571	6.92%	6.73%
Multi Asset High Equity Fund	13400	0.3016	5.76%	6.06%
Multi Asset Low Volatility Income Fund	3312	0.1953	5.44%	6.32%
Multi Asset Low Equity Fund - Fee class 1	79250	0.7100	5.15%	5.12%
Multi Asset Low Equity Fund - Fee class 2	2015	0.7736	5.63%	5.47%
Local Index Property Fund	1307	0.0039*	4.40%	**4.87%**

The returns shown are annualised over the investigation period, are gross of advisor fees and net of all other fees. The null hypothesis was rejected for funds highlighted in yellow or where the p-value is marked with a '*'. The bold green text indicates which return was higher between advised and non-advised investors.

At a 95% confidence level, the null hypothesis is only rejected for the Local Index Property Fund. Therefore, there is a statistically significant difference in the gross returns between advised and non-advised investors in this fund. For the remaining funds, the null hypothesis is not rejected and therefore there is no statistically significant difference in the gross returns between advised and non-advised investors. It is noted that the p-value for the Money Market Fund (fee class 2) is close to the significance level of 0.05.

For the Local Index Property Fund, Table 6 shows that advised investors outperformed non-advised investors on average with average gross returns of 4.87%

p.a. versus 4.40% p.a. This outperformance of on average 0.47% p.a. is statistically significant at a 95% confidence level and is considered a value-add by the advisor.

2. *Is there a difference in the gross return earned by advised investors compared to the fund return, as well as non-advised investors compared to the fund return, over the investigation period?*

Table 7 Testing of gross return differences, advised and non-advised investors versus the underlying fund

	Wilcoxon Rank Sum Test				
	W Statistic	p-value	W Statistic	p-value	Fund Return
Fund Name	Non-advised	Non-advised	Advised	Advised	
Equity Dividend & Growth Fund	58	0.6493	160	0.7991	3.90%
Equity Growth Fund	65	0.5926	74	0.7867	4.30%
Global Equity Long Only Fund	13	0.8182	8	0.1582	10.10%
Money Market Fund - Fee class 1	16	0.2459	151	0.1965	7.00%
Money Market Fund - Fee class 2	9	0.2443	127	0.1151	7.20%
Multi Asset High Equity Fund	45	0.6261	138	0.7085	6.00%
Multi Asset Low Volatility Income Fund	2	0.1818	177	0.4228	7.00%
Multi Asset Low Equity Fund - Fee class 1	138	0.5712	250	0.5627	5.20%
Multi Asset Low Equity Fund - Fee class 2	13	0.5827	69	0.5861	5.50%
Local Index Property Fund	45	0.5752	9	0.2608	4.60%

The returns shown are annualised over the investigation period, gross of advisor fees and net of all other fees. The null hypothesis was rejected for funds highlighted in yellow or where the p-value is marked with a '*'.

At a 95% confidence level, the null hypothesis is not rejected for any of the funds and therefore there is no statistically significant difference in the gross returns between advised investors and the fund, as well as between non-advised investors and the fund.

This result is as expected since investor gross returns shown in Table 2 are largely in-line with the underlying fund returns. Differences between the investor and fund returns would ordinarily arise through timing differences of trading decisions.

3. *Is there a difference between the net of advisor fee returns earned by advised and non-advised investors, over the investigation period?*

Table 8 Testing of net return differences, advised versus non-advised investors

	Wilcoxon Rank Sum Test		Average net return	
Fund Name	W Statistic	p-value	Non-Advised	Advised
Equity Dividend & Growth Fund	31 042	1.9e-12*	**3.84%**	3.10%
Equity Growth Fund	15 928	1.4e-06*	**4.31%**	4.17%
Global Equity Long Only Fund	993	0.9770	10.12%	10.58%
Money Market Fund - Fee class 1	8 798	0.9685	6.31%	6.21%
Money Market Fund - Fee class 2	5 743	5.9e-07*	**6.92%**	6.68%
Multi Asset High Equity Fund	19 332	6.2e-08*	**5.76%**	5.52%
Multi Asset Low Volatility Income Fund	4 821	0.0215*	5.44%	**5.98%**
Multi Asset Low Equity Fund - Fee class 1	111 762	< 2.2e-16*	**5.15%**	4.56%
Multi Asset Low Equity Fund - Fee class 2	3 125	3.2e-06*	**5.63%**	4.95%
Local Index Property Fund	2 140	0.1808	4.40%	4.71%

The returns shown are annualised over the investigation period, are net of advisor fees and net of all other fees. The null hypothesis was rejected for funds highlighted in yellow or where the p-value is marked with a '*'. The bold green text indicates which average return per annum was higher between advised vs. non-advised investors.

At a 95% confidence level, the null hypothesis is rejected for the Equity Dividend & Growth, Equity Growth, Money Market Fund (fee class 2) and all Multi Asset funds, and therefore there is a statistically significant difference in the net returns between advised and non-advised investors in these funds. For the remaining funds, the null hypothesis is not rejected and therefore there is no statistically significant difference in the net returns between advised and non-advised investors.

Table 8 shows that out of seven funds where there is a significant difference in net returns, advised investors significantly outperformed non-advised investors on average, net of advisor fees, in one fund being the Multi Asset Low Volatility Income Fund.

Where in Table 6, the Local Index Property Fund was found to have a significant difference in gross return in favour of advised investors, the net of advisor fee return is no longer found to be significantly different between advised and non-advised investors in Table 8.

To further understand the cost and value-add of using an advisor, the return differential is split into components, namely:

- the return differential due to advice before fees; and
- the cost of advice.

These components are expressed as an annualised return percentage. The cost of advice reduces the return to the investor, expressed as an annualised return effective over the investigation period. To determine the return differential due to advice before advice fees, the difference between gross returns between advised and non-advised investors is considered. To determine the cost of advice, the difference between the net and gross returns of advised investors is considered.

Table 9 summarises the components of the cost and value-add of advice.

Table 9 Return differential components showing the cost and value-add of advice

	Average gross return		Average value added / (detracted) by advice, before fees	Average net return		Cost of advice	Average value added / (detracted) by advice, after fees
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
Fund Name	Non-Advised	Advised	(B) - (A)	Non-Advised	Advised	(E) - (B)	(C) + (F) (E) - (D)
Equity Dividend & Growth Fund	3.84%	3.64%	-0.20%	3.84%	3.10%	-0.53%*	-0.74%
Equity Growth Fund	4.31%	4.68%	0.36%	4.31%	4.17%	-0.50%*	-0.14%
Global Equity Long Only Fund	10.12%	10.69%	0.58%	10.12%	10.58%	-0.11%	0.47%
Money Market Fund - Fee class 1	6.31%	6.21%	-0.10%	6.31%	6.21%	0.00%	-0.10%
Money Market Fund - Fee class 2	6.92%	6.73%	-0.19%	6.92%	6.68%	-0.05%*	-0.24%
Multi Asset High Equity Fund	5.76%	6.06%	0.30%	5.76%	5.52%	-0.54%*	-0.24%
Multi Asset Low Volatility Income Fund	5.44%	6.32%	0.88%	5.44%	5.98%	-0.34%*	0.54%
Multi Asset Low Equity Fund - Fee class 1	5.15%	5.12%	-0.03%	5.15%	4.56%	-0.55%*	-0.58%
Multi Asset Low Equity Fund - Fee class 2	5.63%	5.47%	-0.16%	5.63%	4.95%	-0.53%*	-0.68%
Local Index Property Fund	4.40%	4.87%	0.47%*	4.40%	4.71%	-0.16%	0.31%

The returns are annualised over the investigation period. Funds highlighted in yellow or where the values in either columns C or F are marked with a '*', indicates that the difference between advised and non-advised returns are statistically significant at a 95% confidence level. When comparing advised and non-advised returns, the bold green text indicates which return was higher. For the return differentials in column G, green and red text indicate positive and negative differences respectively.

Column G in Table 9 partly answers the primary question of this study which is "do financial advisors create value for investors relative to the cost of advice?". Here value has a narrow definition, being additional returns for the investor. Before advice fees are considered, advisors in this study have added value (column C) for advised investors in one fund, the Local Index Property Fund, where the gross return difference between advised and non-advised investors was found to be statistically significant at a 95% confidence level. Once fees are considered, advisors have detracted value (column G) in 6 out of 7 funds where the net return differences between advised and non-advised investors was found to be statistically significant at a 95% confidence level. Advisors added value net of fees (column G) in 1 out of 7 funds.

Given that none of the funds that were found to have a significant difference in net returns between advised and non-advised investors were also found to have a significant gross return difference, it stands to reason that the cost of advice (column F) was the component that created the significant differences in net returns between the two groups.

The primary focus of this study seeks to not only understand if financial advisors create value for investors through additional returns relative to the cost of advice, but also how (if any value is created). Understanding the trading behaviour of advised and non-advised investors could aid the understanding of how additional returns are added or detracted.

4. *Is there a difference between the number of trades made by advised and non-advised investors, over the investigation period?*

Table 10 Testing of trade differences, advised versus non-advised investors

Fund Name	Wilcoxon Rank Sum Test		Average number of trades	
	W Statistic	p-value	Non-Advised	Advised
Equity Dividend & Growth Fund	22118.0	0.9893	2.89	3.08
Equity Growth Fund	13092.0	0.1796	2.94	2.74
Global Equity Long Only Fund	252.0	1.9E-09*	**2.81**	0.65
Money Market Fund - Fee class 1	7856.0	0.1408	13.94	4.84
Money Market Fund - Fee class 2	3440.5	0.1270	4.67	2.52
Multi Asset High Equity Fund	13740.0	0.4954	3.64	3.81
Multi Asset Low Volatility Income Fund	4465.5	0.1394	3.34	5.14
Multi Asset Low Equity Fund - Fee class 1	75690.0	0.5129	3.25	3.51
Multi Asset Low Equity Fund - Fee class 2	1975.5	0.6274	8.85	2.27
Local Index Property Fund	1670.5	0.2514	1.76	1.16

The number of trades include all active purchase and redemption trades, covering the investigation period. Funds highlighted in yellow or where the p-value is marked with a '*' indicates that the difference between the number of advised and non-advised active trades is statistically significant at a 95% confidence level. When comparing the average number of advised and non-advised trades, the bold green text indicates which average count is higher.

Table 10 shows that at a 95% confidence level, there is a significant difference between the number of active trades between advised and non-advised investors for the Global Equity Long Only Fund. On average, non-advised investors trade significantly more than advised investors.

While the differences between active trades between advised and non-advised investors for funds Money Market Fund - Fee class 1 and Multi Asset Low Equity Fund - Fee class 2 appear large, the difference was not found to be statistically significant. It is beyond the scope of this study to put forward anything conclusive as to why this is the case.

Table 10 considers both active purchase and redemption trades. However, by combining the active purchase and redemption trades, the impact of each in isolation is hidden. Therefore, to better understand what drives the significant difference in the number of active trades, the testing shown in Table 10 is repeated by considering active purchase and redemption trades separately.

Table 11 Testing of purchase trade differences, advised versus non-advised investors

Fund Name	Wilcoxon Rank Sum Test		Average Purchase Trades	
	W Statistic	p-value	Non-advised	Advised
Equity Dividend & Growth Fund	22724.0	0.5960	1.59	2.05
Equity Growth Fund	13202.0	0.1225	1.69	1.81
Global Equity Long Only Fund	272.0	9.31e-10*	**2.05**	0.40
Money Market Fund - Fee class 1	7959.5	0.1338	6.25	1.66
Money Market Fund - Fee class 2	3275.5	0.0064*	**1.37**	0.61
Multi Asset High Equity Fund	13538.0	0.3415	2.04	2.39
Multi Asset Low Volatility Income Fund	3764.0	0.8018	1.00	1.85
Multi Asset Low Equity Fund - Fee class 1	74062.0	0.2151	1.41	1.76
Multi Asset Low Equity Fund - Fee class 2	1745.0	0.0604	7.00	0.55
Local Index Property Fund	1472.5	0.0112*	**1.01**	0.43

Only active purchase trades are considered, covering the investigation period. Funds highlighted in yellow or where the p-value is marked with a '*' indicates that the difference between the number of advised and non-advised active purchase trades is statistically significant at a 95% confidence level. When comparing the average number of advised and non-advised active purchase trades, the bold green text indicates which average count was higher.

Table 11 shows that at a 95% confidence level, there is a significant difference between the number of active purchase trades between advised and non-advised investors for the Global Equity Long Only, Money Market (fee class 2) and Local Index Property funds. In all three funds, non-advised investors made significantly more active purchase trades compared to advised investors.

Table 12 Testing of redemption trade differences, advised versus non-advised investors

Fund Name	Wilcoxon Rank Sum Test		Average Redemption Trades	
	W Statistic	p-value	Non-advised	Advised
Equity Dividend & Growth Fund	22576.0	0.6574	1.30	1.03
Equity Growth Fund	12121.0	0.9314	1.24	0.93
Global Equity Long Only Fund	791.0	2.47e-02*	**0.76**	0.25
Money Market Fund - Fee class 1	8346.5	0.4904	7.70	3.17
Money Market Fund - Fee class 2	3663.5	0.3812	3.30	1.92
Multi Asset High Equity Fund	14269.0	0.9196	1.60	1.42
Multi Asset Low Volatility Income Fund	4806.0	0.0188*	2.34	**3.29**
Multi Asset Low Equity Fund - Fee class 1	79883.0	0.5455	1.84	1.75
Multi Asset Low Equity Fund - Fee class 2	2050.0	0.8843	1.85	1.72
Local Index Property Fund	2011.0	0.3518	0.75	0.73

Only active redemption trades are considered, covering the investigation period. Funds highlighted in yellow or where the p-value is marked with a '*' indicates that the difference between the number of advised and non-advised active redemption trades is statistically significant at a 95% confidence level. When comparing the number of advised and non-advised trades, the bold green text indicates which average count was higher.

Table 12 shows that at a 95% confidence level, there is a significant difference between the number of active redemption trades between advised and non-advised investors for the Global Equity Long Only and Multi Asset Low Volatility Income funds. For the Global Equity Long Fund, non-advised investors made significantly more active redemption trades compared to advised investors, while the opposite was true for the Multi Asset Low Volatility Income Fund.

The results from Table 11 and Table 12 show that for the Global Equity Long Only Fund, non-advised investors made both more active purchase and redemption trades compared to advised investors over the investigation period.

Figure 2 provides the average percentage of the number of investors that fall into each 'number of trades' category, across all funds. The methodology used to calculate the number of trades in Figure 2 is consistent with that used in 3.2.2.4 in that only active purchase and redemption trades are considered.

Figure 2 Average percentage of investors categorised by number of trades

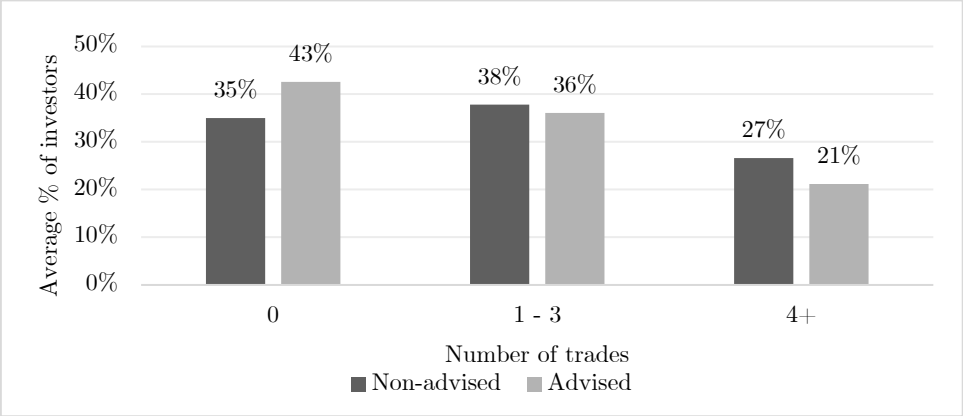


Figure 2 shows that on average 35% of non-advised and 43% of advised investors made no active trades over the investigation period (of approximately five years). On average, more non-advised investors have made more than four active trades compared to advised investors over the period.

The results in Table 10, Table 11 and Table 12 have shown that there are significant differences in the number of active trades between advised and non-advised investors in 4 out of 10 funds. The final set of results considers how trading frequency translates into additional returns for investors, by testing for significant correlation between the number of active trades made and the gross returns earned by investors.

5. *Is there a correlation between the number of trades made and the gross returns earned, by both advised and non-advised investors over the investigation period?*

Table 13: Testing the correlation between the number of active trades made and gross returns earned, advised versus non-advised investors

	Spearman Rho correlation test							
	Rho correlation	p-value	Average number of trades	Average gross return	Rho correlation	p-value	Average number of trades	Average gross return
Fund Name	Non-advised	Non-advised	Non-Advised	Non-Advised	Advised	Advised	Advised	Advised
Equity Dividend & Growth Fund	0.1739	0.0284*	2.89	3.84%	0.2842	1.5E-06*	3.08	3.64%
Equity Growth Fund	0.1942	0.0072*	2.94	4.31%	0.2932	0.0008*	2.74	4.68%
Global Equity Long Only Fund	-0.3695	0.0993	2.81	10.12%	0.4291	1.4E-05*	0.65	10.69%
Money Market Fund - Fee class 1	-0.2213	0.0254*	13.94	6.31%	-0.2475	0.0011*	4.84	6.21%
Money Market Fund - Fee class 2	-0.0046	0.9722	4.67	6.92%	-0.4980	1.2E-09*	2.52	6.73%
Multi Asset High Equity Fund	0.0747	0.4039	3.64	5.76%	0.2873	1.1E-05*	3.81	6.06%
Multi Asset Low Volatility Income Fund	-0.3416	0.0557	3.34	5.44%	-0.2082	0.0012*	5.14	6.32%
Multi Asset Low Equity Fund - Fee class 1	-0.0975	0.1621	3.25	5.15%	-0.0444	0.2233	3.51	5.12%
Multi Asset Low Equity Fund - Fee class 2	0.1289	0.4279	8.85	5.63%	0.0804	0.4170	2.27	5.47%
Local Index Property Fund	-0.3210	0.0081*	1.76	4.40%	0.2098	0.1206	1.16	4.87%

The average number of trades includes active purchase and redemption trades, covering the investigation period. Funds highlighted in yellow or where the p-value is marked with a '*' indicates that the correlation between the number of active trades made and the gross return earned is statistically significant at a 95% confidence level. The bold green text indicates that active trades are positively correlated with gross returns earned, while the bold red text indicates a negative correlation.

Scatter plots for the funds that have a significant correlation between the number of active trades made and gross return earned (highlighted in yellow or where the p-value is marked with a '*' in Table 13) are shown Appendix 5.

Table 13 shows that at a 95% confidence level, there is a significant correlation between the number of active trades made and the gross return earned for non-advised investors in the Equity Dividend & Growth, Equity Growth, Money Market (fee class 1) and Local Index Property funds.

For advised investors, a significant correlation was found in the Equity Dividend & Growth, Equity Growth, Global Equity Long Only, Money Market (fee classes 1 and 2), Multi Asset High Equity and Multi Asset Low Volatility Income funds.

The correlation coefficients shown in Table 13 for non-advised investors show a very weak positive correlation for both the Equity Dividend & Growth and Equity Growth funds. It also shows a very weak negative correlation for the Money Market (fee class 1) Fund and a weak negative correlation for the Local Index Property Fund. Given that these correlations are weak and close to zero, the relationship between active trades and gross returns is considered weak or non-existent.

For advised investors, Table 13 shows very weak positive correlations for the Equity Dividend & Growth, Equity Growth and Multi Asset High Equity funds; and a weak positive correlation for the Global Equity Long Only Fund. It also shows a very weak negative correlation for both the Money Market (fee class 1) and Multi Asset Low Volatility Income funds; and a moderate negative correlation for the Money Market (fee class 2) Fund.

The correlation for the Money Market (fee class 2) Fund, while only moderate, shows that a relationship exists where gross returns decrease with an increase in the number of active trades. The correlations for the remaining advised funds are close to zero and therefore the relationship between active trades and gross returns is considered weak or non-existent.

It is beyond the scope of this study to put forward anything conclusive as to why these relationships exist.

The same testing is repeated separately for active purchase and redemption trades in order to better understand what the drivers are for the significant correlations shown in Table 13.

Table 14 Testing the correlation between the number of active purchase trades made and gross returns earned, advised versus non-advised investors

	Spearman Rho correlation test					
	Rho correlation	p-value	Average Purchase Trades	Rho correlation	p-value	Average Purchase Trades
Fund Name	Non-advised	Non-advised	Non-advised	Advised	Advised	Advised
Equity Dividend & Growth Fund	0.2423	0.0021*	1.59	0.3628	4.5E-10*	2.05
Equity Growth Fund	0.2126	0.0032*	1.69	0.3406	0.0001*	1.81
Global Equity Long Only Fund	-0.0443	0.8488	2.05	0.4292	1.4E-05*	0.40
Money Market Fund - Fee class 1	0.0715	0.4754	6.25	-0.0776	0.3117	1.66
Money Market Fund - Fee class 2	0.3833	0.0025*	1.37	-0.1466	0.0935	0.61
Multi Asset High Equity Fund	-0.0070	0.9375	2.04	0.2150	0.0011*	2.39
Multi Asset Low Volatility Income Fund	-0.3549	0.0463*	1.00	-0.1215	0.0597	1.85
Multi Asset Low Equity Fund - Fee class 1	-0.1200	0.0850	1.41	-0.0434	0.2347	1.76
Multi Asset Low Equity Fund - Fee class 2	-0.0904	0.5792	7.00	-0.0655	0.5089	0.55
Local Index Property Fund	-0.4871	2.9E-05*	1.01	-0.3195	0.0164*	0.43

The average trades only include active purchase trades, covering the investigation period. Funds highlighted in yellow or where the p-value is marked with a '*' indicates that the correlation between the number of active purchase trades made and the gross return earned is statistically significant at a 95% confidence level. The bold green text indicates that active purchase trades are positively correlated with gross returns earned, while the bold red text indicates a negative correlation.

Table 15 Testing the correlation between the number of active redemption trades made and gross returns earned, advised versus non-advised investors

	Spearman Rho correlation test					
	Rho correlation	p-value	Average Redemption Trades	Rho correlation	p-value	Average Redemption Trades
Fund Name	Non-advised	Non-advised	Non-advised	Advised	Advised	Advised
Equity Dividend & Growth Fund	0.1033	0.1953	1.30	0.0086	0.8865	1.03
Equity Growth Fund	-0.0717	0.3253	1.24	0.0939	0.2935	0.93
Global Equity Long Only Fund	-0.5152	0.0169*	0.76	0.1603	0.1208	0.25
Money Market Fund - Fee class 1	-0.3418	0.0004*	7.70	-0.2591	0.0006*	3.17
Money Market Fund - Fee class 2	-0.1198	0.3618	3.30	-0.5144	2.8E-10*	1.92
Multi Asset High Equity Fund	0.1128	0.2068	1.60	0.2256	0.0006*	1.42
Multi Asset Low Volatility Income Fund	-0.2738	0.1294	2.34	-0.2011	0.0017*	3.29
Multi Asset Low Equity Fund - Fee class 1	0.0049	0.9442	1.84	-0.0325	0.3737	1.75
Multi Asset Low Equity Fund - Fee class 2	0.2573	0.1090	1.85	0.1802	0.0672	1.72
Local Index Property Fund	0.4430	0.0002*	0.75	0.6027	8.9E-07*	0.73

The average trades only include active redemption trades, covering the investigation period. Funds highlighted in yellow or where the p-value is marked with a '*' indicates that the correlation between the number of active redemption trades made and the gross return earned is statistically significant at a 95% confidence level. The bold green text indicates that active redemption trades are positively correlated with gross returns earned, while the bold red text indicates a negative correlation.

Table 14 shows that at a 95% confidence level, there is a significant correlation between the number of active purchase trades made and the gross returns earned for non-advised investors in the Equity Dividend & Growth, Equity Growth, Money Market (fee class 2), Multi Asset Low Volatility Income and Local Index Property funds.

For advised investors, a significant correlation was found in the Equity Dividend & Growth, Equity Growth, Global Equity Long Only, Multi Asset High Equity and Local Index Property funds.

The correlation coefficients shown in Table 14 for non-advised investors show a very weak positive correlation for both the Equity Dividend & Growth and Equity Growth funds; and a weak positive correlation for the Money Market (fee class 2) Fund. It also shows a weak negative correlation for the Multi Asset Low Volatility Income Fund and a borderline moderate negative correlation for the Local Index Property Fund.

The correlation for the Local Index Property Fund, while only borderline moderate, shows that a relationship exists where gross returns decrease with an increase in the number of active purchase trades. The correlations for the remaining non-advised funds are close to zero and therefore the relationship between active purchase trades and gross returns earned is considered weak or non-existent.

For advised investors, Table 14 shows weak positive correlations for the Equity Dividend & Growth Fund, Equity Growth and Global Equity Long Only funds; and a very weak positive correlation for the Multi Asset High Equity Fund. It also shows a weak negative correlation for the Local Index Property Fund. Given that the correlations for advised investors are weak and close to zero, the relationship between active purchase trades and gross returns is considered weak or non-existent.

Table 15 shows that at a 95% confidence level, there is a significant correlation between the number of active redemption trades made and the gross return earned for non-advised investors in the Global Equity Long Only, Money Market (fee class 1) and Local Index Property funds.

For advised investors, a significant correlation was found in the Money Market (fee classes 1 and 2), Multi Asset High Equity, Multi Asset Low Volatility Income and Local Index Property funds.

The correlation coefficients shown in Table 15 for non-advised investors show a weak positive correlation for the Local Index Property Fund. It also shows a weak negative correlation for the Money Market (fee class 1) and a moderate negative correlation for the Global Equity Long Only Fund.

The correlation for the Global Equity Long Only Fund, while only moderate, shows that a relationship exists where gross returns decrease with an increase in the number of active redemption trades. The correlations for the remaining non-advised funds are close to zero and therefore the relationship between active redemption trades and gross returns earned is considered weak or non-existent.

For advised investors, Table 15 shows a very weak positive correlation for the Multi Asset High Equity Fund; and a moderate positive correlation for Local Index Property Fund. It also shows very weak negative correlations for the Money Market (fee class 1) and Multi Asset Low Volatility Income funds; and a moderate negative correlation for the Money Market (fee class 2) Fund.

The correlation for the Money Market (fee class 2) Fund, while only moderate, shows that a relationship exists where gross returns decrease with an increase in the number of active redemption trades. Likewise, for the Local Index Property Fund, while only moderate, the positive correlation shows that a relationship exists where gross returns increase with an increase in the number of active redemption trades. The correlations for the remaining advised funds are close to zero and therefore the

relationship between active redemption trades and gross returns earned is considered weak or non-existent.

The results shown in Table 14 and Table 15 when viewed together help explain the drivers that cause the significant correlations shown in Table 13, at a 95% confidence level.

For non-advised investors, the significant positive correlations for the Equity Dividend & Growth and Equity Growth funds shown in Table 13 are driven by significant active purchase trades.

The significant negative correlation for the Money Market (fee class 1) Fund shown in Table 13 is driven by significant active redemption trades.

For the Local Index Property Fund, both active purchase and active redemption trades were found to have a significant correlation with gross returns at a 95% confidence level, however these relationships were opposing. Active purchase trades had a borderline moderate negative correlation with gross returns, while active redemption trades had a weak positive correlation. As a result, it is not conclusive which type of trade is the driver for the significant correlation shown in Table 13.

Table 14 showed a significant correlation for active purchase trades in the Money Market (fees class 2) and Multi Asset Low Volatility Income funds, but there were no significant correlations in the same funds for active redemption trades in Table 15 or overall active trades in Table 13. Table 15 showed a significant correlation for active redemption trades in the Global Equity Long Only Fund, but there were no significant correlations in the same fund for active purchase trades in Table 14 or overall active trades in Table 13. In this study, it appears that when active purchase and redemption trades are combined and significance testing is carried out using the combined total active trades, the overall correlation between total active trades and gross returns reduces in significance.

For advised investors, the significant positive correlations for the Equity Dividend & Growth, Equity Growth and Global Equity Long Only funds shown in Table 13 are driven by significant active purchase trades.

The significant negative correlations for the Money Market (fee classes 1 and 2) and Multi Asset Low Volatility Income funds are driven by significant active redemption trades.

For the Multi Asset High Equity Fund, both active purchase and active redemption trades were found to have a significant positive correlation with gross returns at a 95% confidence level. As a result, they are both the drivers for the significant correlation shown in Table 13.

Table 14 showed a significant negative correlation for active purchase trades in the Local Index Property Fund while Table 15 showed a significant positive correlation for active redemption trades. However, there is no significant correlation in the same fund for overall active trades in Table 13. As stated previously for non-advised investors, when active purchase and redemption trades are combined for advised investors, the overall correlation between total active trades and gross returns appears to reduce in significance.

5. Conclusion & Recommendations

5.1 Summary of results

The results of this study show that overall, the returns generated by non-advised investors are not significantly different from the returns generated by advised investors before advisor fees are considered. These results indicate that, without considering advisor fees, investors performed the same whether advised or not and that this investment performance is not significantly different from the underlying fund performance. This result is consistent with the findings of Allie, West and Willows (2015).

In this study, when advisor fees are considered and net of advisor fee returns are compared, the results show that non-advised investors outperform advised investors in 6 out 10 funds. Only in 1 out of 10 funds do advised investors outperform non-advised investors. For the remaining 3 funds, there is no significant difference in net of advisor fee returns.

Overall, in 4 out of 10 funds, advised investors performed the same or better than non-advised investors. Conversely, it could be viewed that in 9 out of 10 funds, non-advised investors had the same or better performance than advised investors.

The analysis carried out in this study shows that the impact of advisor fees creates the significant difference in performance between advised and non-advised investors; leading to non-advised investors performing better after fees are considered. Table 9 highlights that in most cases, the additional returns generated by advice is significantly eroded by the cost of advice. This finding is consistent with the study by Hackethal, Haliassos and Jappelli (2011), where it was also found that advised investors had lower net returns on average. However, in this study, lower net returns is driven by the cost of advice, and not due to trading costs as a result of increased levels of trading as found in the study by Hackethal, Haliassos and Jappelli (2011).

On investigating the drivers for return differentials between advised and non-advised investors, the results of this study show that overall, advised investors made fewer active trades than non-advised investors. Across all funds considered in this study, 43% of advised investors made no trades over the period of investigation, compared to 35% of non-advised investors (Figure 2). 21% of advised investors made 4 or more active trades over the period of investigation, compared to 27% of non-advised investors (Figure 2). This result is contrary to what was found by Allie, West and Willows (2015), who found that advised investors traded significantly more than non-advised investors. It may be that advisors have overcome the negative behavioural effect arising from overconfidence and overtrading, as discussed by Barber and Odean (2001). Perhaps non-advised investors have overestimated their abilities as discussed by De Bondt and Thaler (1995), leading them to trade more.

When assessing the correlation of active trades made and gross returns earned, the results did not show strong evidence of return differentials arising from the timing of trade decisions, for either advised or non-advised investors. The results of this study show that despite non-advised investors trading more on average than advised investors, their investment performance is not worse off as a result.

5.2 Conclusion

The limitations of this study are reiterated here to highlight its relevance on the conclusions drawn. The data used in this study covered a period of approximately five years and was limited to one investment house and only considered ten funds managed by them. The results of this study cannot take into account the effect of advice on other funds investors may have with other investment houses, nor can it consider the effect of advice in respect of the reallocation of funds from one house to another. The results also cannot take into account the type, extent or nature of advice that was provided by the advisor to the investor. It also cannot account for the advisor's level of experience, qualifications, skillset, independence status or whether any conflicts of interest exist.

This study only considers the quantitative value of advice measured through return differentials between advised and non-advised investors. The results of this study show that while advisors do add value through excess returns on investor portfolios, the return difference is not significant when compared to non-advised investors. The results also show that when the cost of advice is considered for advised investors, it detracts value as the additional returns added is less than the cost of advice.

The results of this study align with the fourth quadrant of the 'Advice-Value Framework' outlined by Dutkiewicz, Levin and Dukhi (2007) where "on a net basis the consumer's financial well-being is negatively impacted" (Dutkiewicz, Levin and Dukhi, 2007). Dutkiewicz, Levin and Dukhi (2007) suggest that lowering the cost of advice would be one way of shifting the experience back to a positive value.

The alternative view is that the cost of advice is necessary to overcome the many behavioural and cognitive biases investors are faced with when making investment decisions, which can "interfere with decision making" (Willis, 2008). Further to this, Willis (2008) finds that information asymmetry between product providers and consumers along with the everchanging regulatory landscape, lack of consumer comprehension and numeracy skills puts consumers in a poor position to be self-advised. Given that retail investors have a plethora of investment options available to them, this could lead to a 'choice overload'. Willis (2011) suggests that this can lead to consumers opting for oversimplified decision strategies which fail to consider all dimensions of the decision. Anderson (2003) suggests that consumers may avoid making any decisions if they are unclear what the best option is or anticipate regret.

Ultimately, there needs to be a balance between forgoing investment returns in order to pay for financial advice and receiving no advice at all and potentially making poor investment decisions or making no financial decisions at all and neglecting one's financial well-being.

While the results of this study show that financial advisors were unable to add significant quantitative value after fees, investors may benefit from qualitative value

through the advice process. It stands to reason that the more extensive the advice process followed, such as a full needs analysis approach (so that the investor's full financial needs are met), and the more qualified and experienced the financial advisor, the more qualitative value ought to be added by financial advisors.

5.3 Areas for future research

The data used in this study was limited to one investment house and only considered ten funds. Therefore, the results do not take into account the effect of advice on other funds, held by other investment houses. As such, it does not consider the investors full investment portfolio or their full investment strategy, and therefore does not cover the full spectrum of advice given by the advisor. Further analysis could be carried out on an extended data set, covering multiple funds from multiple investment houses.

The analyses in this study could be extended to consider the gender and diversity of financial advisors to investigate if there is any gender bias present.

This study does not consider the type or extent of advice given by the advisor to the investor. It also cannot account for the advisor level of experience, qualifications, skillset, independence status or whether any conflicts of interest exist. The analyses could be extended to investigate whether advisors are independent or tied to a specific product provider or investment house. It could also consider whether advisors have provided a full or partial financial needs analysis or consider other forms of quantifying the extent of advice. These factors could be studied to assess its impact on the qualitative value of advice relative to its cost.

This study only considered the frequency and type of investor trades. The analyses could be extended using more granular trade data which includes the timing of daily trades and the daily underlying fund unit price. It would then be possible to investigate whether investors time their trades in relation to the underlying fund performance or general market performance or sentiment.

6. References

Allie, J., West, D. & Willows, G. 2015. The value of financial advice: An analysis of the investment performance of advised and non-advised individual investors. *Investment Analysts Journal*. 45(1):63–74. DOI: 10.1080/10293523.2016.1201292.

Anderson, C. 2003. The psychology of doing nothing: forms of decision avoidance result from reason and emotion. *Psychological Bulletin*. 129(1):139–167. DOI: 10.1037/0033-2909.129.1.139.

Association for Savings and Investment South Africa (ASISA). 2019. List of CIS Funds as at 31 March 2020. Available: https://www.asisa.org.za/statistics/collective-investment-schemes/list-rand-denominated-funds/ [2020, June 2].

Barber, B. & Odean, T. 2001. Boys Will Be Boys: Gender, Overconfidence, And Common Stock Investment. *Quarterly Journal of Economics*. 116(1):261. DOI: 10.2139/ssrn.139415.

Belsky, G. & Gilovich, T. 2010. *Why Smart People Make Big Money Mistakes and How to Correct Them: Lessons from the Life-Changing Science of Behavioral Economics*. New York: Simon & Schuster.

Cain, D.M., Loewenstein, G., & Moore, D.A. 2005. The Dirt on Coming Clean: Perverse Effects of Disclosing Conflicts of Interest. *The Journal of Legal Studies*. 34(1):1–25. DOI: 10.1086/426699.

Cole, S. & Shastry, G.K. 2008. If you are so smart, why aren't you rich? The effects of education, financial literacy and cognitive ability on financial market participation. *Harvard Business School Working Paper*. Available: http://www.afi.es/EO/FinancialLiteracy.pdf [2019, October 12].

Daniel, K., Hirshleifer, D. & Subrahmanyam, A. 1998. Investor Psychology and Security Market Under- and Overreactions. *Journal of Finance*. 53(6):1839–1885. DOI: 10.1111/0022-1082.00077.

De Bondt, W. & Thaler, R. 1995. Financial Decision-Making in Markets and Firms: A Behavioral Perspective. *Series of Handbooks in Operations Research and Management Science.* North Holland: Elsevier-North Holland.

Dutkiewicz, C., Levin, S., & Dukhi, A. 2007. The Value of Financial Advice: It's Not (Just) About the Cost. *Proceedings of the Actuarial Society of South Africa Convention.* 2 November 2007. Available: http://legacy.actuarialsociety.org.za/Portals/2/Documents/Convention-ValueOfFinancialAdvice-CD-SL-AD-2007.pdf [2019, October 12].

Hackethal, A., Haliassos, M., & Jappelli, T. 2011. Financial advisors: A case of babysitters? *Journal of Banking & Finance.* 36(2):509–524. DOI: 10.1016/j.jbankfin.2011.08.008.

Iyengar, S.S & Lepper, M.R. 2000. When Choice Is Demotivating: Can One Desire Too Much of a Good Thing? *Journal of Personality and Social Psychology.* 79(6):995–1006. DOI: 10.1037/0022-3514.79.6.995.

Kahneman, D., Tversky, A. 1979. Prospect Theory: An Analysis of Decision Under Risk. *Econometrica.* 47(2):263–292. Available: http://www.jstor.org/stable/1914185 [2019, October 12].

Shefrin, H. & Statman, M. 1985. The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence. *Journal of Finance.* 40(3):777–790. DOI: 10.1111/j.1540-6261.1985.tb05002.x.

Smalheiser, N.R. 2011. *Data Literacy: How to Make Your Experiments Robust and Reproducible.* London, Mica Haley.

Thaler, R. 1985. Mental Accounting and Consumer Choice. *Marketing Science.* 4(3):199–214. DOI: 10.1287/mksc.4.3.199.

Thaler, R. & Johnson, E. 1990. Gambling with the House Money and Trying to Break Even: The Effects of Prior Outcomes on Risky Choice. *Management Science.* 36(6):643. DOI: 10.1287/mnsc.36.6.643.

Thaler, R. & Shefrin, H. 1981. An Economic Theory of Self-Control. *The Journal of Political Economy*. 89(2):392. DOI: 10.3386/w0208.

Tversky, A. & Shafir, E. 1992. Choice Under Conflict: The Dynamics of Deferred Decision. *Psychological Science*. 3(6):358–361. DOI: 10.1111/j.1467-9280.1992.tb00047.x.

Oztuna, D., Elhan, AH. & Tuccar, E. 2006. Investigation of four different normality tests in terms of type 1 error rate and power under different distributions. *Turkish Journal of Medical Sciences*. 36(3):171–6. Available: http://journals.tubitak.gov.tr/medical/issues/sag-06-36-3/sag-36-3-7-0510-10.pdf [2020, March 16].

Willis, L.E. 2008. Against Financial-Literacy Education. *Iowa Law Review*. 94(1):197-285. Available: https://ssrn.com/abstract=1105384 [2019, October 12].

Willis, L.E. 2011. The Financial Education Fallacy. *American Economic Review*. 101(3):429-34. DOI: 10.1257/aer.101.3.429.

7. Appendices

7.1 Appendix 1

Using the XIRR function in Microsoft Excel

The XIRR function was used to calculate both the gross and net of fees returns. Figure 3 below shows an illustrative example of how the function is used.

The function requires a schedule of cashflows along with corresponding dates. The series of cashflows must contain at least one positive cashflow and one negative cashflow. For this reason, the closing market value is always stated as a negative value. This accommodates the case where all other cash flows are positive. The function also makes use of a 'guess', whereby the user inserts a number that is guessed to be close to the result of the XIRR function. In this case, 0 is used, but is not required. The function always returns an annualised internal rate of return.

The function in cell J3 is '=XIRR(D3:I3,D2:I2,0)'

If the cashflows, opening and closing market values are arranged in a spreadsheet with all the applicable dates, for all investors, the XIRR function can be used to calculate the annualised internal rate of return. This process would need to be repeated with cashflows that include fees in order to calculate the gross return.

Figure 3 XIRR function example – calculating net of fee returns

	A	B	C	D	E	F	G	H	I	J
1				Opening Market Value	Cashflows (excluding fees, reinvestments)				Closing Market Value	XIRR Return (p.a.) Net of fees
2	Fund Name	Client no.	Date	2014/08/04	2015/08/04	2016/08/04	2017/08/04	2018/08/04	2019/07/31	
3	Equity Dividend & Growth Fund	ABC123		282 609.09	- 4 000.00	- 10 000.00	- 10 000.00	- 10 000.00	- 295 113.17	3.26%

R code used for statistical hypothesis testing

The following R packages are required to be installed after R is installed:

'timeDate', 'timeSeries', 'fBasics', 'lawstat', 'pspearman'.

The code used for each statistical test is as follows:

Kolmogorov-Smirnov

```
ksnormTest(x, title = NULL, description = NULL)
```

Shapiro-Wilk

```
shapiroTest(x, title = NULL, description = NULL)
```

The Wilcoxon Rank Sum Test (Mann-Whitney U-test)

```
wilcox.test(x, y = NULL,
         alternative = c("two.sided", "less", "greater"),
         mu = 0, paired = FALSE, exact = NULL, correct = TRUE,
         conf.int = FALSE, conf.level = 0.95, …)
```

Spearman's Rank Correlation Rho

```
cor.test(x, y,
      alternative = c("two.sided", "less", "greater"),
      method = c("pearson", "kendall", "spearman"),
      exact = NULL, conf.level = 0.95, continuity = FALSE, …)
```

R code used for charts

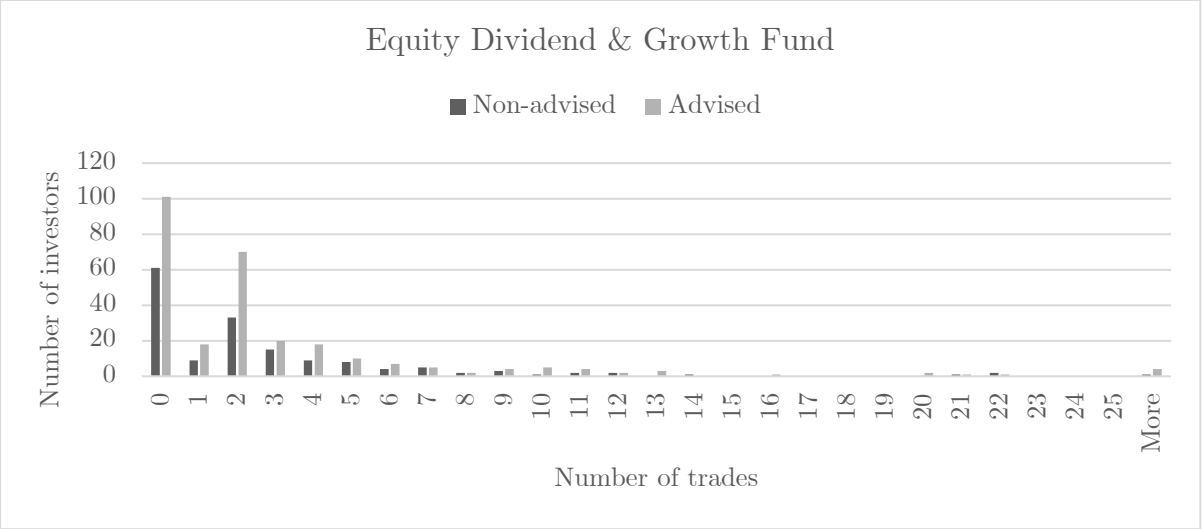
The R package 'ggpubr' was used to create the statistical charts.

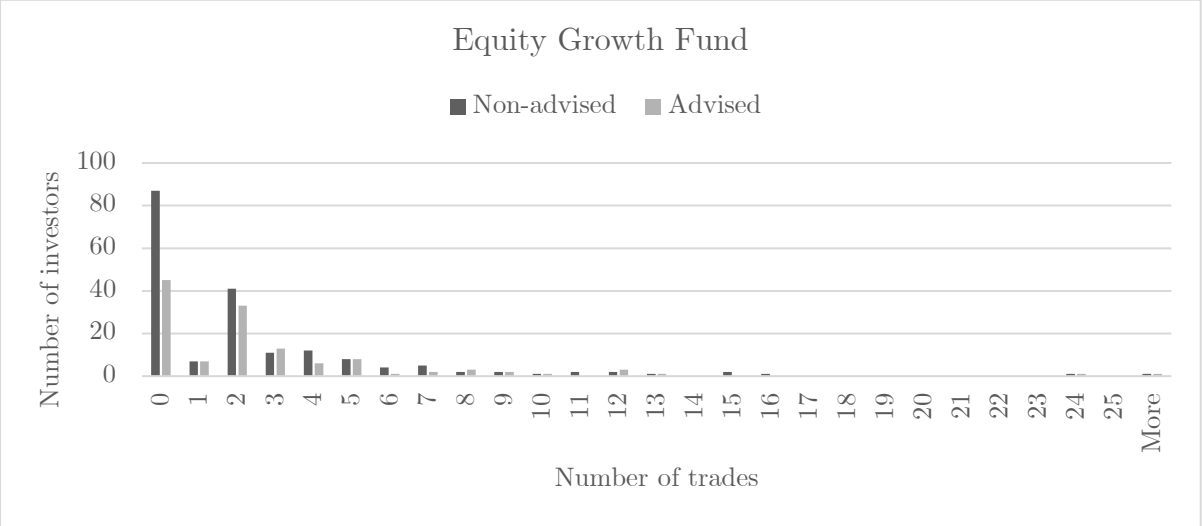
The code used for creating scatter plots is as follows:

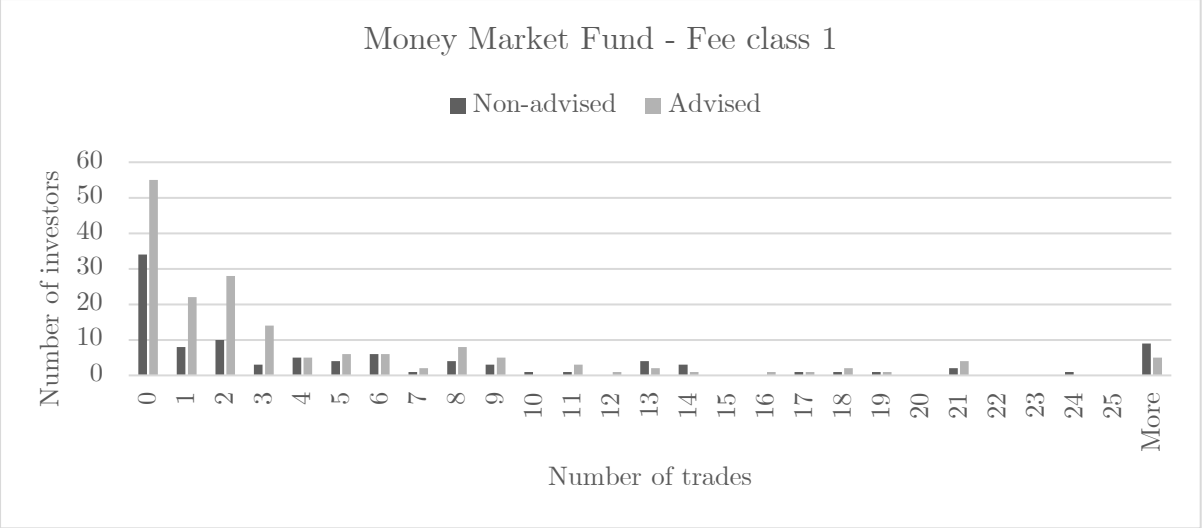
```
ggscatter(
  data,
  x,
  y,
  title = NULL,
  xlab = NULL,
  ylab = NULL,
  add = "reg.line",
  add.params = list(color = "green", fill = "lightgray"),
  font.label = c(12, "plain"),
  font.family = "",
  label.select = NULL,
  cor.coef = FALSE,
  cor.coeff.args = list(),
  cor.method = "spearman",
  ...
)
```

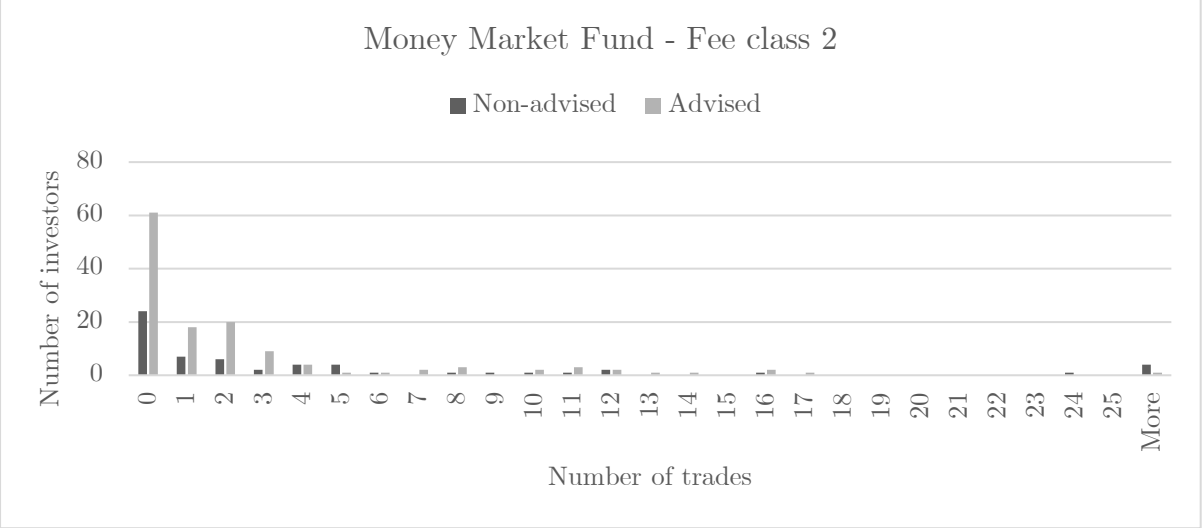
7.2 Appendix 2

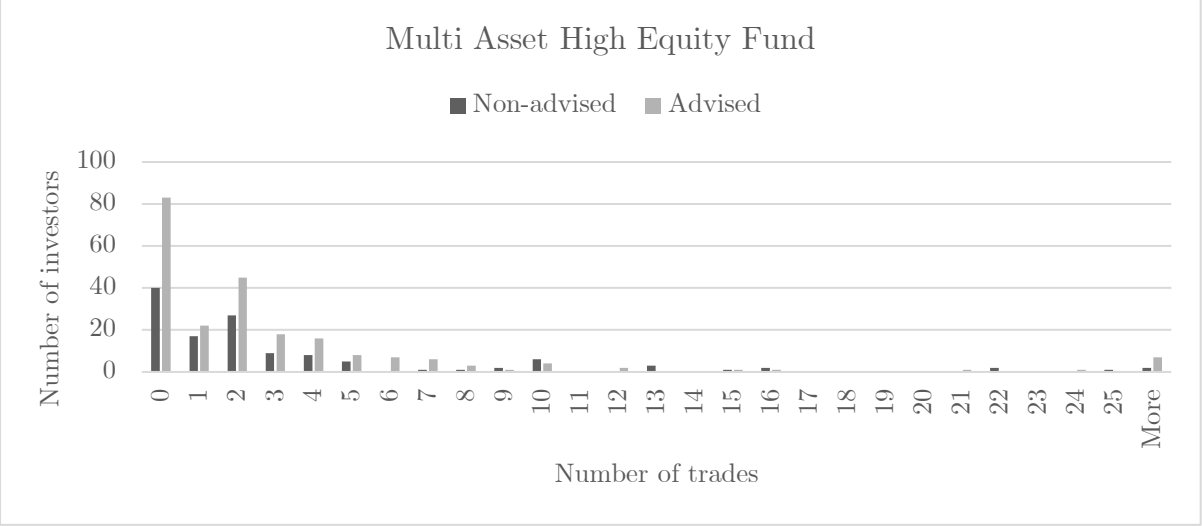
Histograms showing the distribution of the trade data per fund

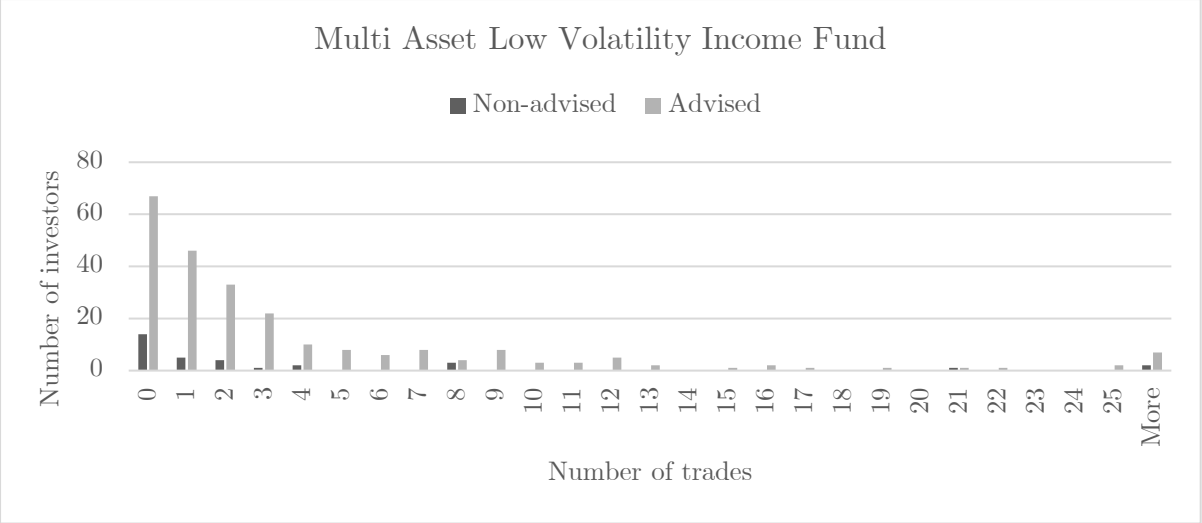


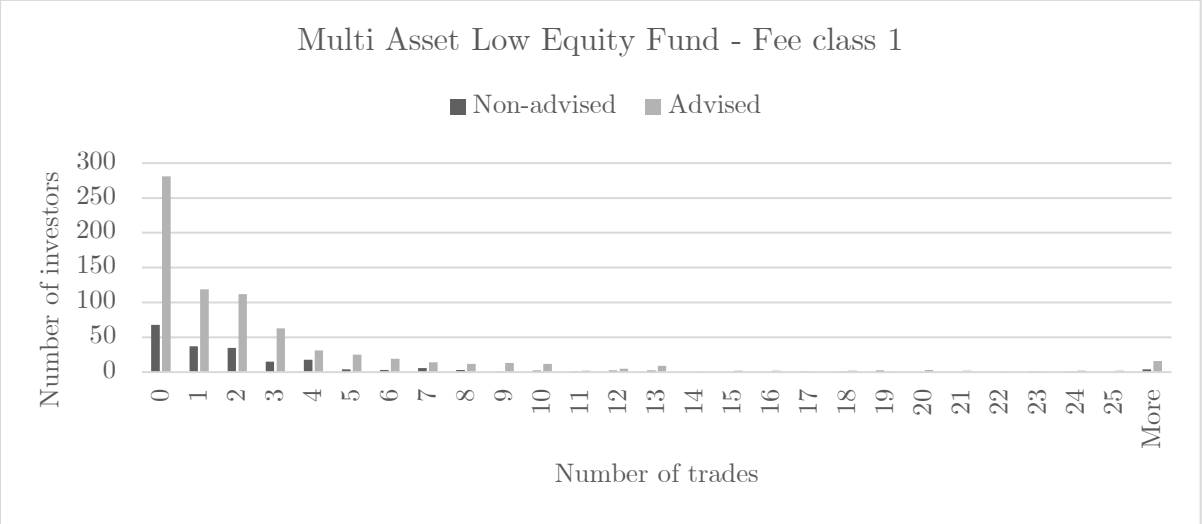


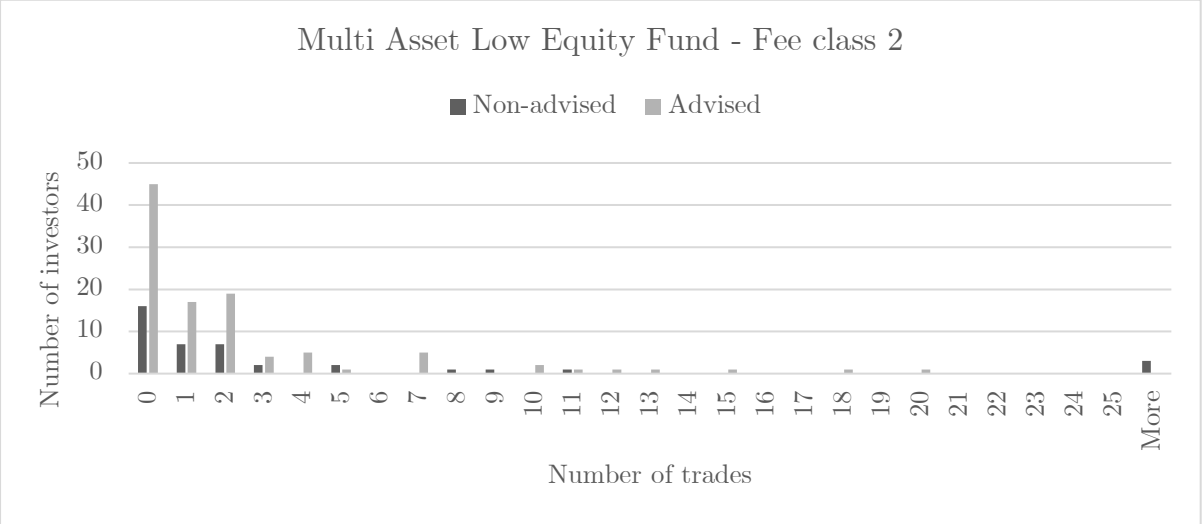

Money Market Fund - Fee class 1
Non-advised
Advised
Number of investors
60
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 More
Number of trades


Money Market Fund - Fee class 2
Non-advised
Advised
Number of investors
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 More
Number of trades


Multi Asset High Equity Fund
Non-advised
Advised
Number of investors
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 More
Number of trades


Multi Asset Low Volatility Income Fund
Non-advised
Advised
Number of investors
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 More
Number of trades

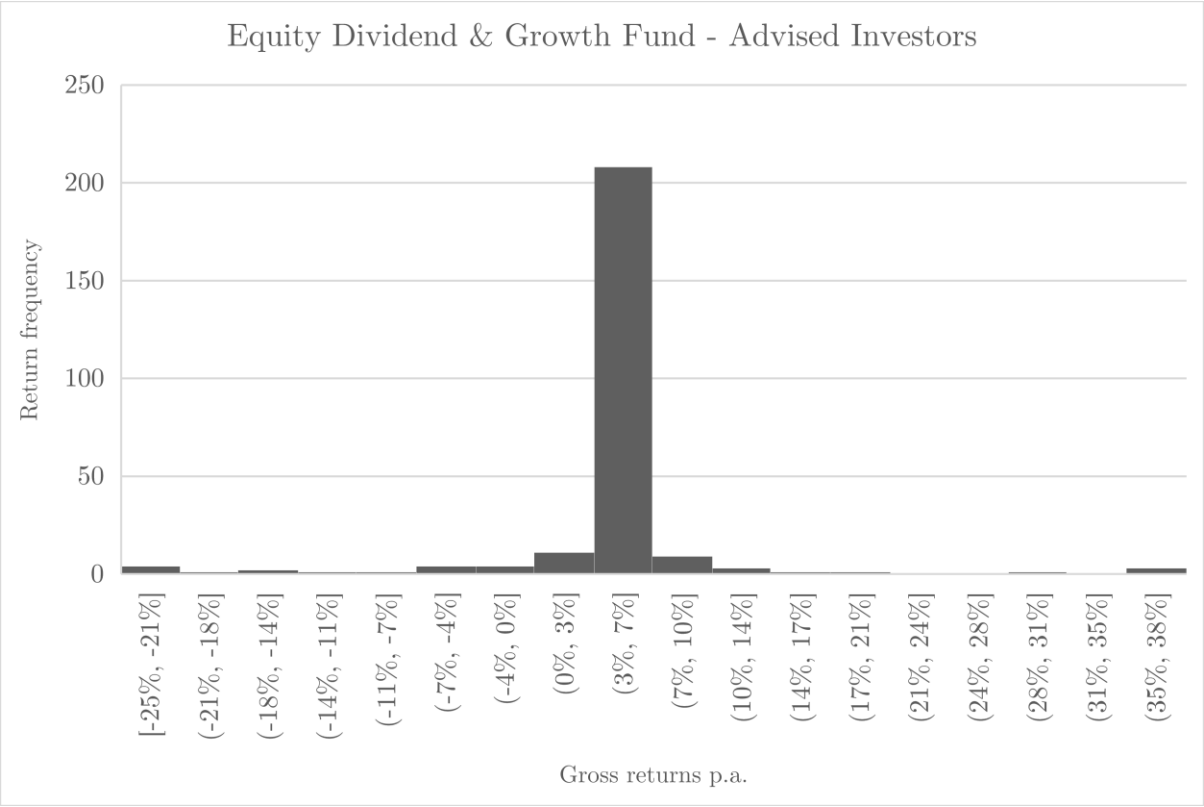

Multi Asset Low Equity Fund - Fee class 1
Non-advised
Advised
Number of investors
300
250
200
150
100
50
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 More
Number of trades

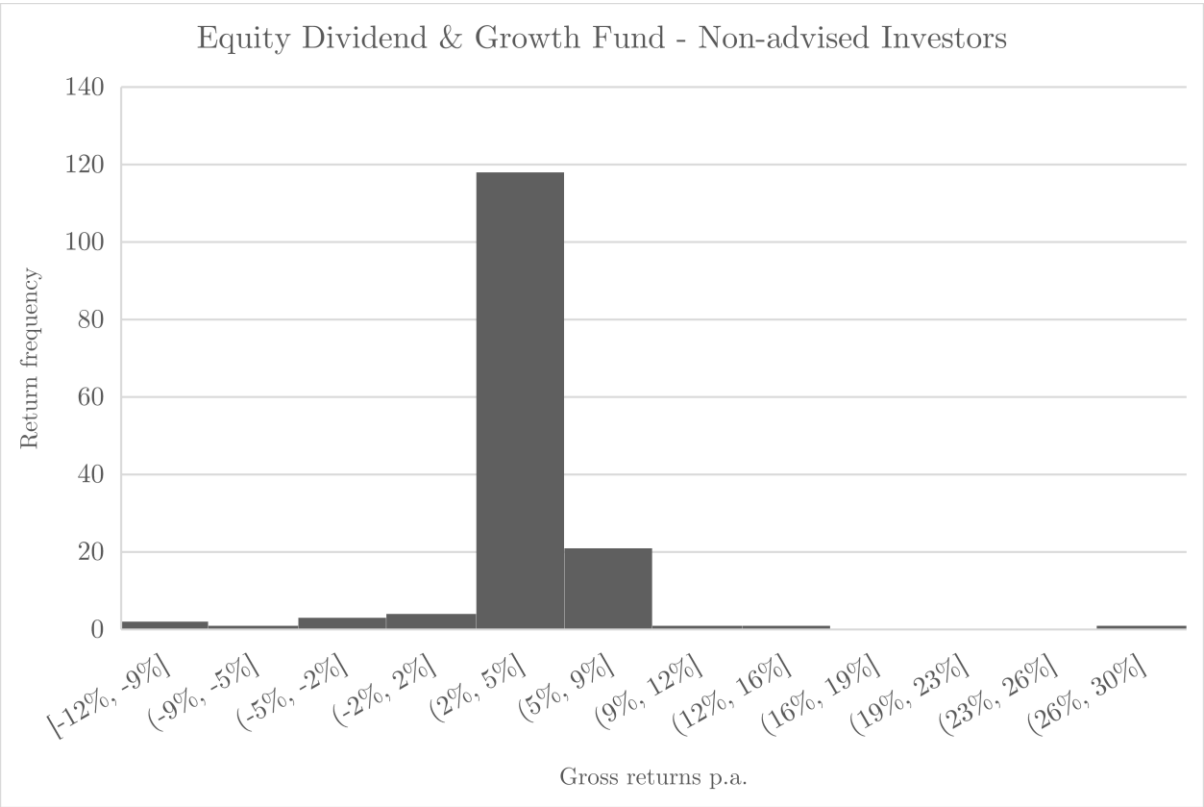

Multi Asset Low Equity Fund - Fee class 2
Non-advised
Advised
Number of investors
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 More
Number of trades

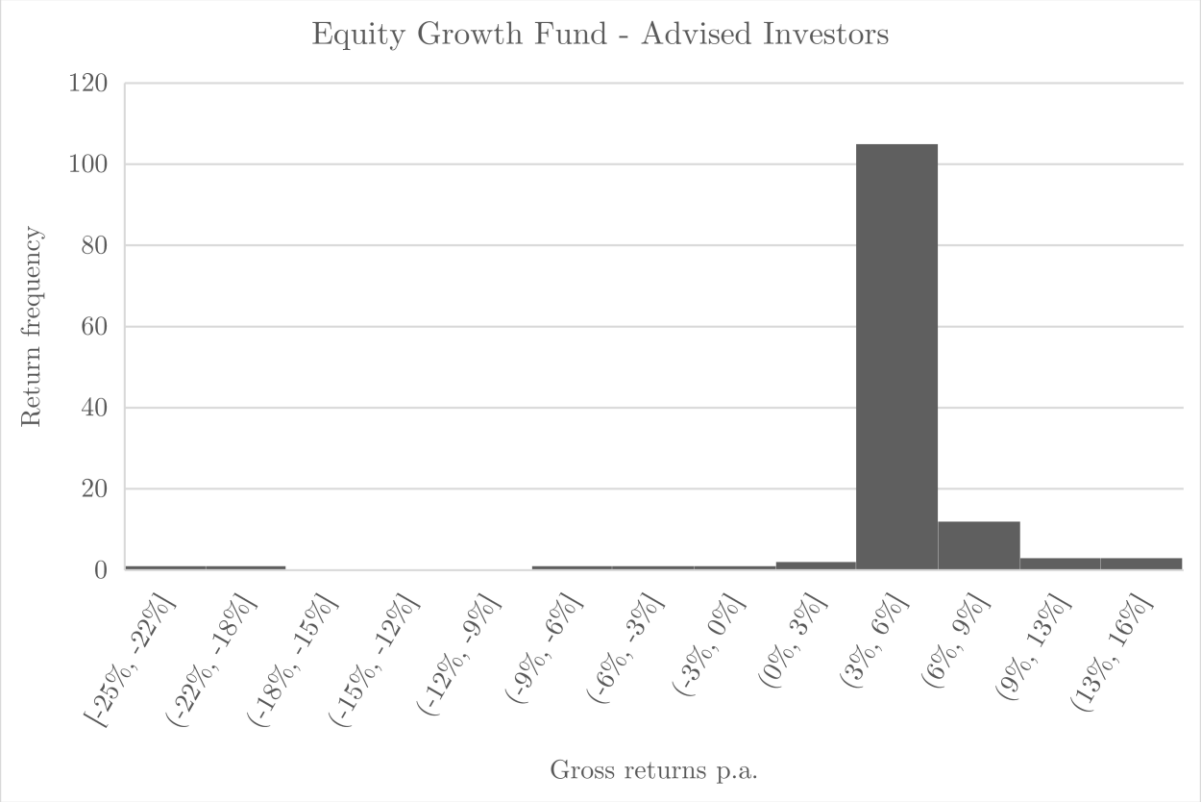

Local Index Property Fund
Non-advised
Advised
Number of investors
40
30
20
10
0
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
More
Number of trades

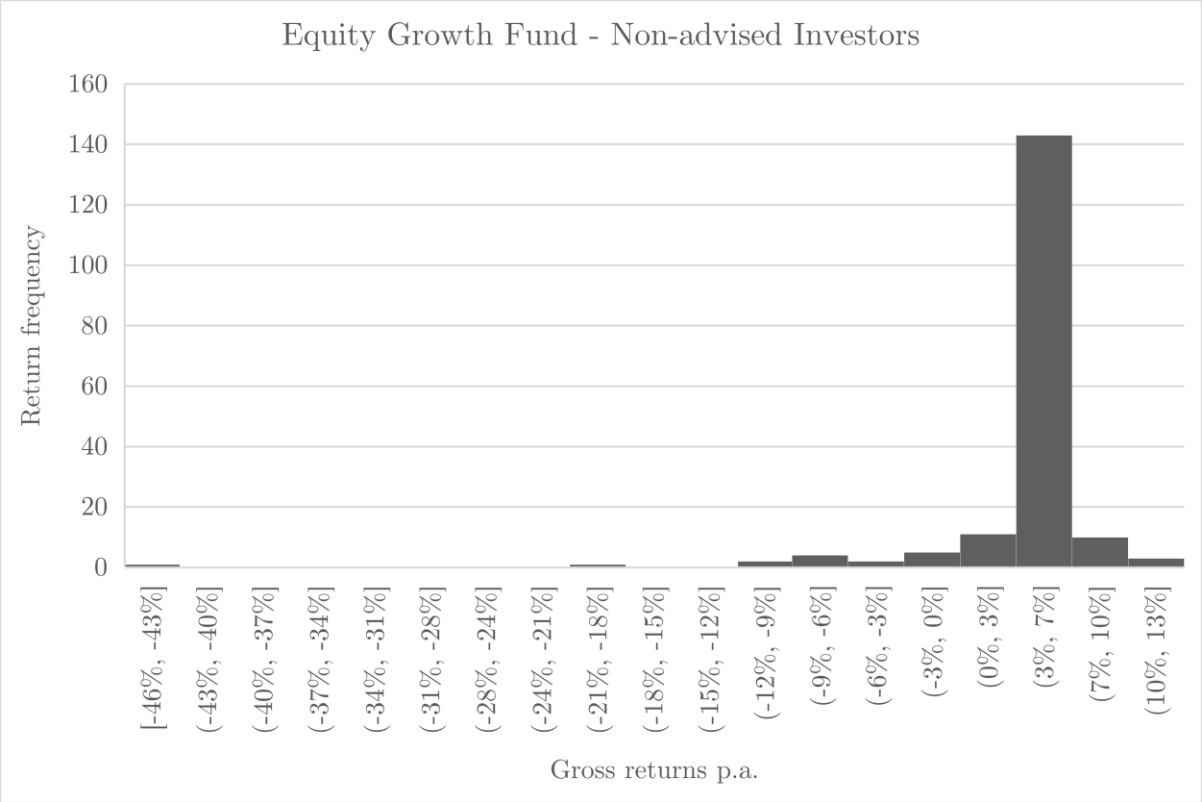
7.3 Appendix 3

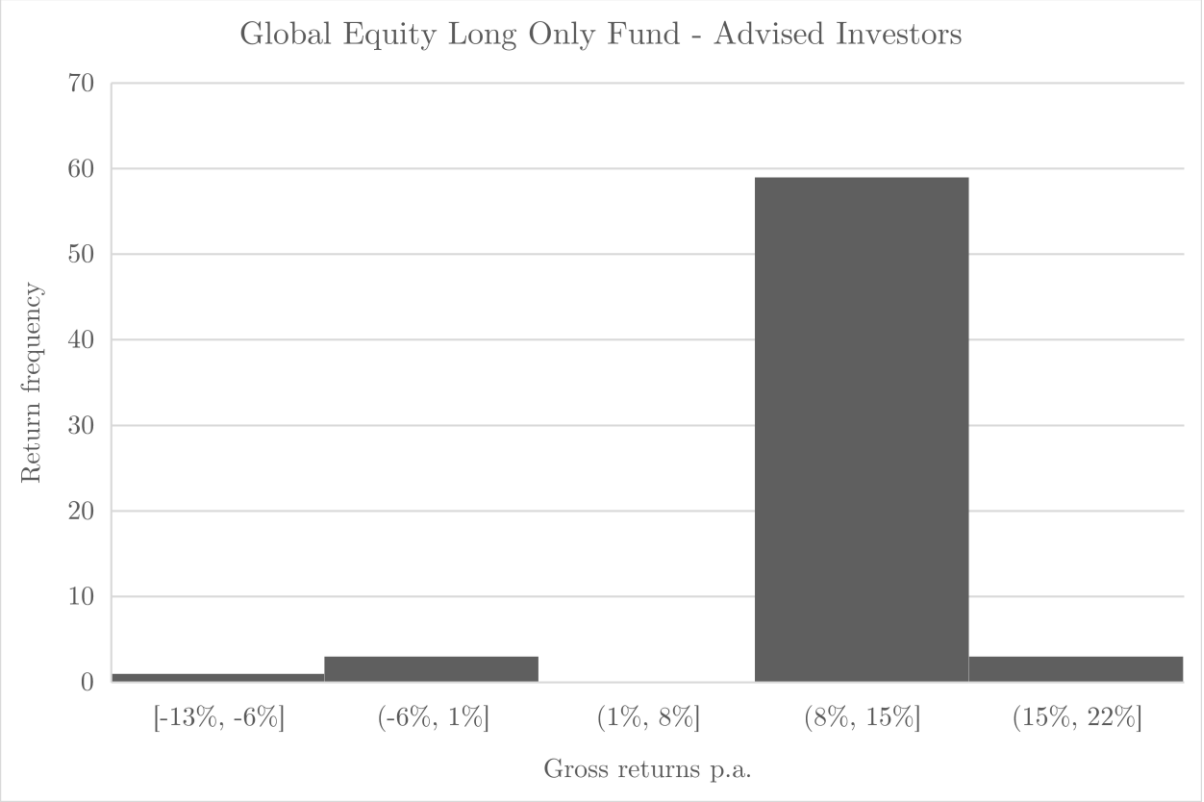
Histograms showing the distribution of the gross return data (annualised) per fund

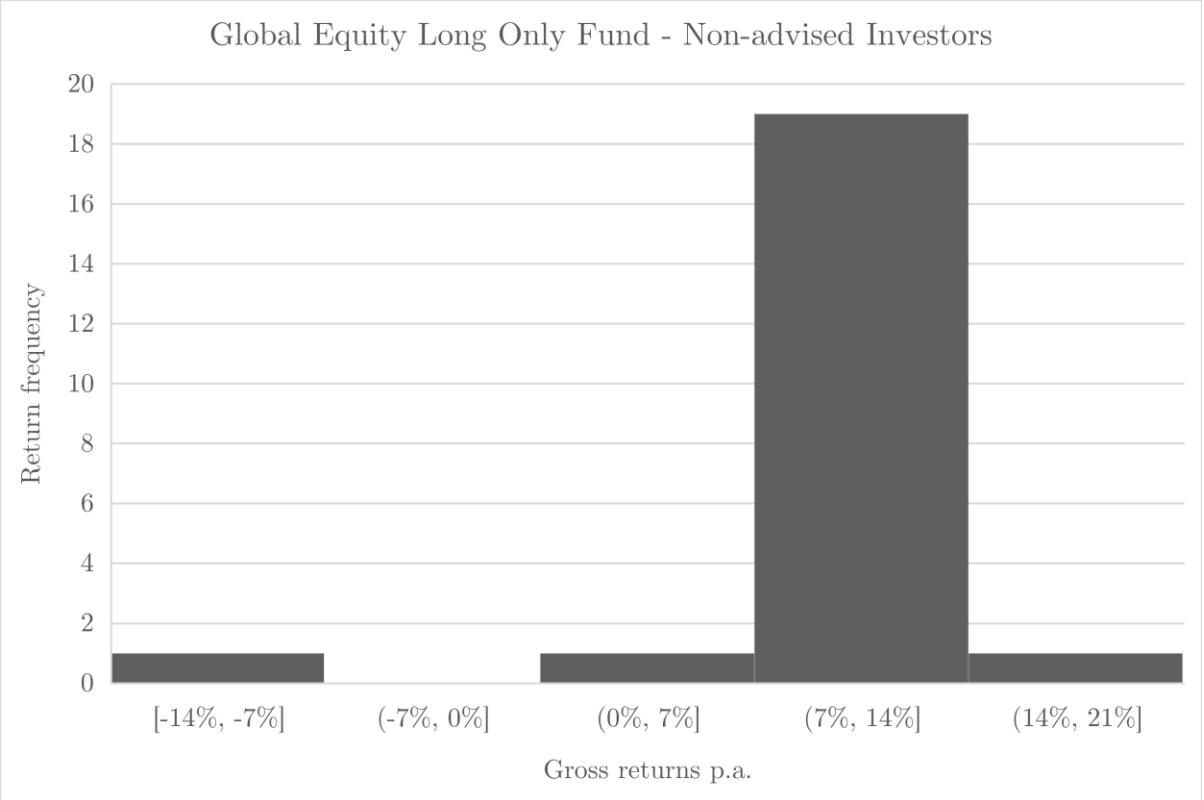


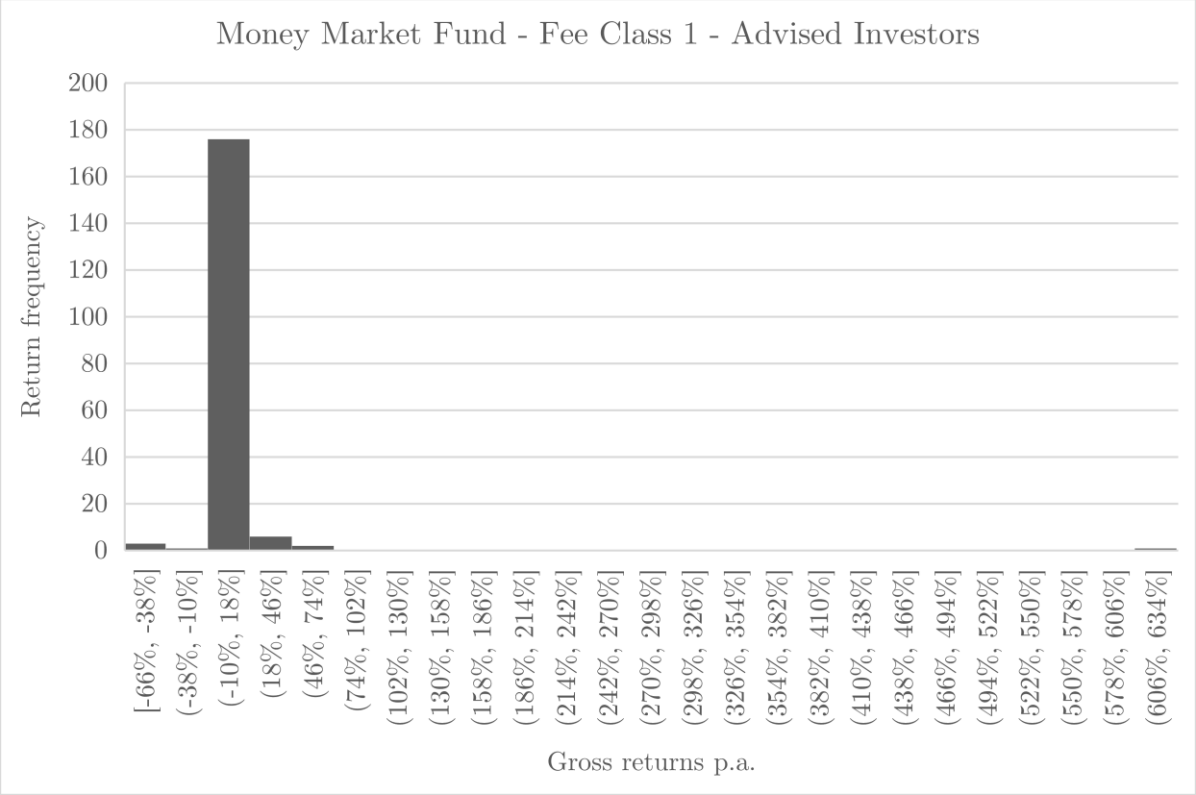


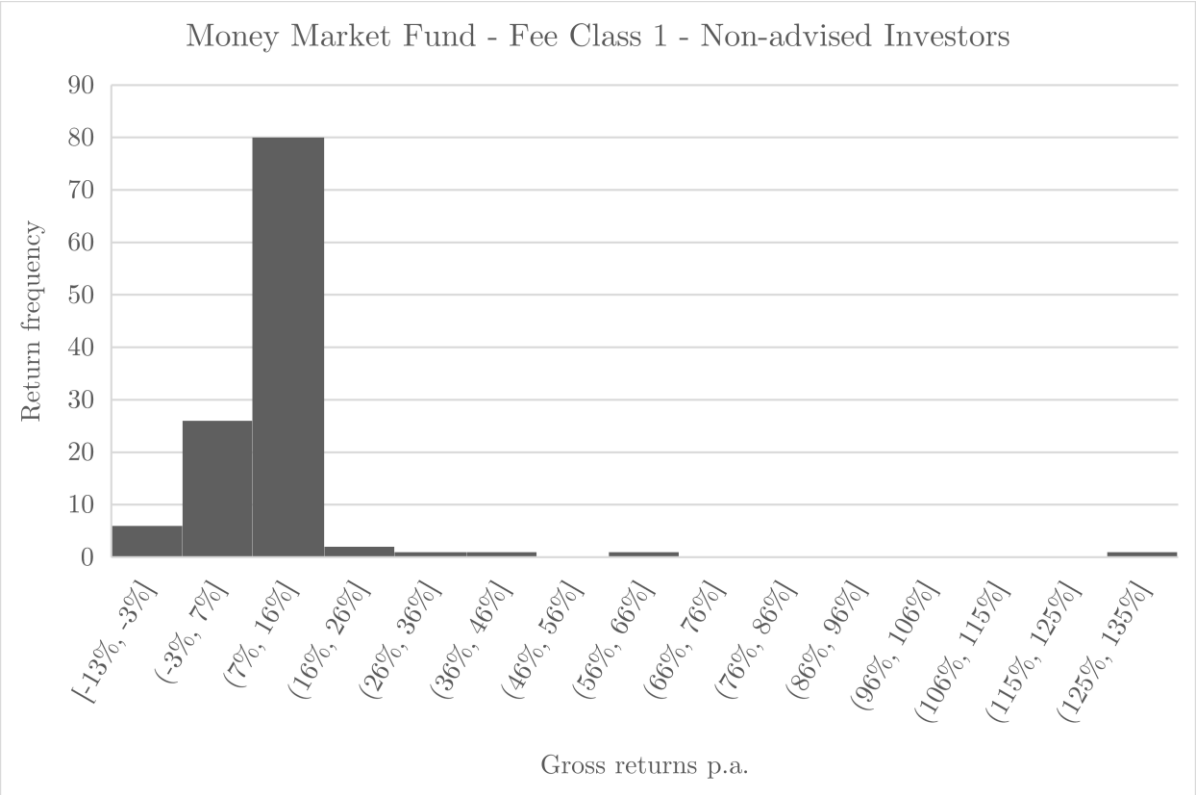

Equity Growth Fund - Advised Investors
Return frequency
120
100
80
60
40
20
0
[-25%, -22%]
(-22%, -18%]
(-18%, -15%]
(-15%, -12%]
(-12%, -9%]
(-9%, -6%]
(-6%, -3%]
(-3%, 0%]
(0%, 3%]
(3%, 6%]
(6%, 9%]
(9%, 13%]
(13%, 16%]
Gross returns p.a.

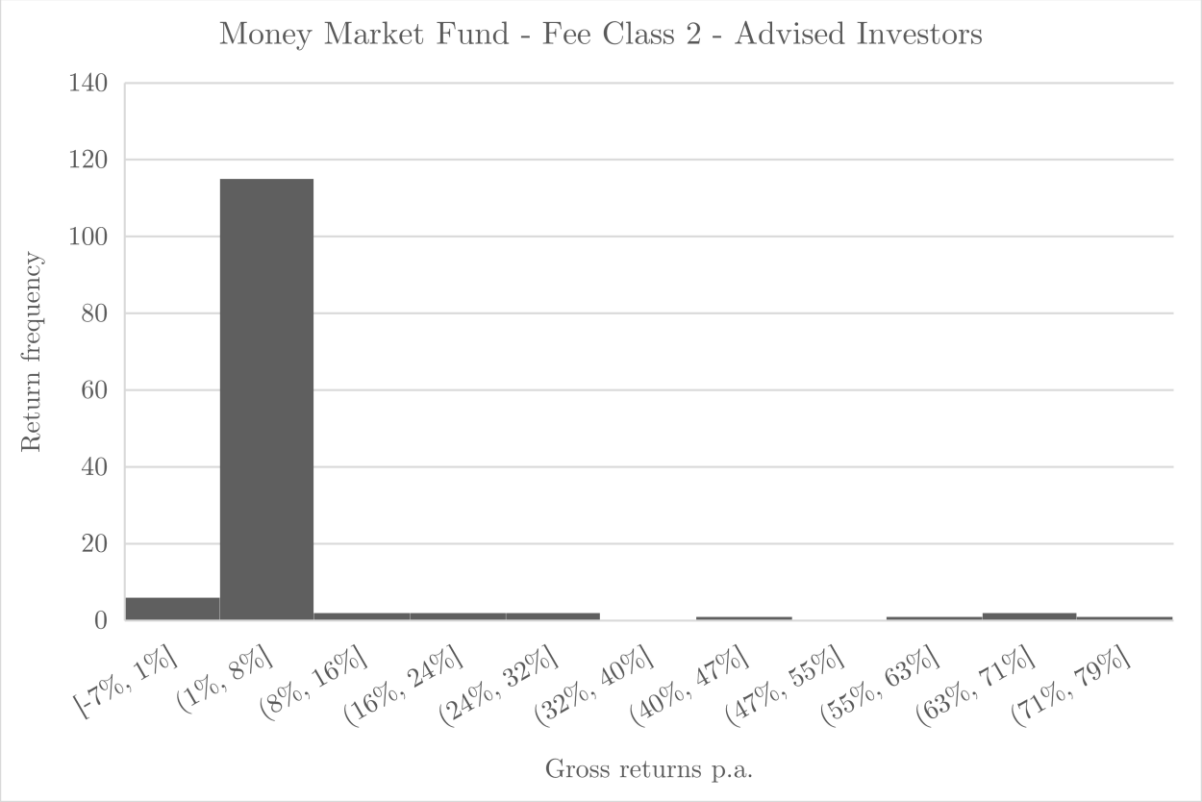

Equity Growth Fund - Non-advised Investors
Return frequency
160
140
120
100
80
60
40
20
0
[-46%, -43%]
(-43%, -40%]
(-40%, -37%]
(-37%, -34%]
(-34%, -31%]
(-31%, -28%]
(-28%, -24%]
(-24%, -21%]
(-21%, -18%]
(-18%, -15%]
(-15%, -12%]
(-12%, -9%]
(-9%, -6%]
(-6%, -3%]
(-3%, 0%]
(0%, 3%]
(3%, 7%]
(7%, 10%]
(10%, 13%]
Gross returns p.a.

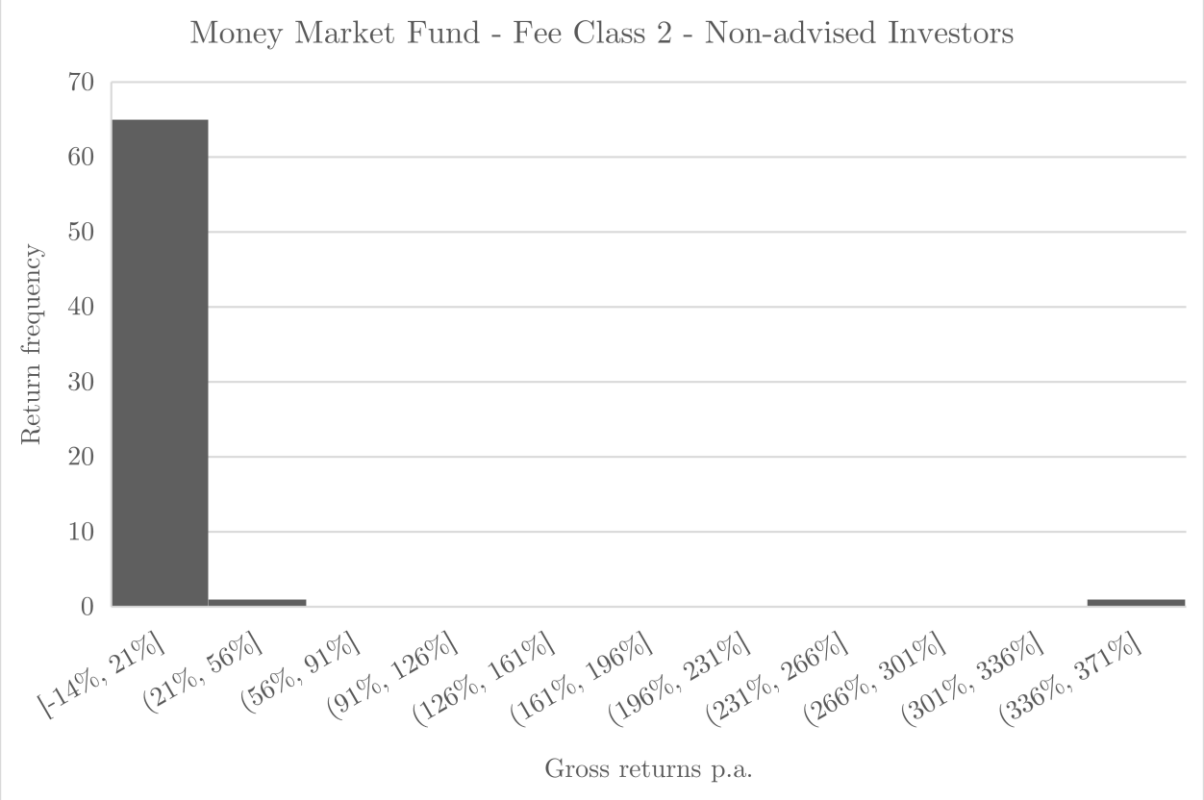

Global Equity Long Only Fund - Advised Investors
Return frequency
70
60
50
40
30
20
10
0
[-13%, -6%]
(-6%, 1%]
(1%, 8%]
(8%, 15%]
(15%, 22%]
Gross returns p.a.

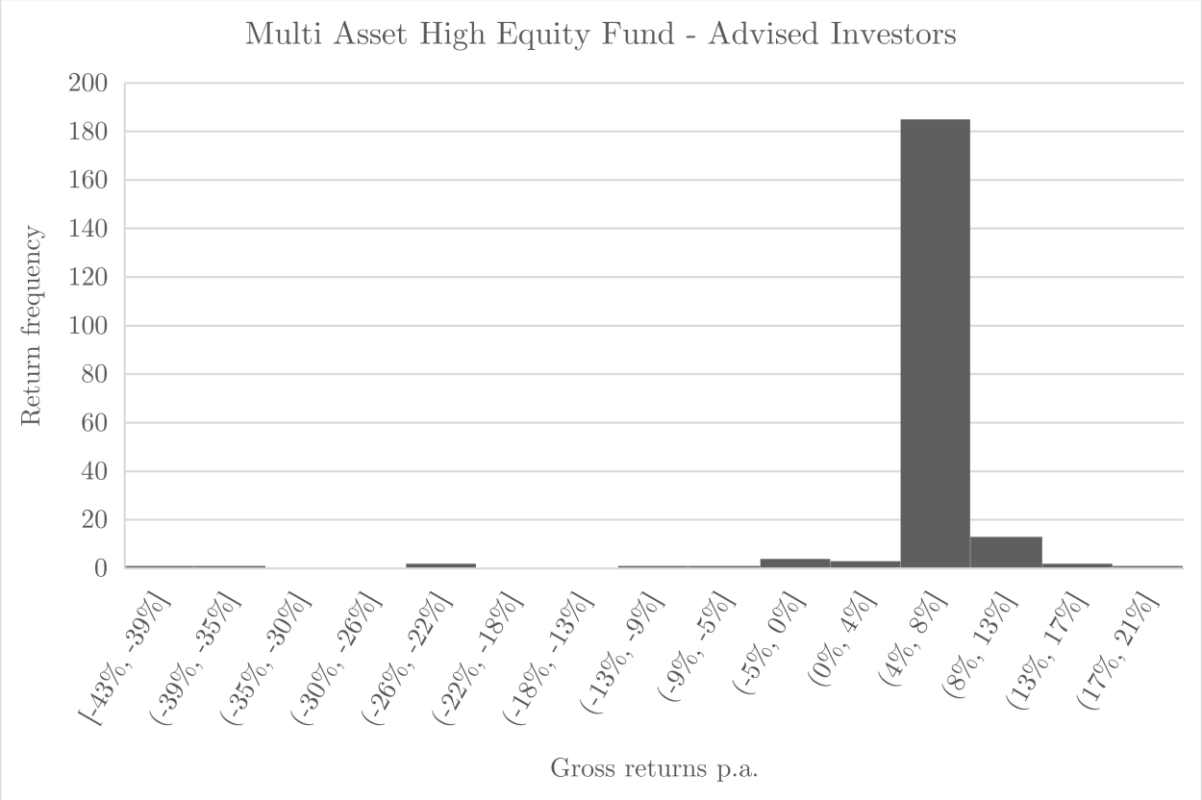

Global Equity Long Only Fund - Non-advised Investors
Return frequency
20
18
16
14
12
10
8
6
4
2
0
[-14%, -7%]
(-7%, 0%]
(0%, 7%]
(7%, 14%]
(14%, 21%]
Gross returns p.a.

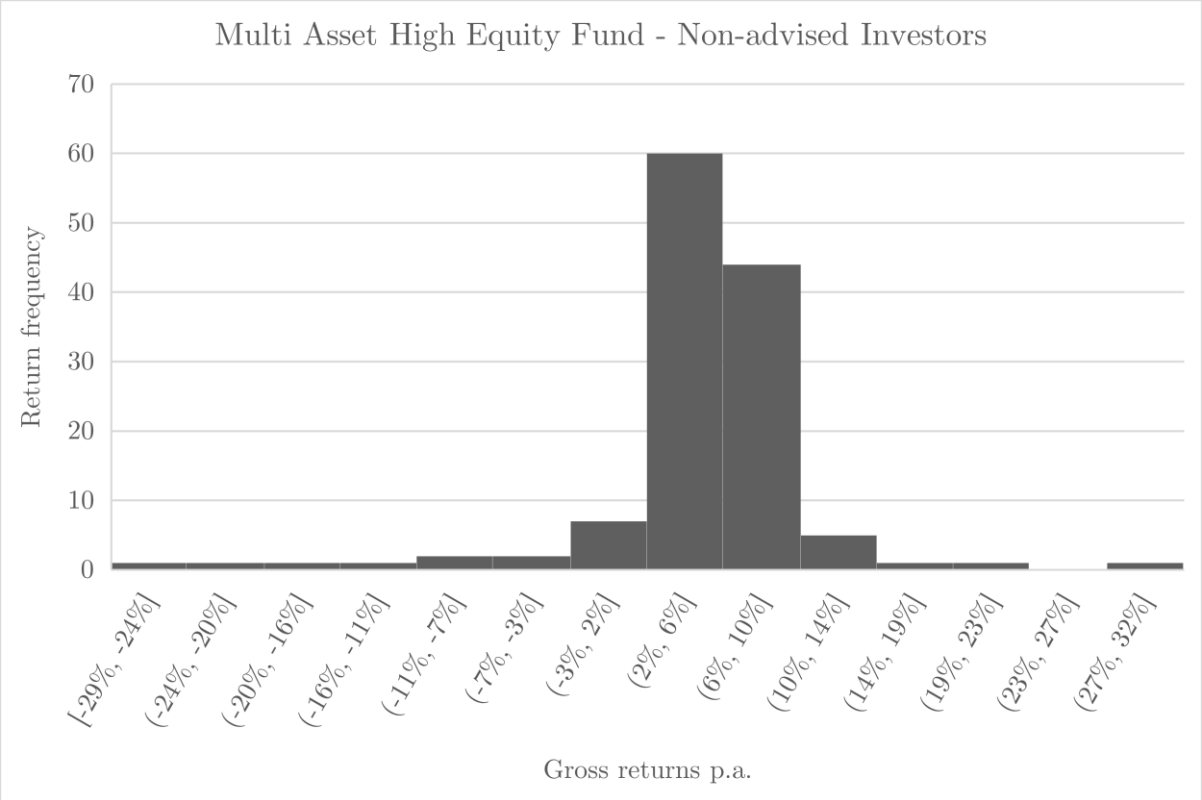

Money Market Fund - Fee Class 1 - Advised Investors
Return frequency
200
180
160
140
120
100
80
60
40
20
0
[-66%, -38%]
(-38%, -10%]
(-10%, 18%]
(18%, 46%]
(46%, 74%]
(74%, 102%]
(102%, 130%]
(130%, 158%]
(158%, 186%]
(186%, 214%]
(214%, 242%]
(242%, 270%]
(270%, 298%]
(298%, 326%]
(326%, 354%]
(354%, 382%]
(382%, 410%]
(410%, 438%]
(438%, 466%]
(466%, 494%]
(494%, 522%]
(522%, 550%]
(550%, 578%]
(578%, 606%]
(606%, 634%]
Gross returns p.a.

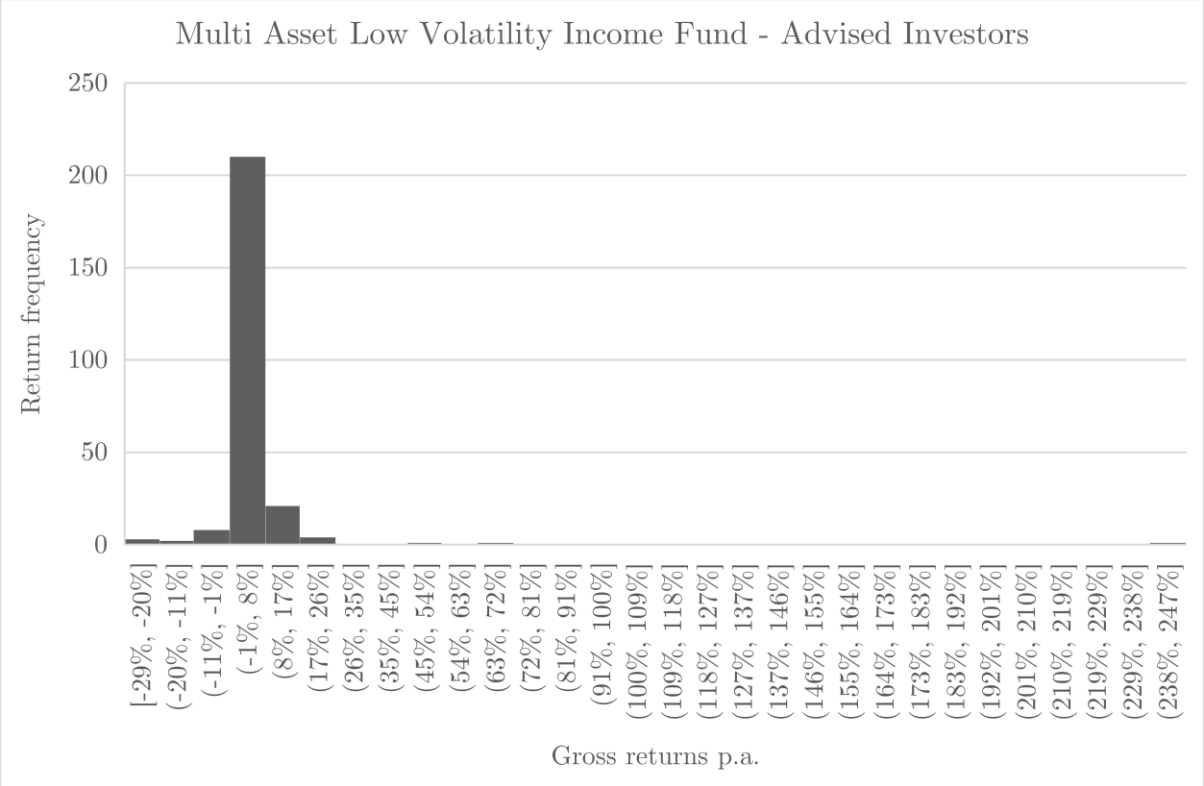

Money Market Fund - Fee Class 1 - Non-advised Investors
Return frequency
90
80
70
60
50
40
30
20
10
0
[-13%, -3%]
(-3%, 7%]
(7%, 16%]
(16%, 26%]
(26%, 36%]
(36%, 46%]
(46%, 56%]
(56%, 66%]
(66%, 76%]
(76%, 86%]
(86%, 96%]
(96%, 106%]
(106%, 115%]
(115%, 125%]
(125%, 135%]
Gross returns p.a.

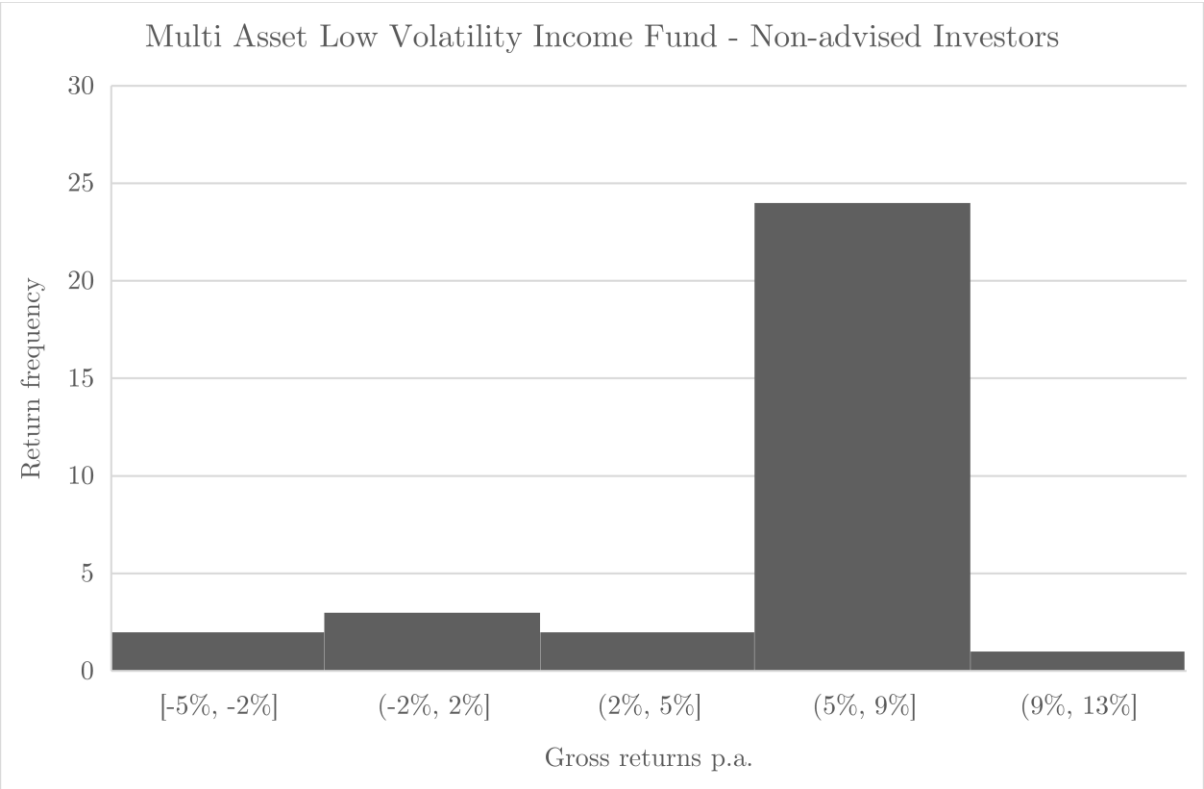

Money Market Fund - Fee Class 2 - Advised Investors
Return frequency
140
120
100
80
60
40
20
0
[-7%, 1%]
(1%, 8%]
(8%, 16%]
(16%, 24%]
(24%, 32%]
(32%, 40%]
(40%, 47%]
(47%, 55%]
(55%, 63%]
(63%, 71%]
(71%, 79%]
Gross returns p.a.

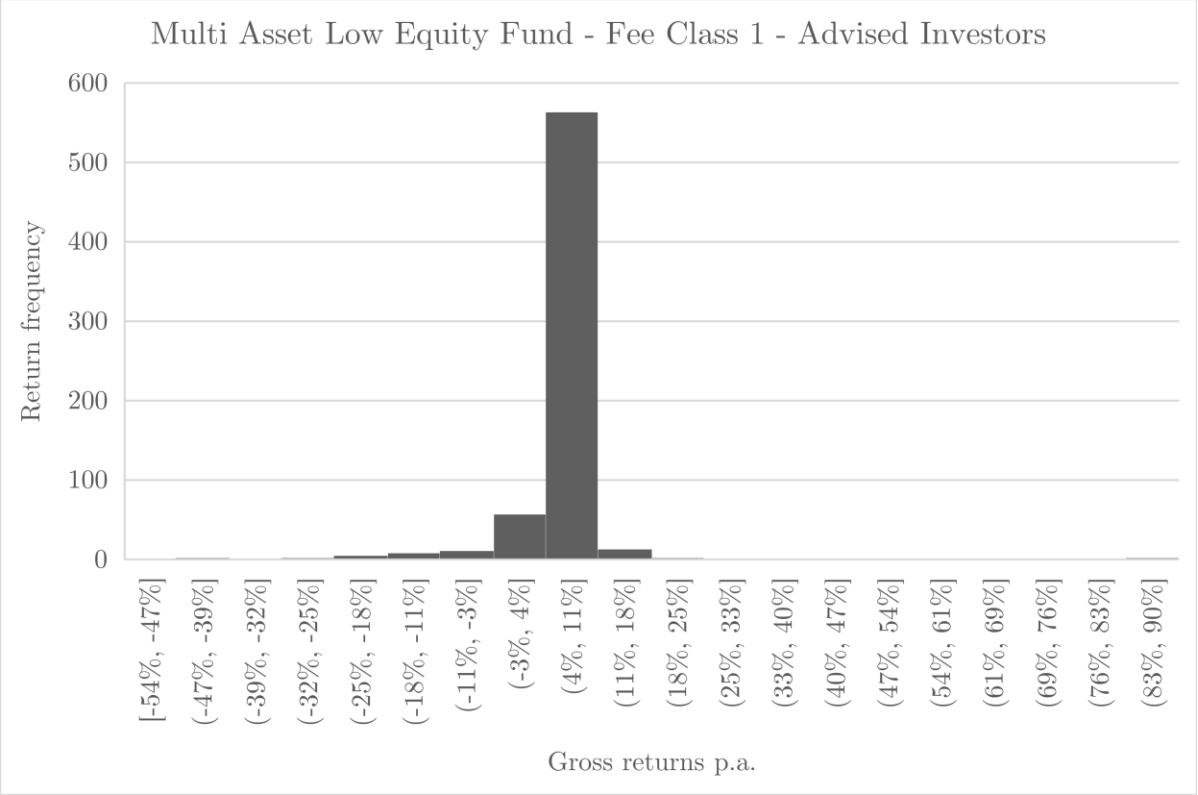

Money Market Fund - Fee Class 2 - Non-advised Investors
Return frequency
70
60
50
40
30
20
10
0
[-14%, 21%]
(21%, 56%]
(56%, 91%]
(91%, 126%]
(126%, 161%]
(161%, 196%]
(196%, 231%]
(231%, 266%]
(266%, 301%]
(301%, 336%]
(336%, 371%]
Gross returns p.a.

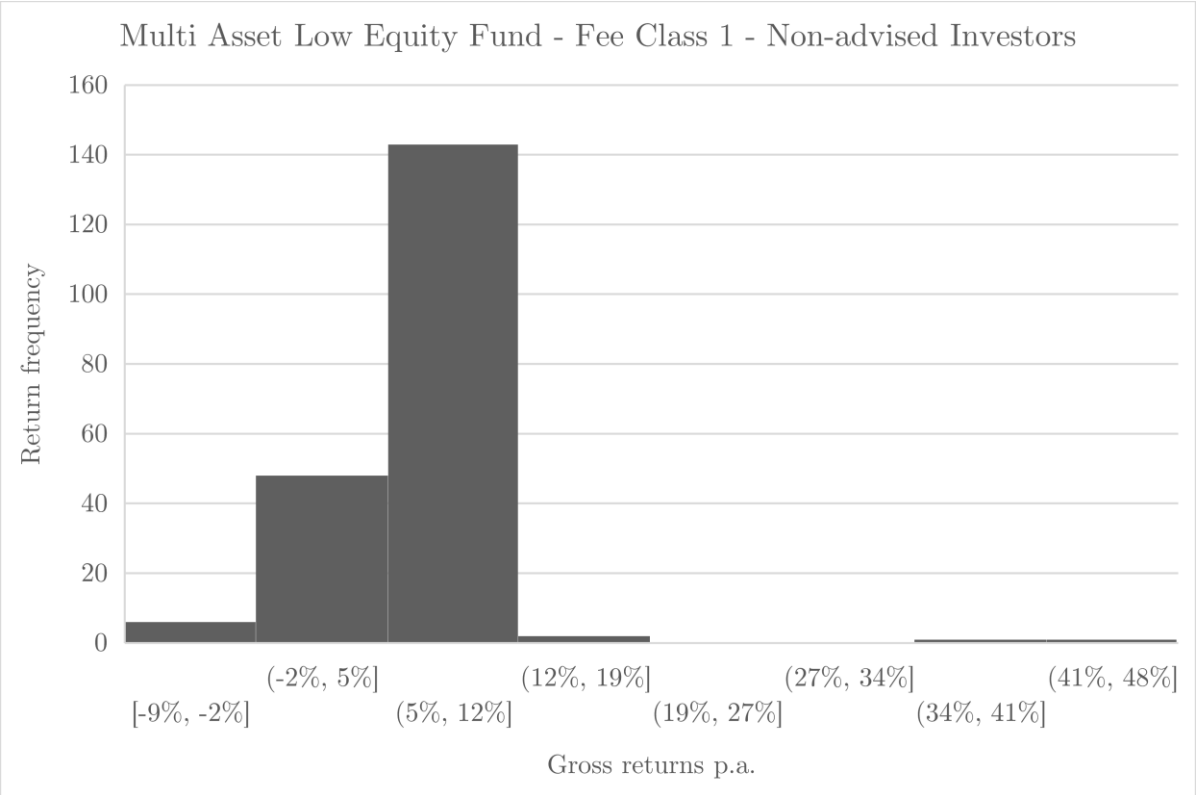

Multi Asset High Equity Fund - Advised Investors
Return frequency
200
180
160
140
120
100
80
60
40
20
0
[-43%, -39%]
(-39%, -35%]
(-35%, -30%]
(-30%, -26%]
(-26%, -22%]
(-22%, -18%]
(-18%, -13%]
(-13%, -9%]
(-9%, -5%]
(-5%, 0%]
(0%, 4%]
(4%, 8%]
(8%, 13%]
(13%, 17%]
(17%, 21%]
Gross returns p.a.

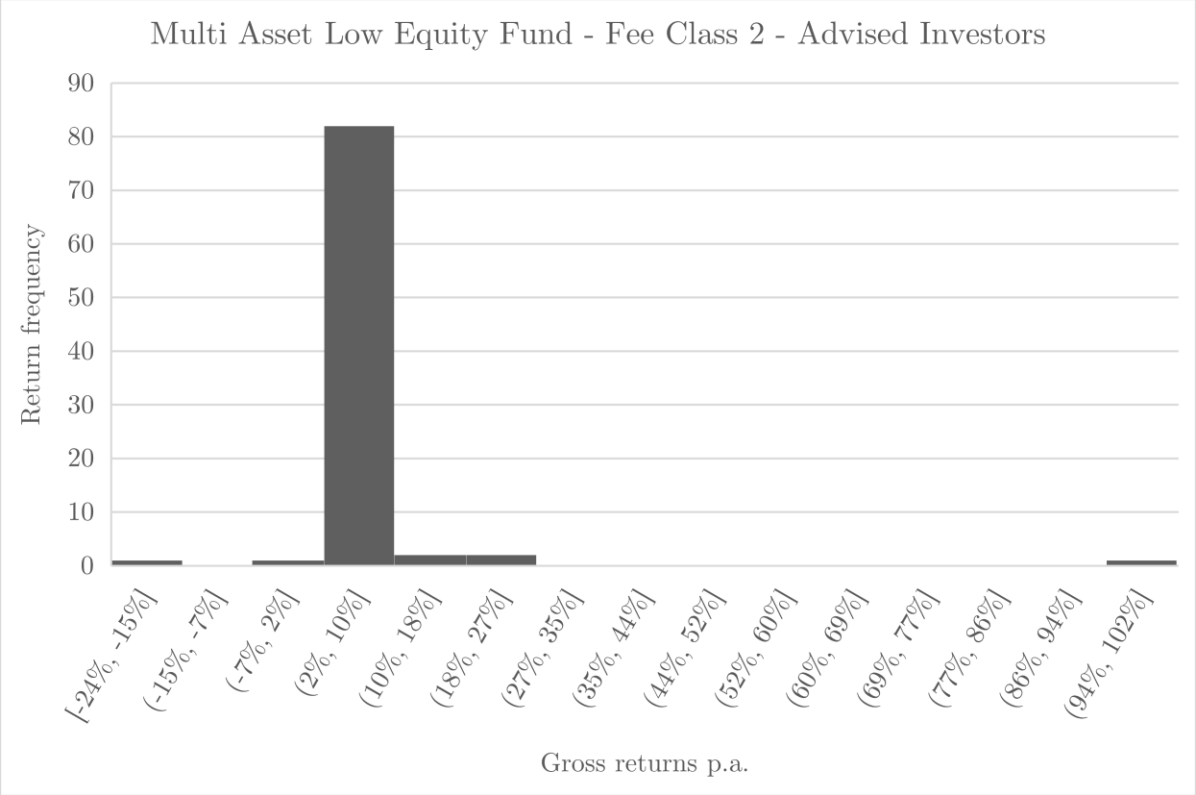

Multi Asset High Equity Fund - Non-advised Investors
Return frequency
70
60
50
40
30
20
10
0
[-29%, -24%]
(-24%, -20%]
(-20%, -16%]
(-16%, -11%]
(-11%, -7%]
(-7%, -3%]
(-3%, 2%]
(2%, 6%]
(6%, 10%]
(10%, 14%]
(14%, 19%]
(19%, 23%]
(23%, 27%]
(27%, 32%]
Gross returns p.a.

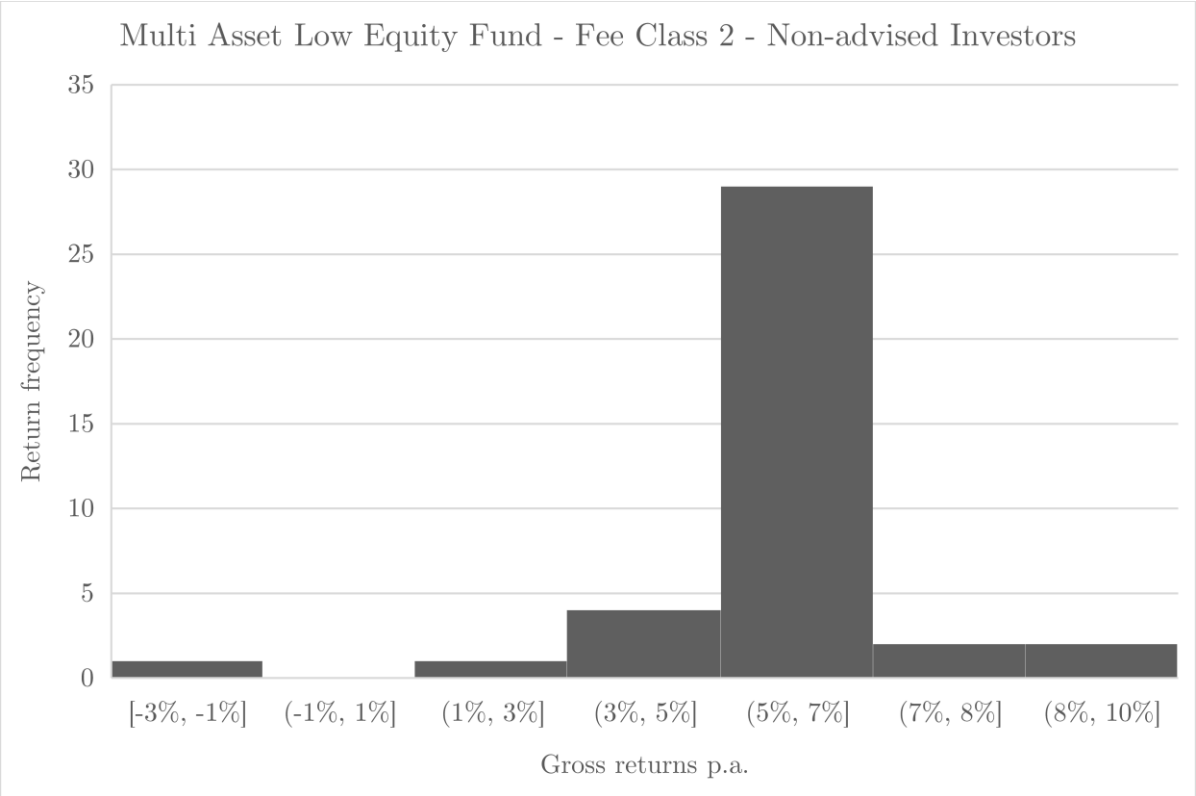

Multi Asset Low Volatility Income Fund - Advised Investors
Return frequency
250
200
150
100
50
0
[-29%, -20%]
(-20%, -11%]
(-11%, -1%]
(-1%, 8%]
(8%, 17%]
(17%, 26%]
(26%, 35%]
(35%, 45%]
(45%, 54%]
(54%, 63%]
(63%, 72%]
(72%, 81%]
(81%, 91%]
(91%, 100%]
(100%, 109%]
(109%, 118%]
(118%, 127%]
(127%, 137%]
(137%, 146%]
(146%, 155%]
(155%, 164%]
(164%, 173%]
(173%, 183%]
(183%, 192%]
(192%, 201%]
(201%, 210%]
(210%, 219%]
(219%, 229%]
(229%, 238%]
(238%, 247%]
Gross returns p.a.

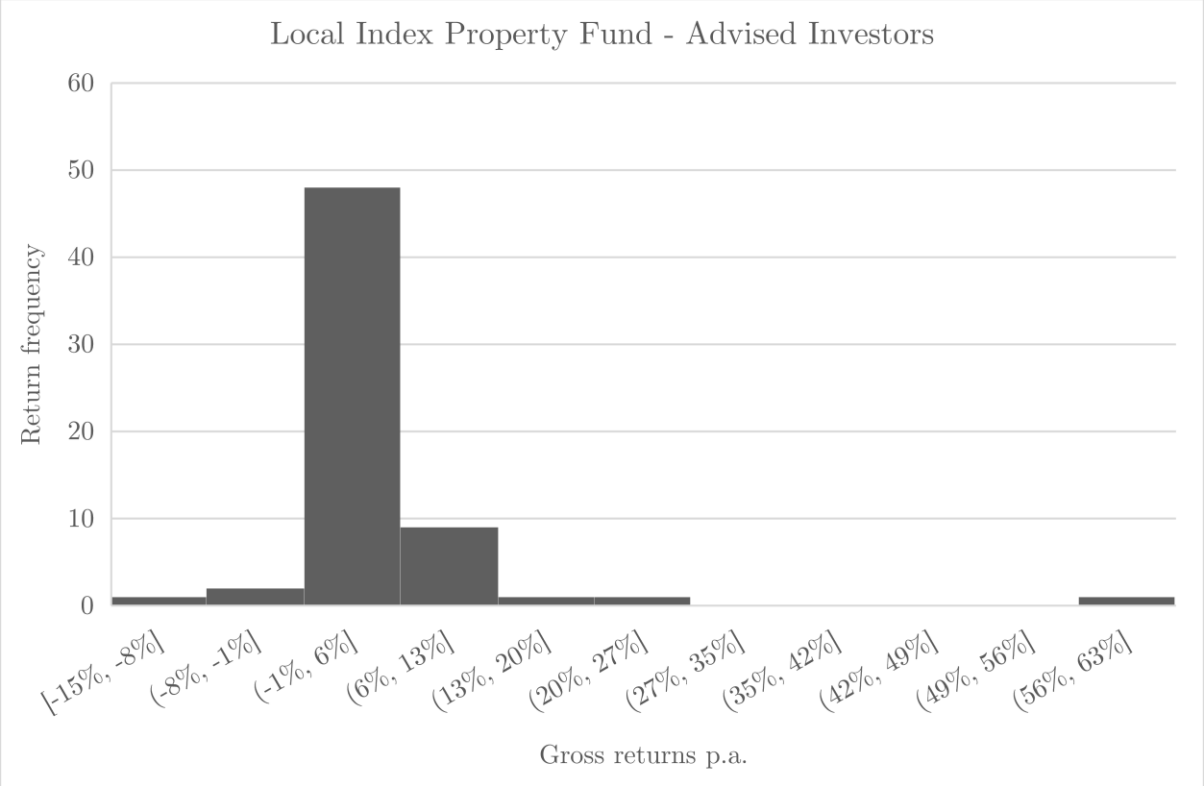

Multi Asset Low Volatility Income Fund - Non-advised Investors
Return frequency
30
25
20
15
10
5
0
[-5%, -2%]
(-2%, 2%]
(2%, 5%]
(5%, 9%]
(9%, 13%]
Gross returns p.a.

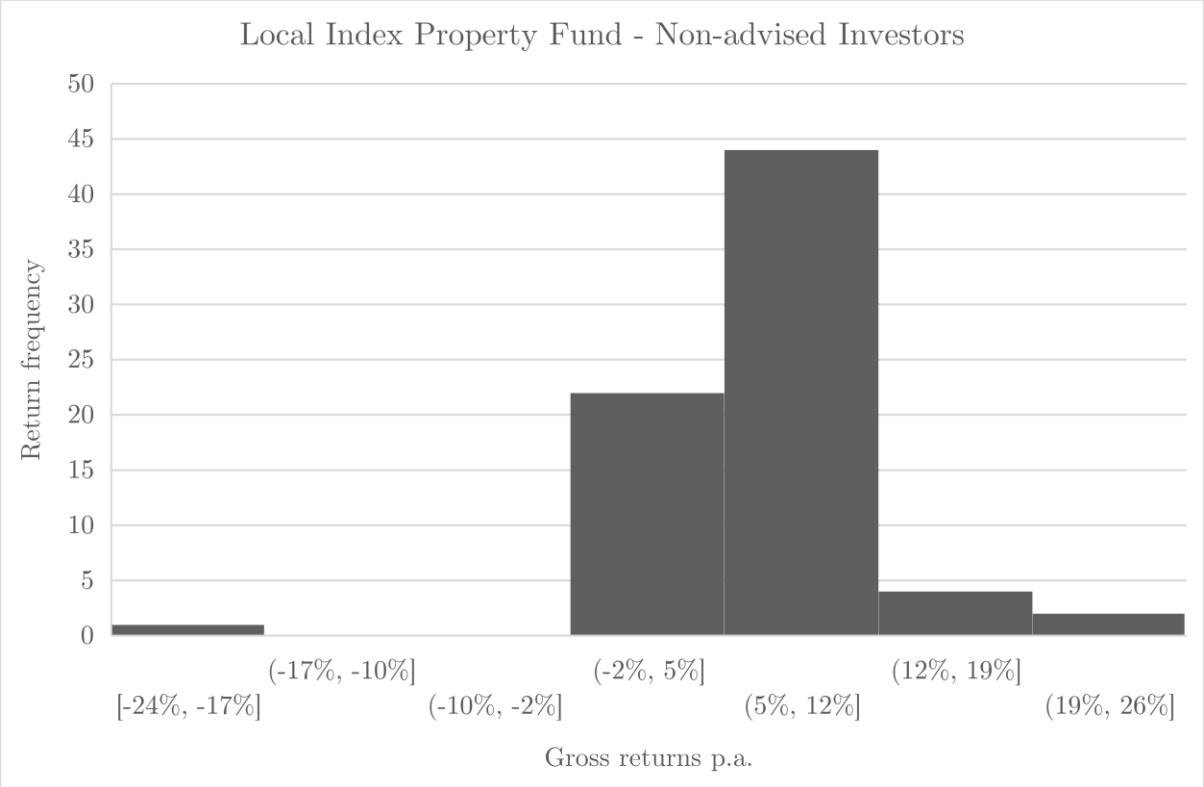

Multi Asset Low Equity Fund - Fee Class 1 - Advised Investors
Return frequency
600
500
400
300
200
100
0
[-54%, -47%]
(-47%, -39%]
(-39%, -32%]
(-32%, -25%]
(-25%, -18%]
(-18%, -11%]
(-11%, -3%]
(-3%, 4%]
(4%, 11%]
(11%, 18%]
(18%, 25%]
(25%, 33%]
(33%, 40%]
(40%, 47%]
(47%, 54%]
(54%, 61%]
(61%, 69%]
(69%, 76%]
(76%, 83%]
(83%, 90%]
Gross returns p.a.


Multi Asset Low Equity Fund - Fee Class 1 - Non-advised Investors
Return frequency
160
140
120
100
80
60
40
20
0
[-9%, -2%]
(-2%, 5%]
(5%, 12%]
(12%, 19%]
(19%, 27%]
(27%, 34%]
(34%, 41%]
(41%, 48%]
Gross returns p.a.


Multi Asset Low Equity Fund - Fee Class 2 - Advised Investors
Return frequency
90
80
70
60
50
40
30
20
10
0
[-24%, -15%]
(-15%, -7%]
(-7%, 2%]
(2%, 10%]
(10%, 18%]
(18%, 27%]
(27%, 35%]
(35%, 44%]
(44%, 52%]
(52%, 60%]
(60%, 69%]
(69%, 77%]
(77%, 86%]
(86%, 94%]
(94%, 102%]
Gross returns p.a.


Multi Asset Low Equity Fund - Fee Class 2 - Non-advised Investors
Return frequency
35
30
25
20
15
10
5
0
[-3%, -1%]
(-1%, 1%]
(1%, 3%]
(3%, 5%]
(5%, 7%]
(7%, 8%]
(8%, 10%]
Gross returns p.a.


Local Index Property Fund - Advised Investors
Return frequency
60
50
40
30
20
10
0
[-15%, -8%]
(-8%, -1%]
(-1%, 6%]
(6%, 13%]
(13%, 20%]
(20%, 27%]
(27%, 35%]
(35%, 42%]
(42%, 49%]
(49%, 56%]
(56%, 63%]
Gross returns p.a.


Local Index Property Fund - Non-advised Investors
Return frequency
50
45
40
35
30
25
20
15
10
5
0
[-24%, -17%]
(-17%, -10%]
(-10%, -2%]
(-2%, 5%]
(5%, 12%]
(12%, 19%]
(19%, 26%]
Gross returns p.a.

7.4 Appendix 4

Null hypothesis (H0): The return data of the advised and non-advised returns are normally distributed

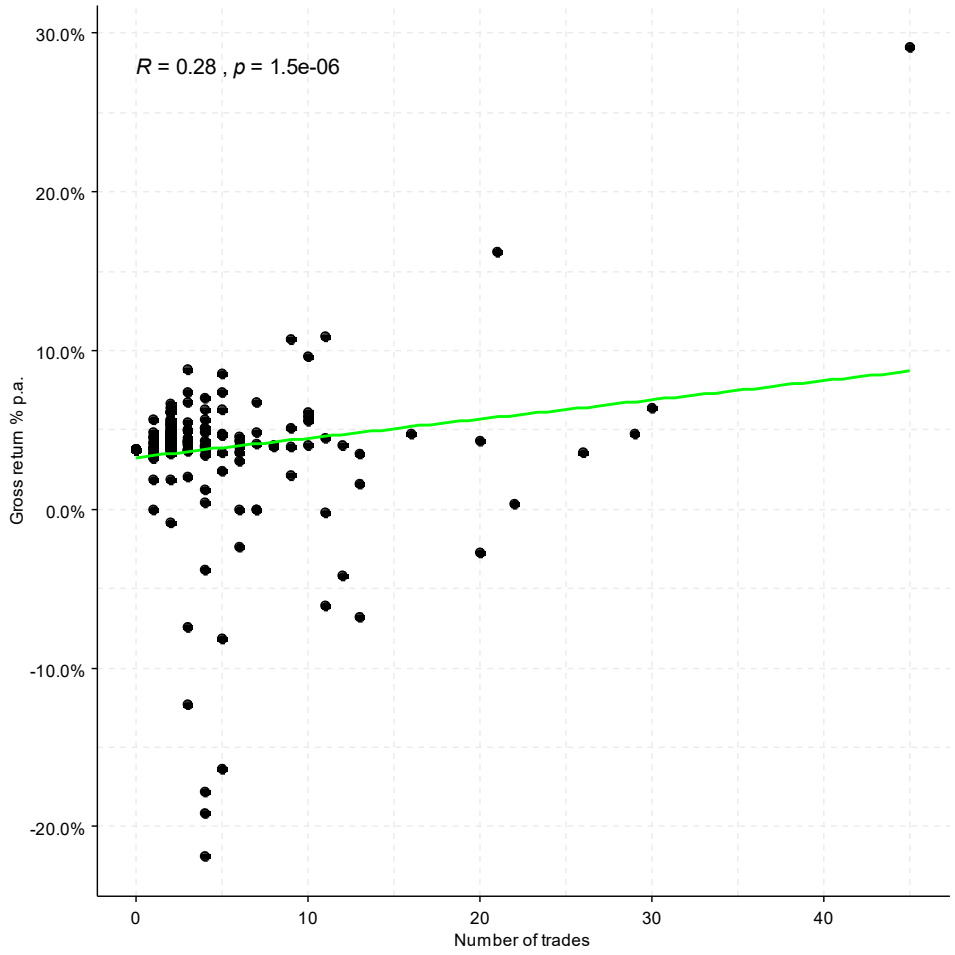
	Kolmogorov-Smirnov test						Shapiro-Wilk test			
Fund Name	D Statistic Non-advised	p-value - one sided Non-advised	p-value - two sided Non-advised	D Statistic Advised	p-value - one sided Advised	p-value - two sided Advised	D Statistic Non-advised	p-value Non-advised	D Statistic Advised	p-value Advised
Equity Dividend & Growth Fund	0.4631	< 2.2e-16	< 2.2e-16	0.4510	< 2.2e-16	< 2.2e-16	0.6182	< 2.2e-16	0.5156	< 2.2e-16
Equity Growth Fund	0.4872	< 2.2e-16	< 2.2e-16	0.5032	< 2.2e-16	< 2.2e-16	0.6781	< 2.2e-16	0.8166	2.7e-11
Global Equity Long Only Fund	0.5210	7.9e-06	3.9e-06	0.5227	< 2.2e-16	< 2.2e-16	0.9600	0.5166	0.5350	7.6e-16
Money Market Fund - Fee class 1	0.5000	< 2.2e-16	< 2.2e-16	0.5000	< 2.2e-16	< 2.2e-16	0.7011	4.1e-13	0.6828	< 2.2e-16
Money Market Fund - Fee class 2	0.5092	3.1e-14	6.2e-14	0.5000	< 2.2e-16	< 2.2e-16	0.6505	1.1e-10	0.4159	< 2.2e-16
Multi Asset High Equity Fund	0.4650	< 2.2e-16	< 2.2e-16	0.4786	< 2.2e-16	< 2.2e-16	0.7256	4.2e-14	0.5984	< 2.2e-16
Multi Asset Low Volatility Income Fund	0.4788	1.4e-07	2.9e-07	0.4779	< 2.2e-16	< 2.2e-16	0.6538	1.9e-07	0.6363	< 2.2e-16
Multi Asset Low Equity Fund - Fee class 1	0.4878	< 2.2e-16	< 2.2e-16	0.4783	< 2.2e-16	< 2.2e-16	0.7187	< 2.2e-16	0.6766	< 2.2e-16
Multi Asset Low Equity Fund - Fee class 2	0.5103	8.9e-10	1.8e-09	0.4971	< 2.2e-16	< 2.2e-16	0.7982	6.2e-06	0.7669	1.5e-11
Local Index Property Fund	0.5007	2.6e-15	5.1e-15	0.5088	2.6e-13	5.1e-13	0.7507	2.5e-09	0.7898	1.6e-07

7.5 Appendix 5

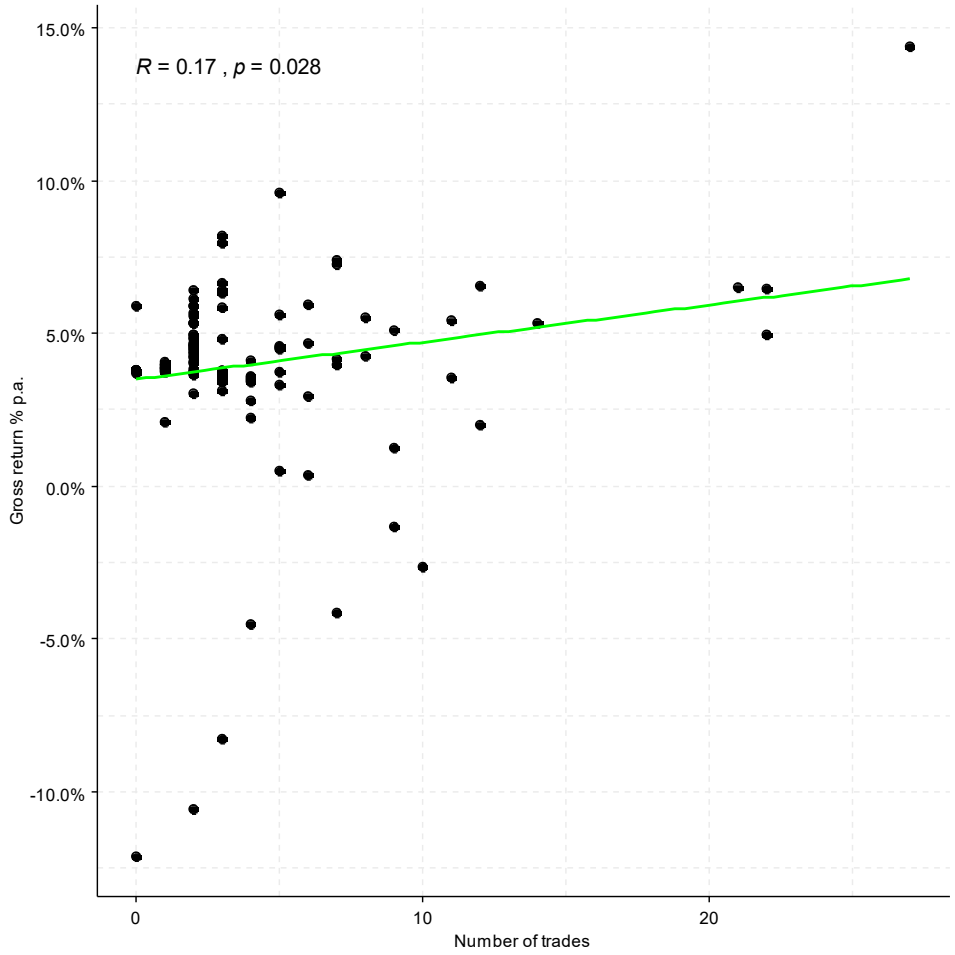
Scatter plots showing the total number of active trades and gross returns (annualised) per fund.

The correlation coefficient ('R") and line of best fit is shown using the Spearman method.

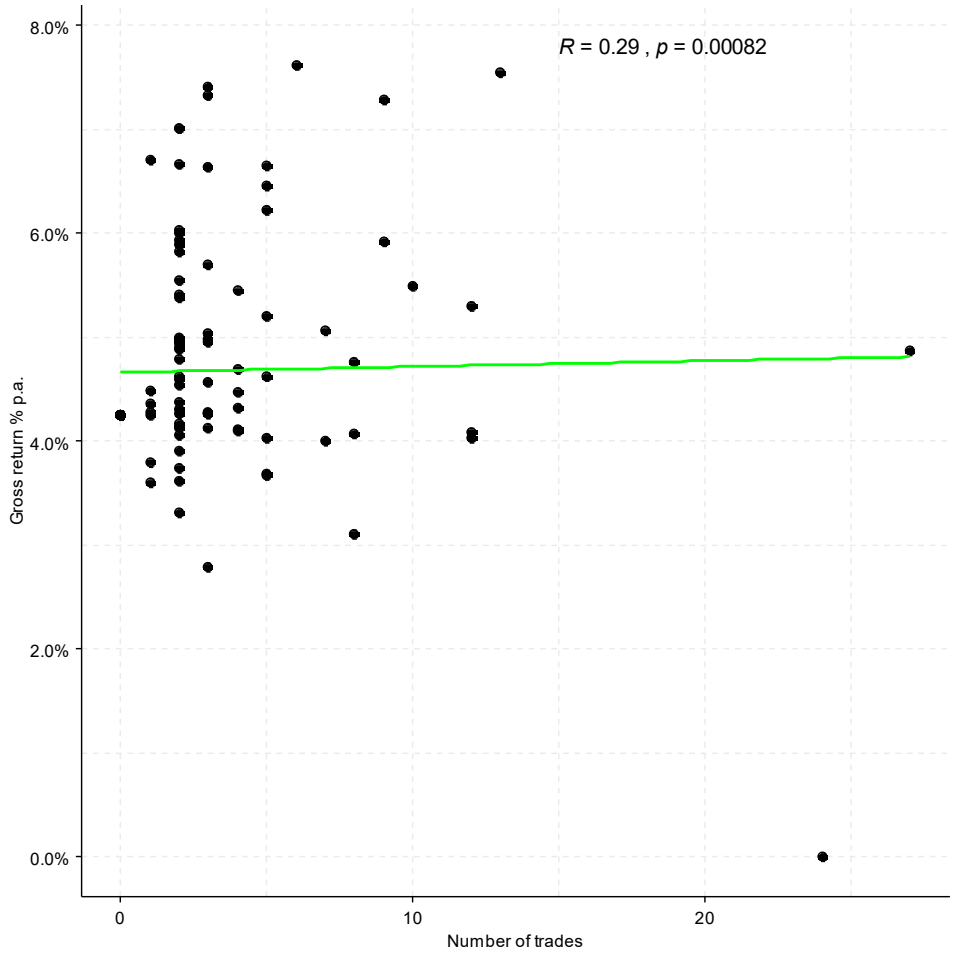
7.5.1 Equity Dividend & Growth Fund: Advised investors - correlation between the total number of active trades and gross returns p.a.



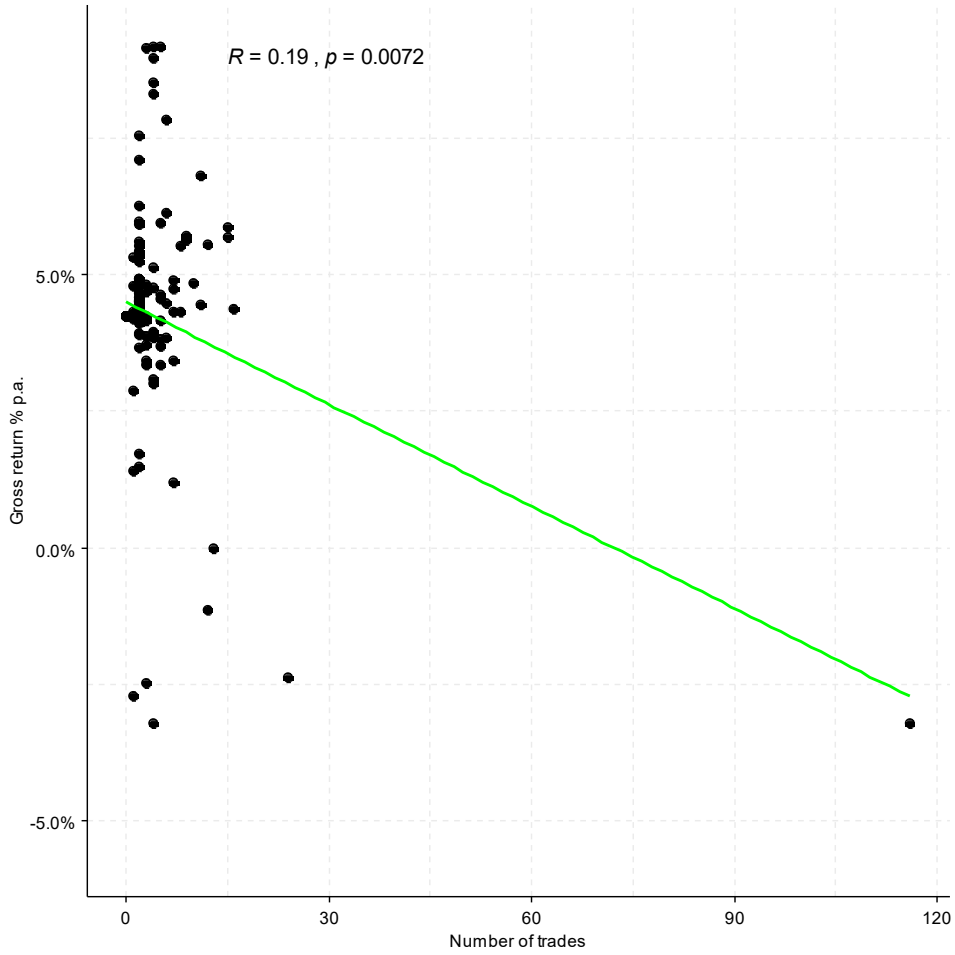
7.5.2 Equity Dividend & Growth Fund: Non-advised investors - correlation between the total number of active trades and gross returns p.a.



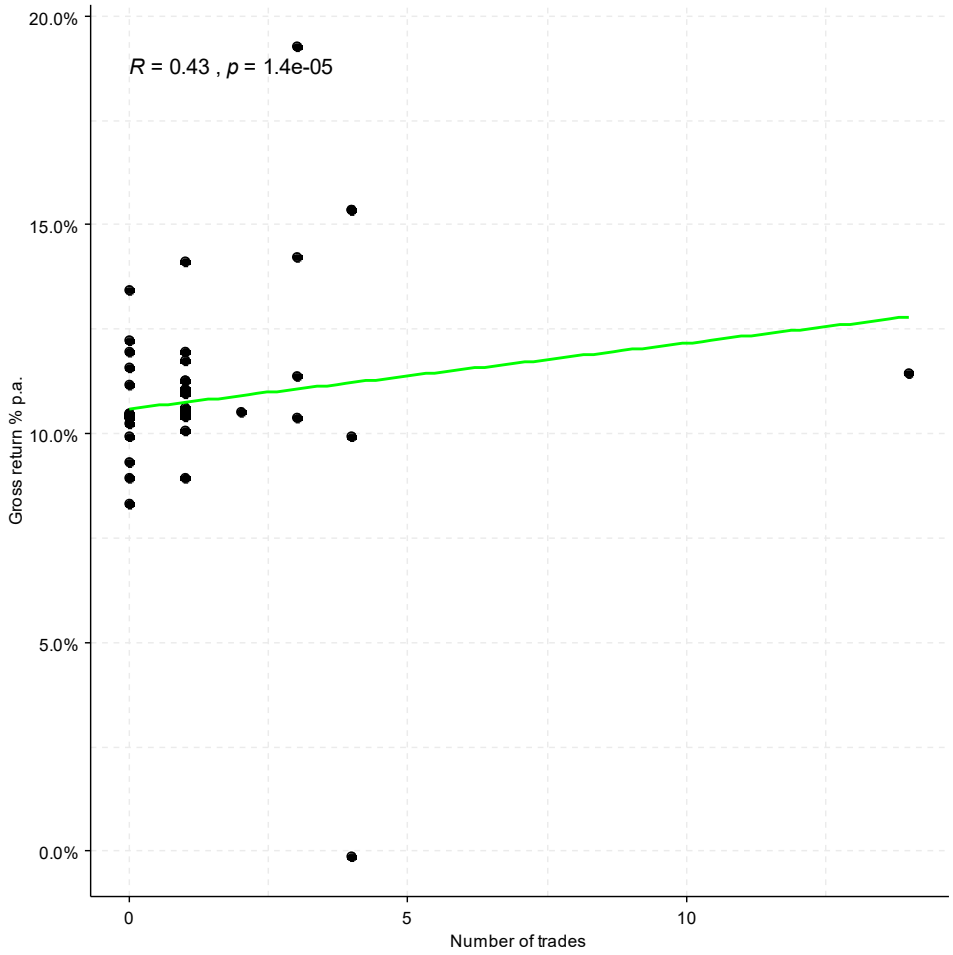
7.5.3 Equity Growth Fund: Advised investors - correlation between the total number of active trades and gross returns p.a.



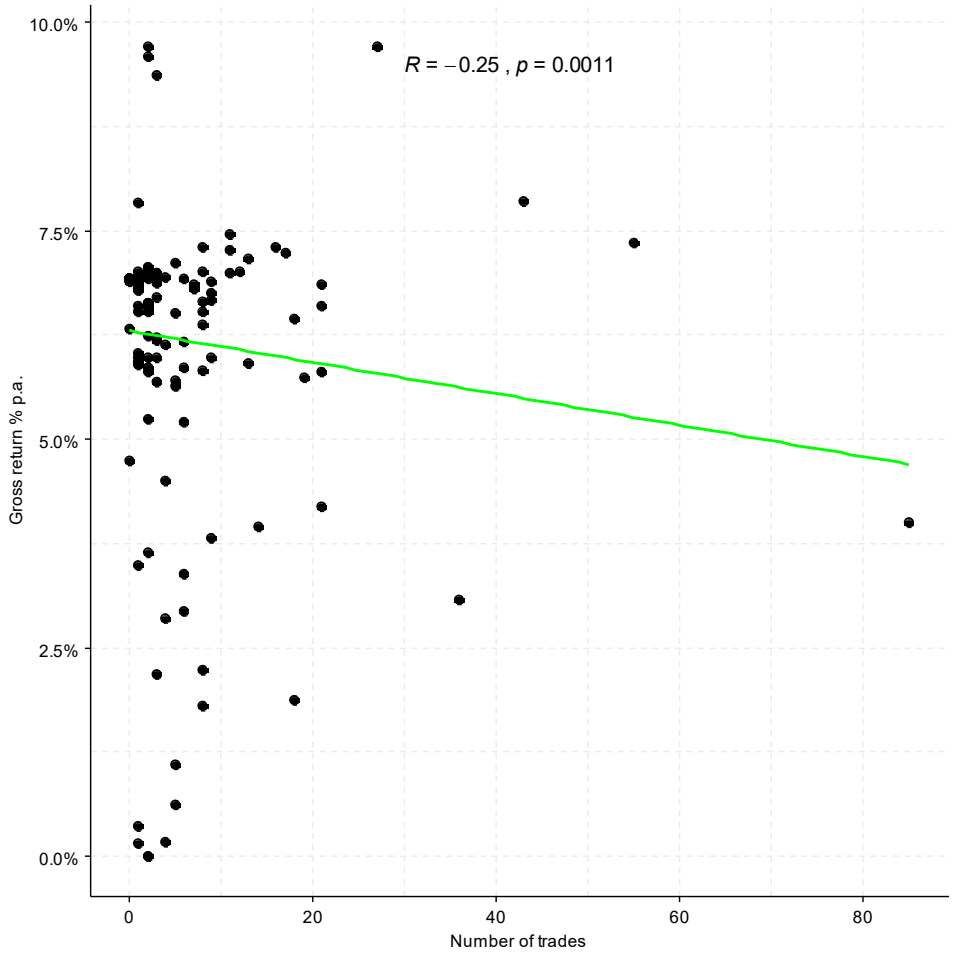
7.5.4 Equity Growth Fund: Non-advised investors - correlation between the total number of active trades and gross returns p.a.



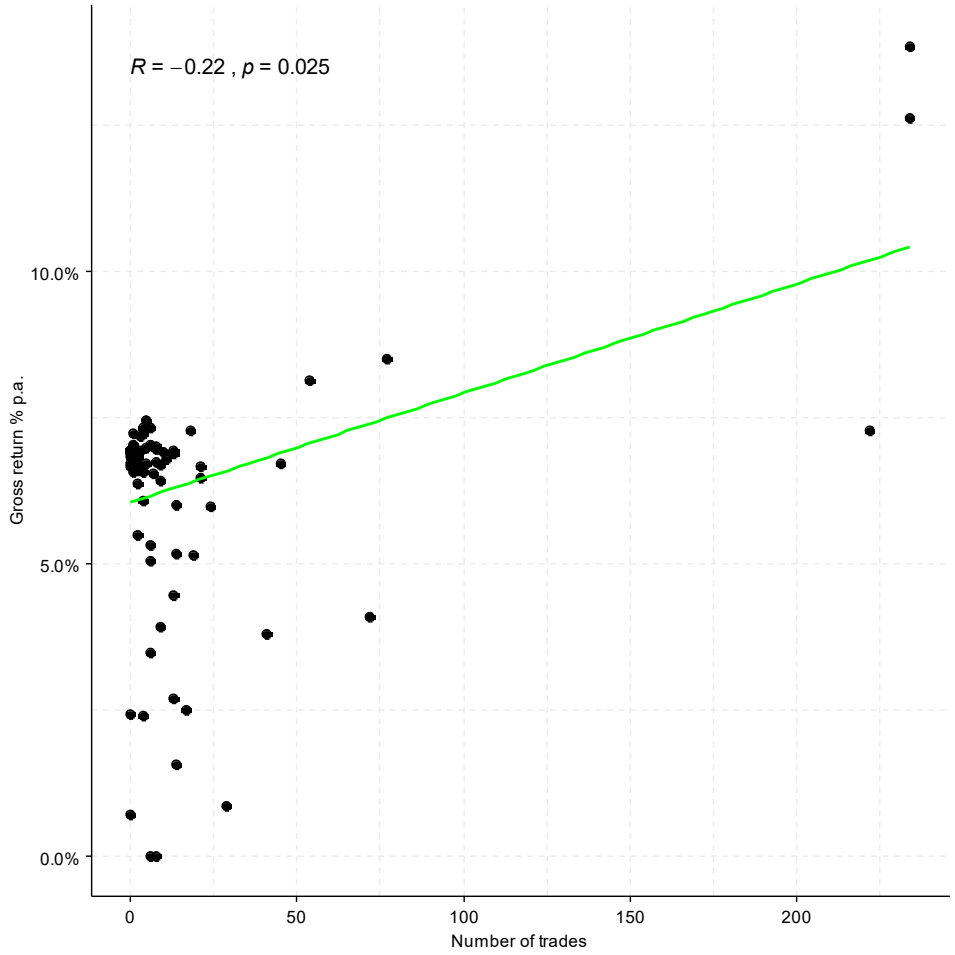
7.5.5 Global Equity Long Only Fund: Advised investors - correlation between the total number of active trades and gross returns p.a.



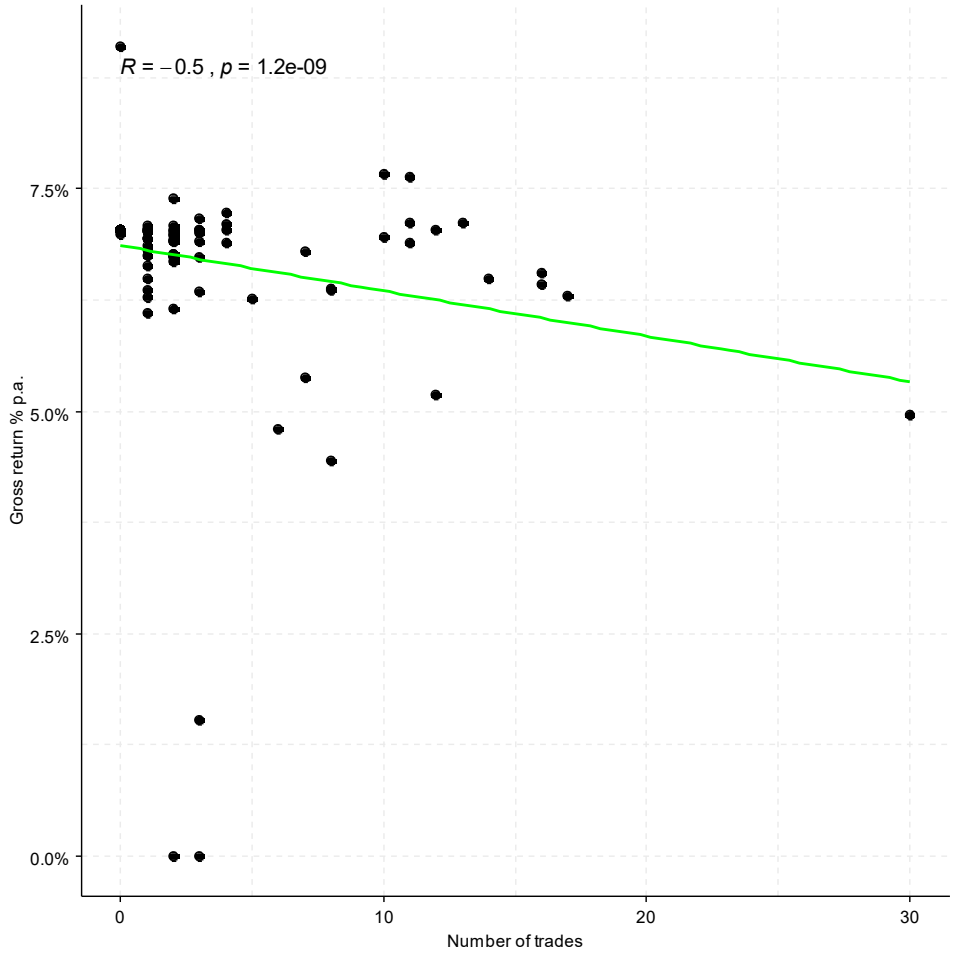
7.5.6 Money Market Fund - Fee class 1: Advised investors - correlation between the total number of active trades and gross returns p.a.



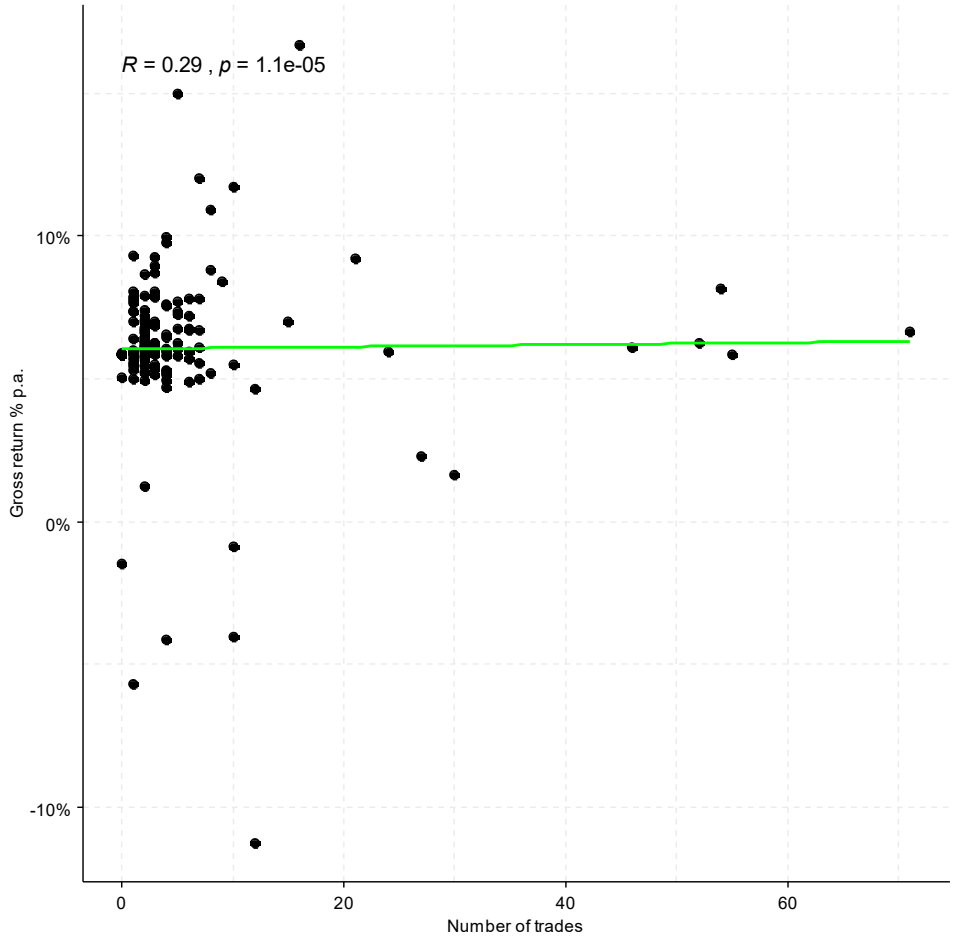
7.5.7 Money Market Fund - Fee class 1: Non-advised investors - correlation between the total number of active trades and gross returns p.a.



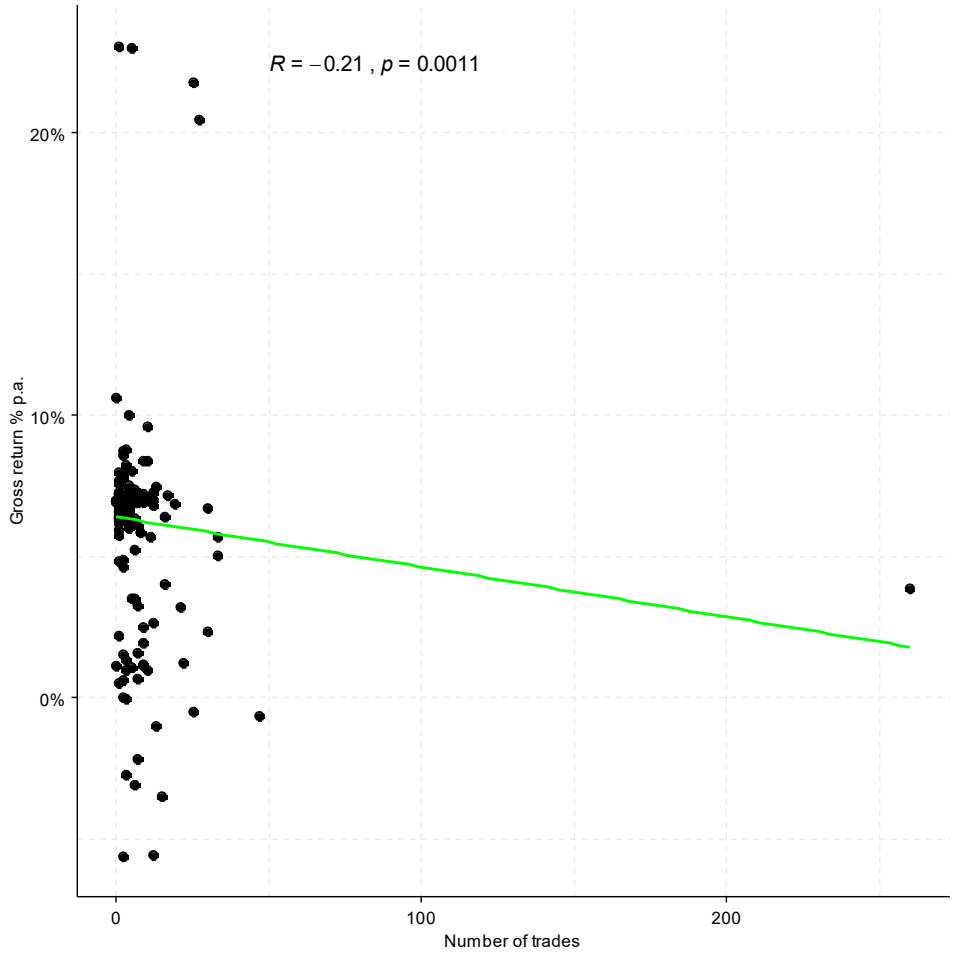
7.5.8 Money Market Fund - Fee class 2: Advised investors - correlation between the total number of active trades and gross returns p.a.



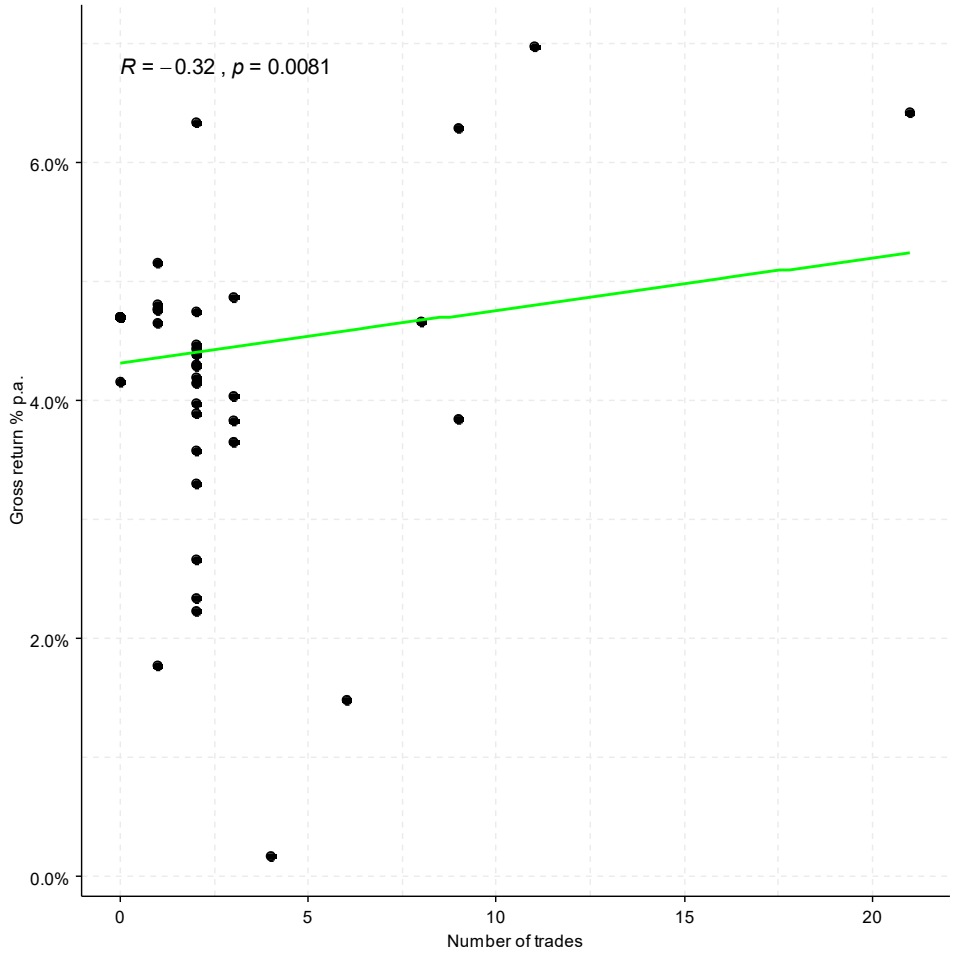
7.5.9 Multi Asset High Equity Fund: Advised investors - correlation between the total number of active trades and gross returns p.a.



7.5.10 Multi Asset Low Volatility Income Fund: Advised investors - correlation between the total number of active trades and gross returns p.a.



7.5.11 Local Index Property Fund: Non-advised investors - correlation between the total number of active trades and gross returns p.a.

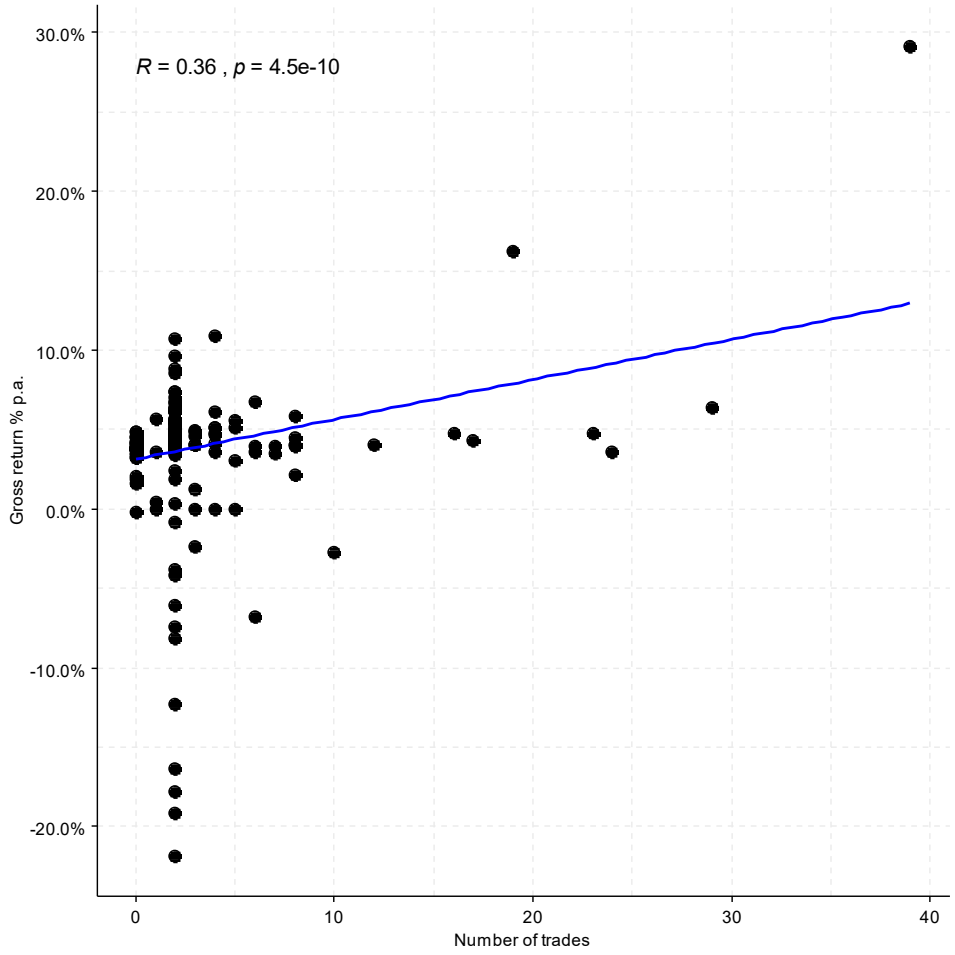


7.6 Appendix 6

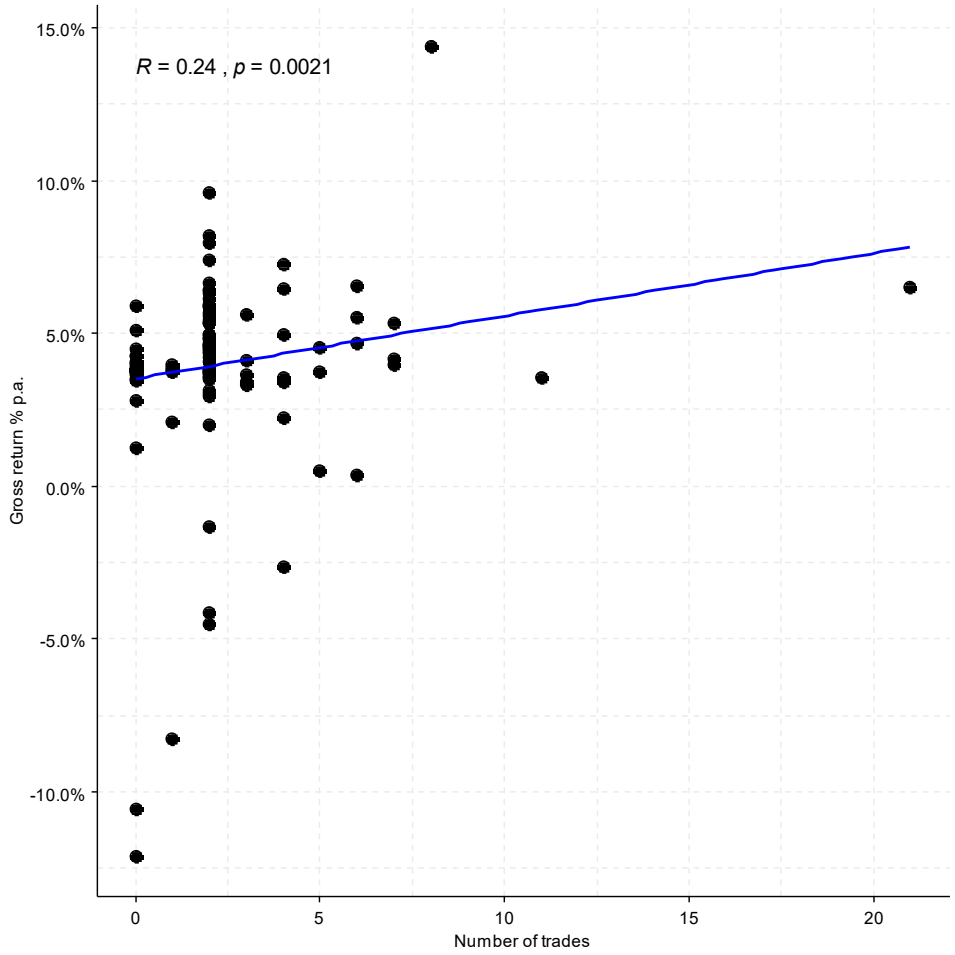
Scatter plots showing the number of active **purchase** trades and gross returns (annualised) per fund.

The correlation coefficient ('R") and line of best fit is shown using the Spearman method.

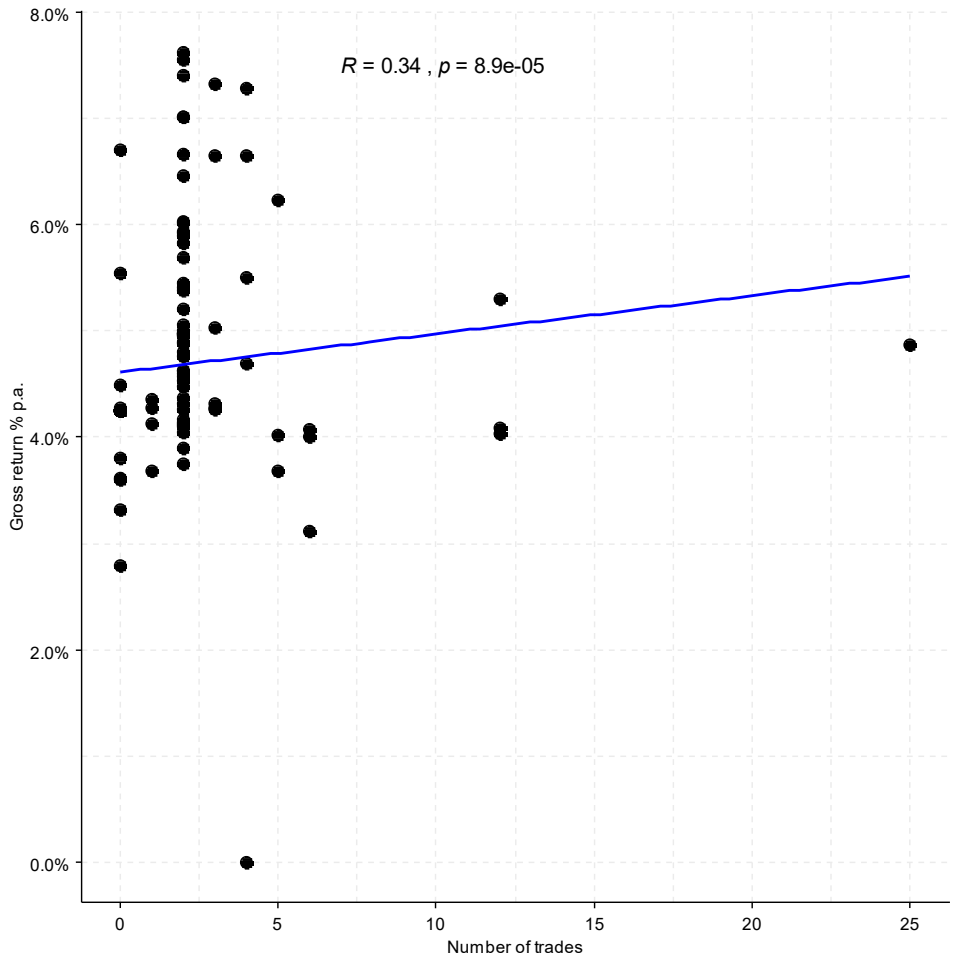
7.6.1 Equity Dividend & Growth Fund: Advised investors - correlation between the number of active purchase trades and gross returns p.a.



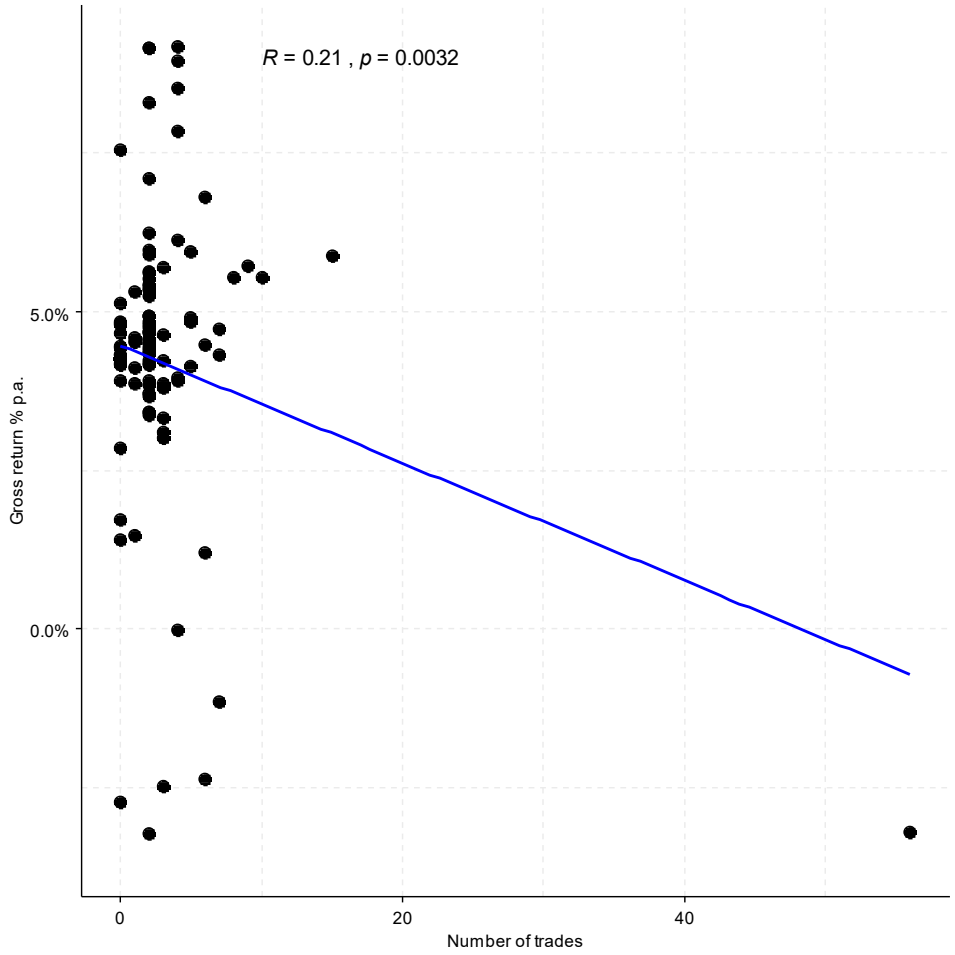
7.6.2 Equity Dividend & Growth Fund: Non-advised investors - correlation between the number of active purchase trades and gross returns p.a.



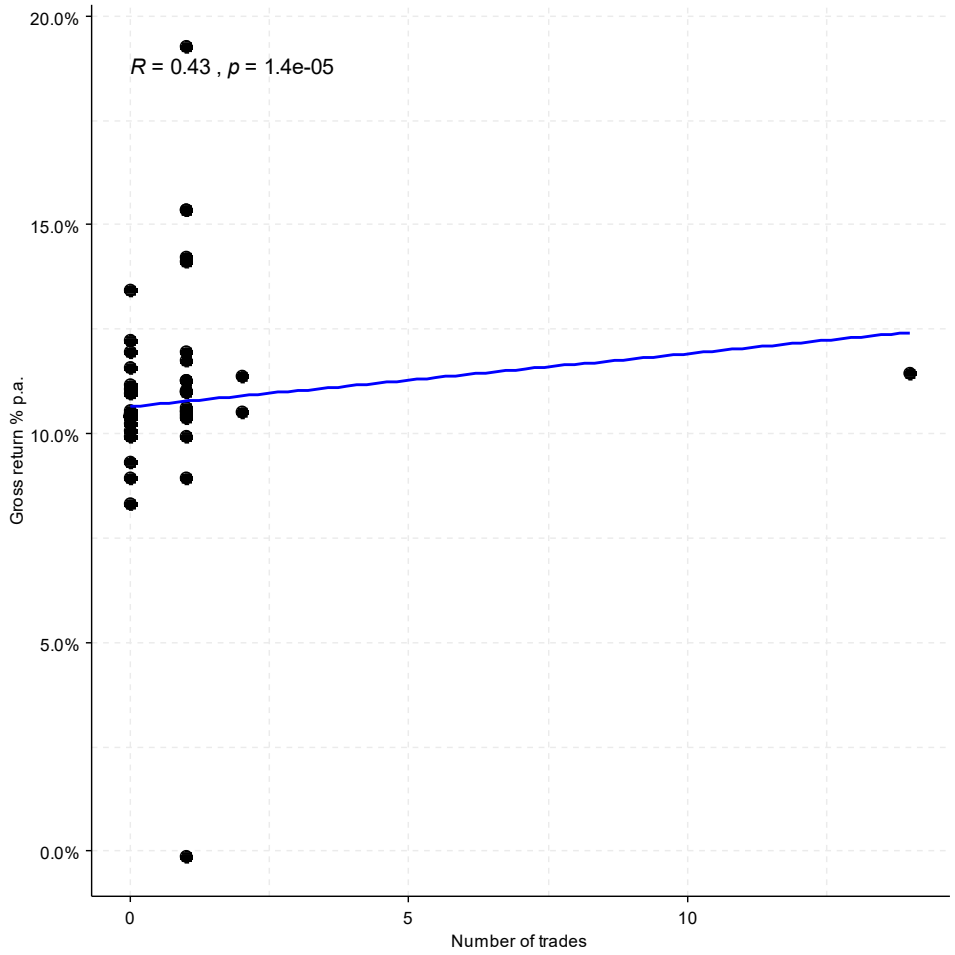
7.6.3 Equity Growth Fund: Advised investors - correlation between the number of active purchase trades and gross returns p.a.



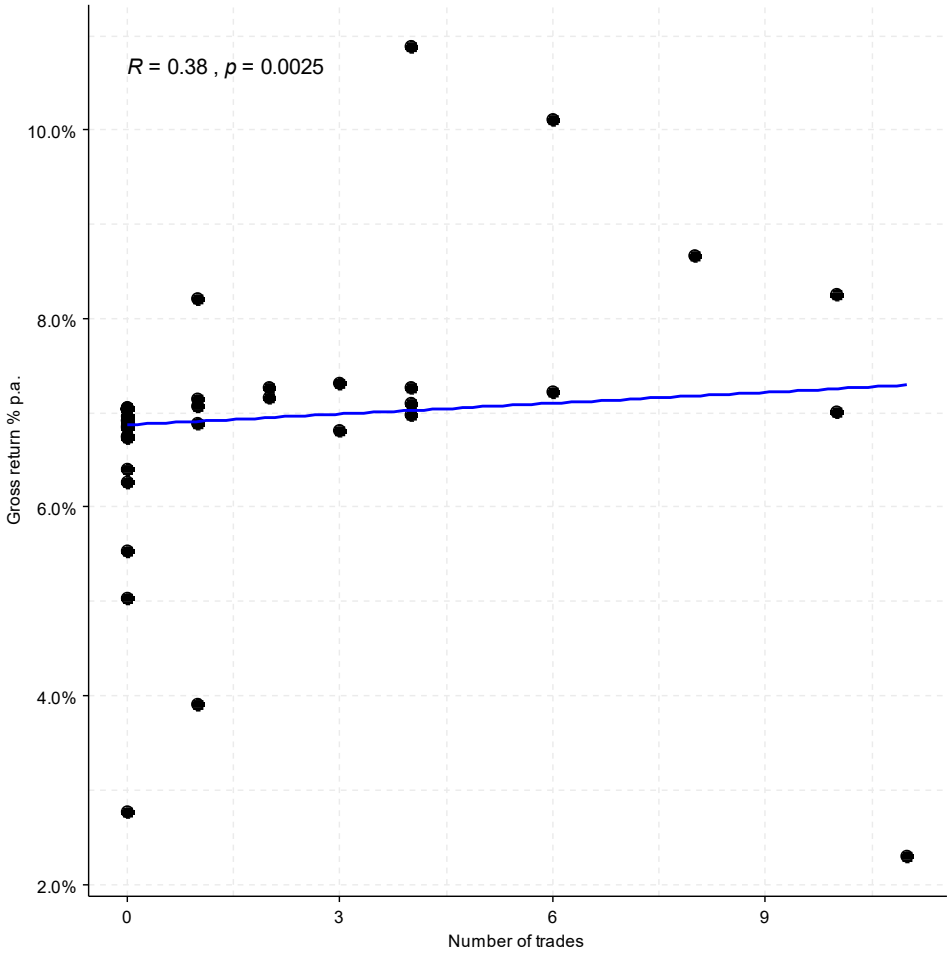
7.6.4 Equity Growth Fund: Non-advised investors - correlation between the number of active purchase trades and gross returns p.a.



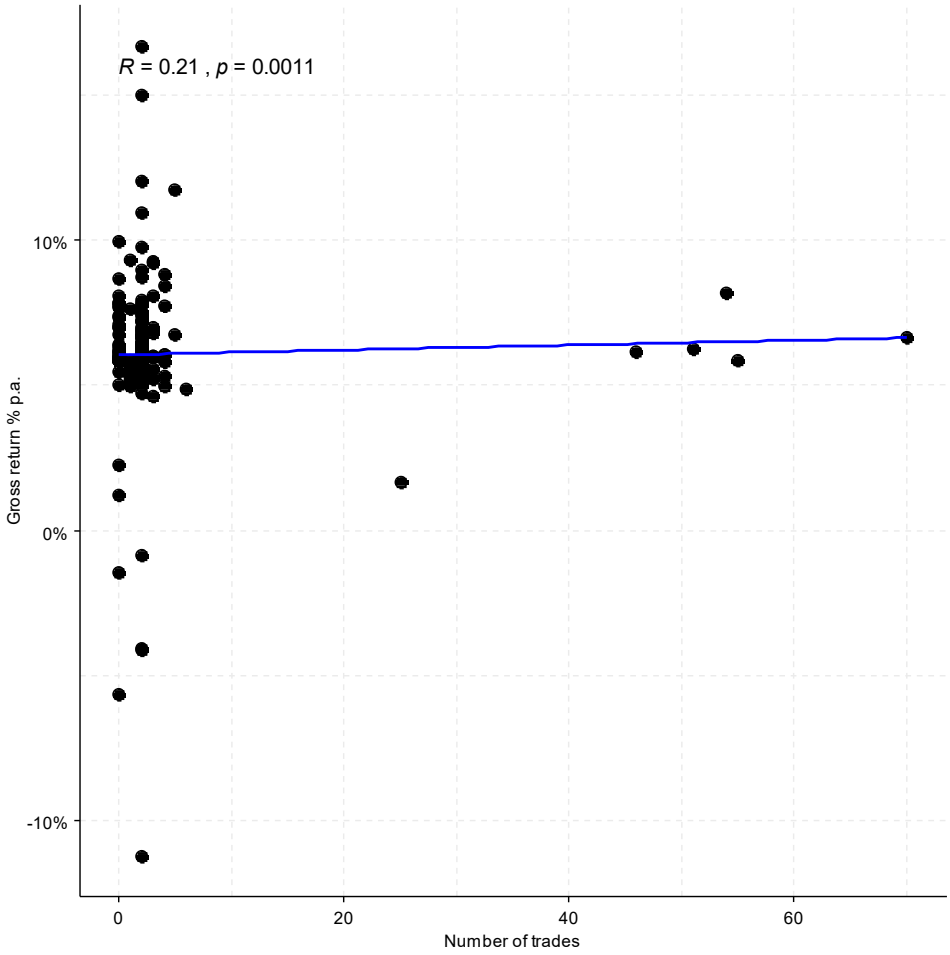
7.6.5 Global Equity Long Only Fund: Advised investors - correlation between the number of active purchase trades and gross returns p.a.



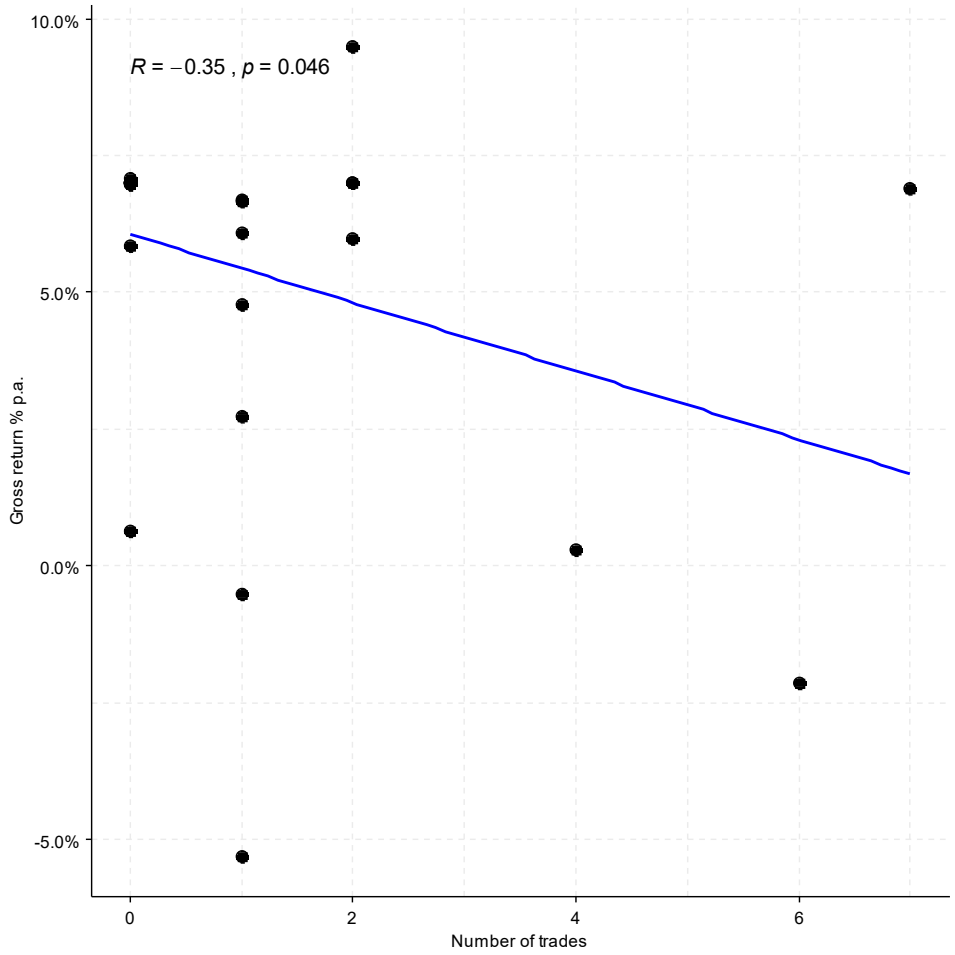
7.6.6 Money Market Fund - Fee class 2: Non-advised investors - correlation between the number of active purchase trades and gross returns p.a.



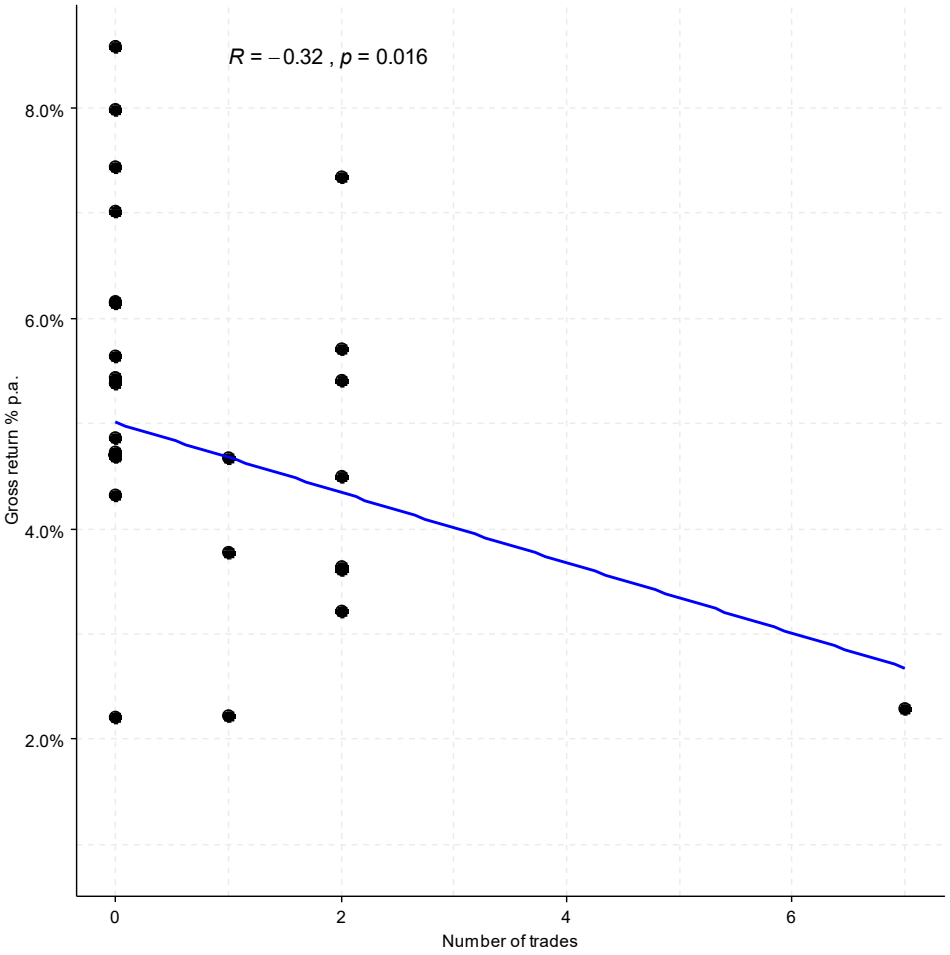
7.6.7 Multi Asset High Equity Fund: Advised investors - correlation between the number of active purchase trades and gross returns p.a.



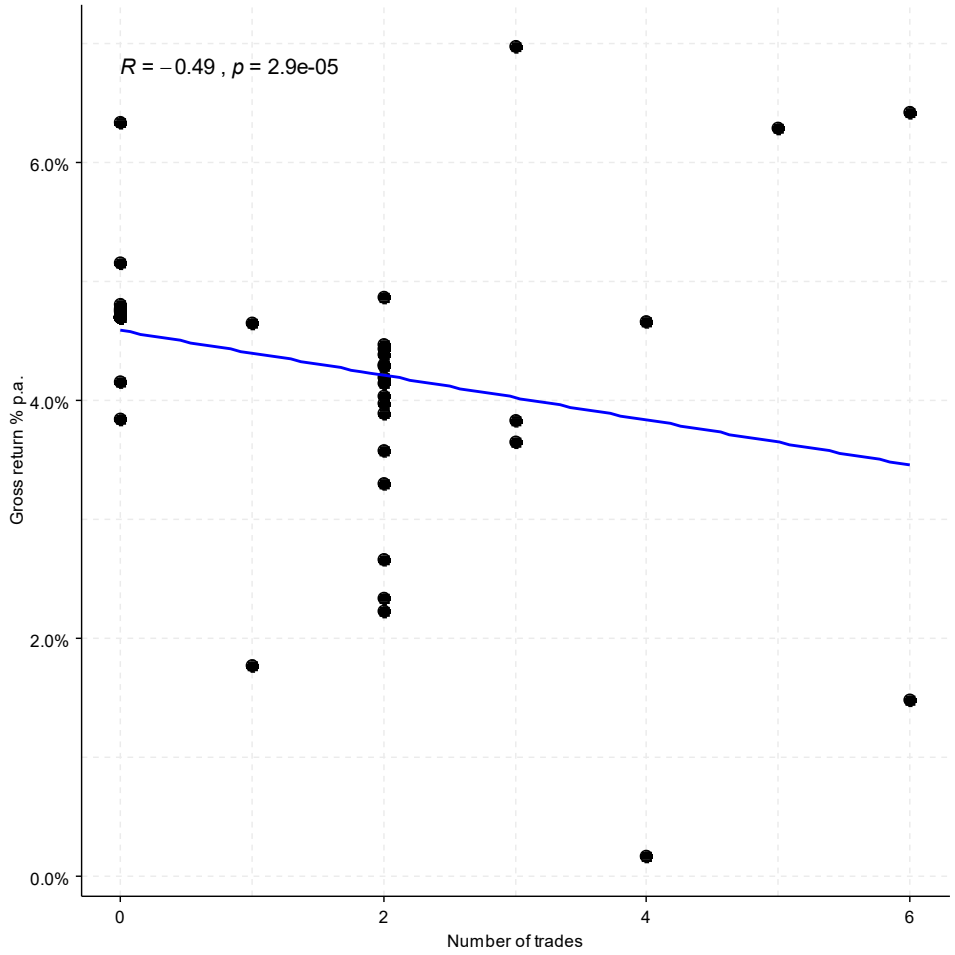
7.6.8 Multi Asset Low Volatility Income Fund: Non-advised investors - correlation between the number of active purchase trades and gross returns p.a.



7.6.9 Local Index Property Fund: Advised investors - correlation between the number of active purchase trades and gross returns p.a.



7.6.10 Local Index Property Fund: Non-advised investors - correlation between the number of active purchase trades and gross returns p.a.

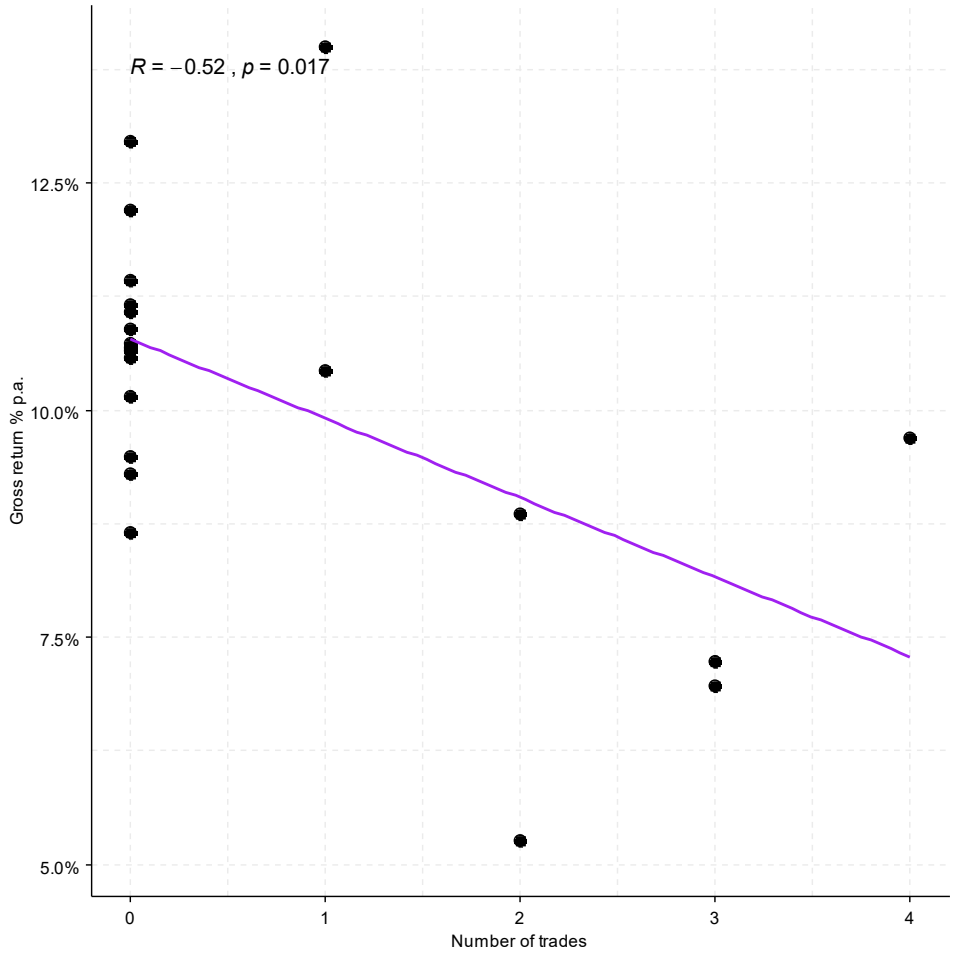


7.7 Appendix 7

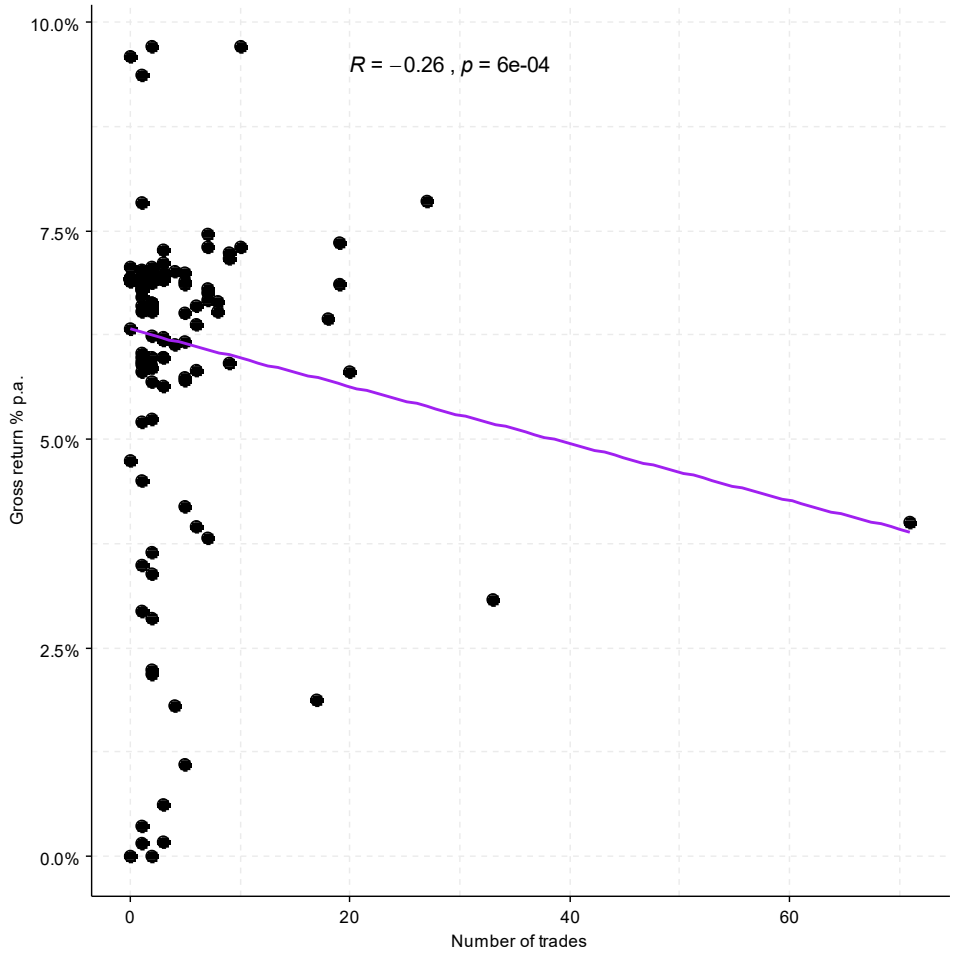
Scatter plots showing the number of active **redemption** trades and gross returns (annualised) per fund.

The correlation coefficient ("R") and line of best fit is shown using the Spearman method.

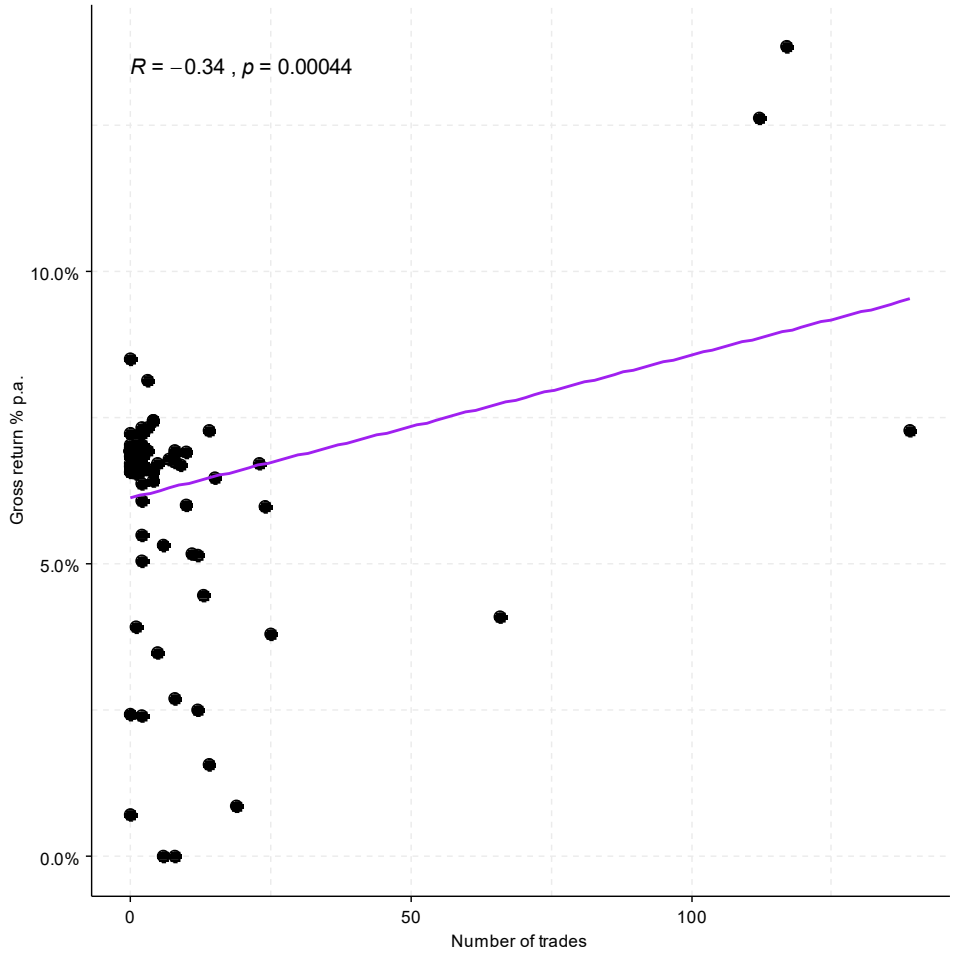
7.7.1 Global Equity Long Only Fund: Non-advised investors - correlation between the number of active redemption trades and gross returns p.a.



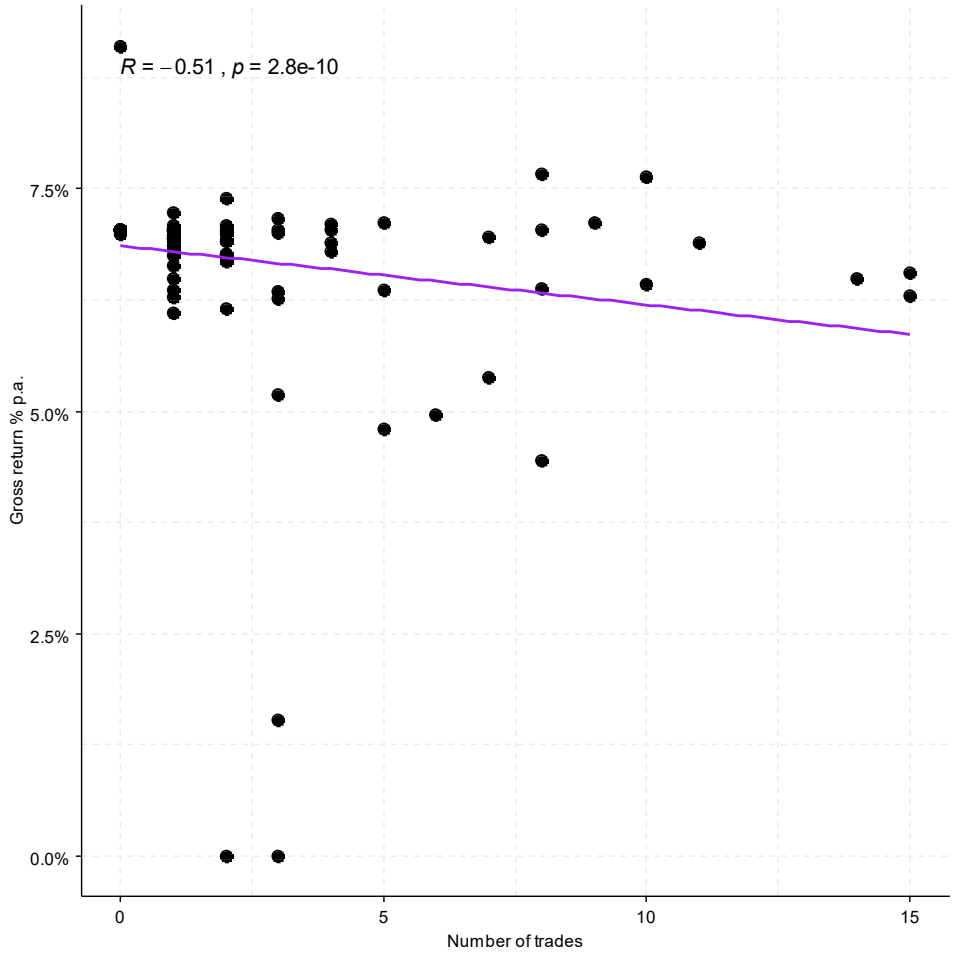
7.7.2 Money Market Fund - Fee class 1: Advised investors - correlation between the number of active redemption trades and gross returns p.a.



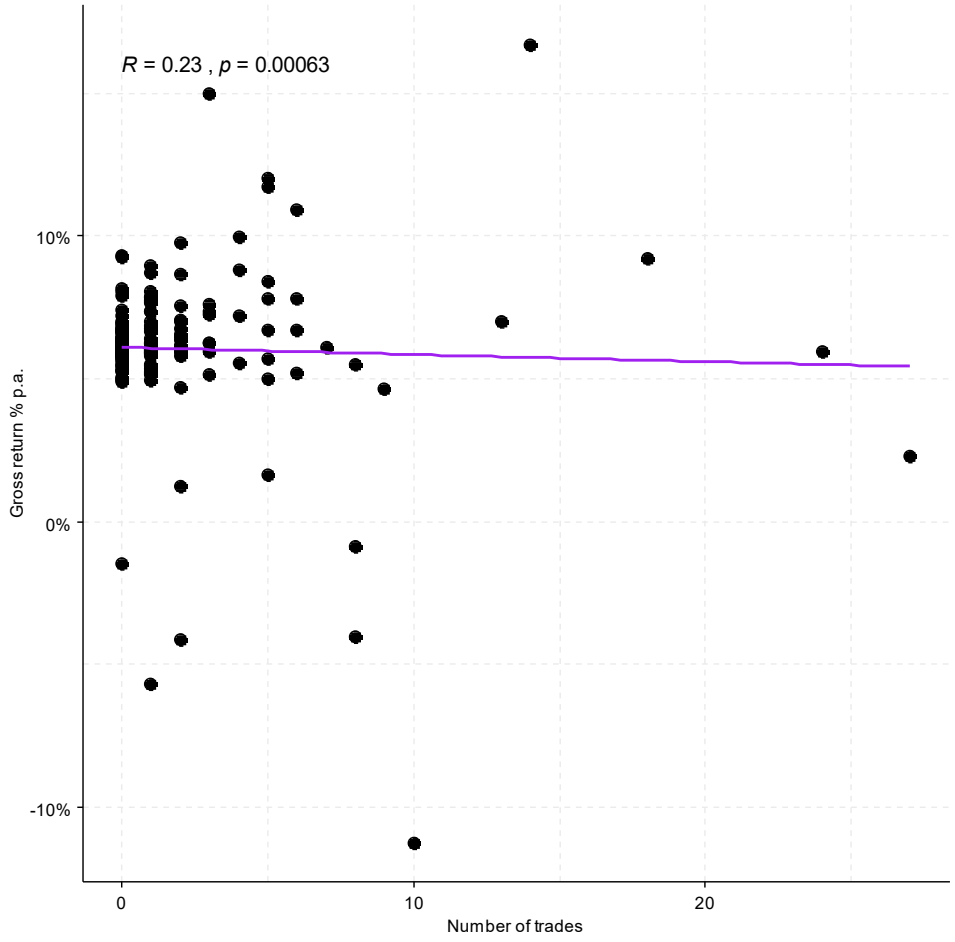
7.7.3 Money Market Fund - Fee class 1: Non-advised investors - correlation between the number of active redemption trades and gross returns p.a.



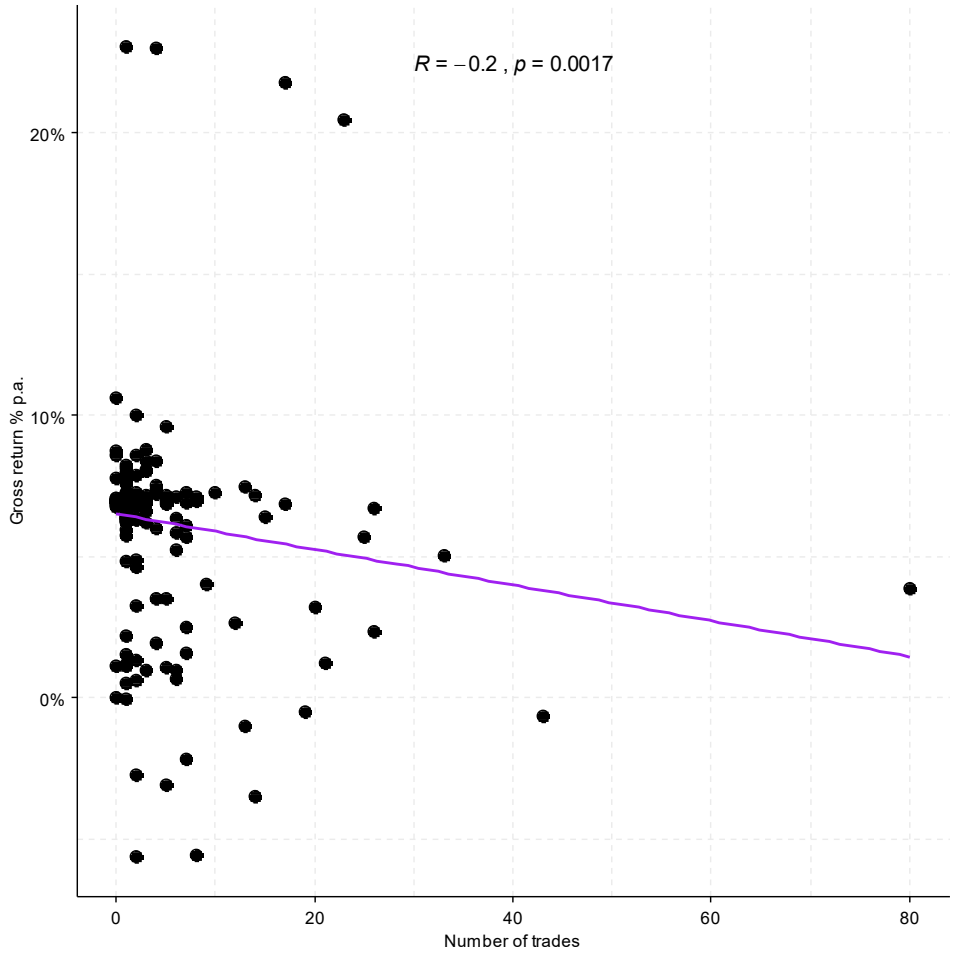
7.7.4 Money Market Fund - Fee class 2: Advised investors - correlation between the number of active redemption trades and gross returns p.a.



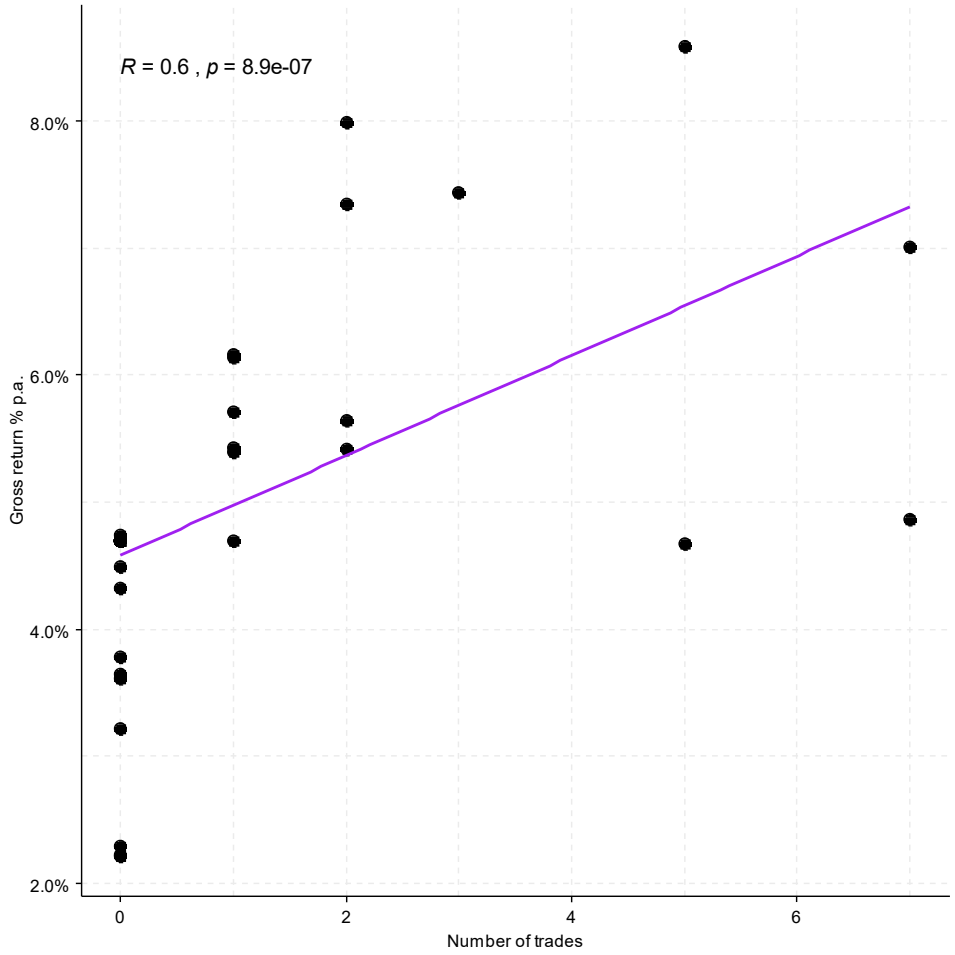
7.7.5 Multi Asset High Equity Fund: Advised investors - correlation between the number of active redemption trades and gross returns p.a.



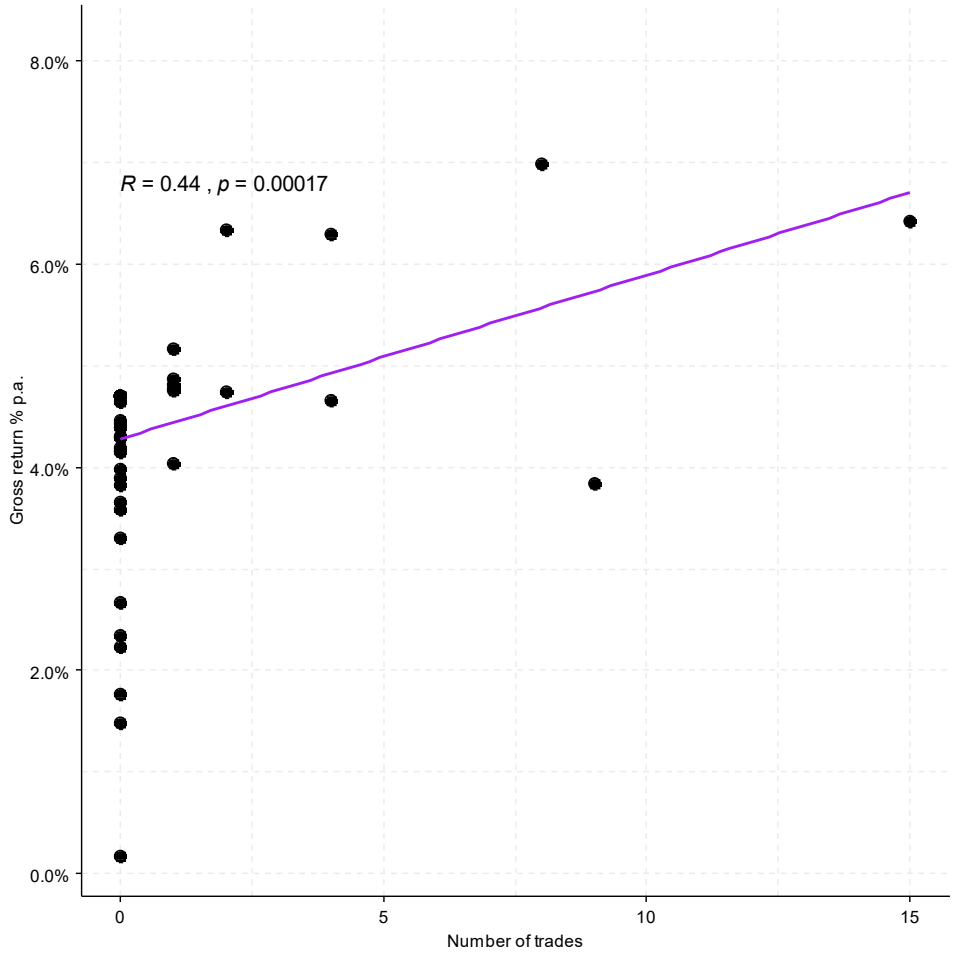
7.7.6 Multi Asset Low Volatility Income Fund: Advised investors - correlation between the number of active redemption trades and gross returns p.a.



7.7.7 Local Index Property Fund: Advised investors - correlation between the number of active redemption trades and gross returns p.a.



7.7.8 Local Index Property Fund: Non-advised investors - correlation between the number of active redemption trades and gross returns p.a.



This Page is Intentionally Left Blank