Considering the relationship amongst behavioural finance, risk aptitude and investment profiles in investment decisions

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Abstract

The study field of behavioural finance is well-known in the financial and investment environment. The concept implies that investors do not necessarily make rational investment decisions. It argues that investment decisions are often influenced by emotional or other non-rational factors leading to irrational investment choices. One may conclude that in many instances investors display investment behaviour in line with behavioural finance theory without realising it. The study field of behavioural finance based on the “emotional” experiences of investors when investing identified different “types of emotional experiences” labelled as behavioural finance biases which may lead to or cause subjective investment decision-making.

The aim of this study was to configure whether behavioural finance biases influence the investment decisions of different categorised age and gender groups and if so which age category and gender is mostly affected by which bias.

A questionnaire based on previous research and adjusted for relevance, was developed and distributed to study participants with the help of a financial advisory company. Results from the study indicated that a deviation exists between the theoretically expected level of risk that investors will assume and the real level of risk assumed. Behavioural finance biases seems to be largely responsible for this deviation. As an example it was found that investors in the spending phase (retirement phase) are mostly subjected to the availability bias whereas female investors are mostly subjected to the regret bias.

Keywords: Investors, Behavioural Finance, Gender, Age, Investments
Chapter 1

Introduction to behavioural finance

1.1 Introduction

When a variation exists between actual income and expected income it is known as a risk (Valsamakis et al., 2015:29). Investors typically invest according to their risk tolerance which is composed of risk appetite and risk capacity. According to the above investors can be categorised as either conservative-, moderate-, growth- or aggressive investors (Pompian, 2016).

Conservative investors tend to be risk averse where emphasis is placed on financial security and wealth preservation. This type of investors built up wealth if money is inherited or by not risking capital (Rolph, 2013). Economic conditions which may possibly include risk and return cause these investors to be hesitant to make confident initial investment decisions. One of the main aims seems for conservative investors is to be at taking care of future generations in the form of education and homeownership.

Moderate investors on the other hand, when making investment decisions, it seems, follow the example of friends and colleagues to make their own investment decisions. These investors focus on the most popular short-term investments without taking any long-term considerations into account. Moderate investors tend to overestimate their ability to tolerate risk.

However, growth investors may be classified as active investors with a medium to high risk tolerance. These investors seem to base investment decisions on gut-feeling and on own market research. One can argue that this group of investors follow their independent mind-sets even if their market views are not supported by market tendencies. The focus of this group is to outperform the market (Pompian, 2016).

According to Megginson et al. (2010:701) this group of investors are known as being strong willed and overconfident in their actions and they also tend to be willing to assume risk. Additionally these investors seem to be the first generation of their family to create wealth. The portfolios for these investors change as the market conditions change and accept the challenge of investing in high risk portfolios. The tendency exists that these investors
structure their portfolios in a manner where asset allocation and diversification are not evident (Megginson et al., 2010:708).

Given the above, one also has to consider that people in different stages in the life cycle has different levels of income, ability, and capacity to invest and willingness to absorb risk. According to Reilly and Brown (2012:8) investors can be divided into three life stages namely the accumulation, consolidation and the spending phase. People in early career will mostly find themselves in the accumulation phase. In this phase these investors tend to go for the high returns and high levels of risk, the intent is to generate substantial growth and wealth (Reilly & Brown, 2012:8).

The consolidation phase normally occurs during the mid-career years. The investment horizon for these investors are in the vicinity of approximately 20 years and the willingness to absorb risk also decreases. It can be concluded that these investors prefer to be less aggressive and more conservative in their investment approach (Marx et al., 2013:17). With regards to this group, one has to consider the fact that if a nonperforming investment has been done there may be time to recover from negative market returns (Greer, 2004).

Moreover, investors approaching retirement find themselves in the so called spending phase. These investors are characterised by a level of low risk tolerance and the focus typically is on capital preservation rather than on earning high rates of return (Bodie et al., 2007:704).

When considering risk, investors can be classified according to predetermined risk profiles. Risk profiles take into account the required rate of return, and risk tolerance comprising of risk capacity and risk appetite (Fina Metrica, 2016). The required rate of return is associated with the amount of risk the investor is willing to assume in order to achieve investment goals.

In the context of risk, the term risk capacity refers to the amount of risk an investor can afford to take on. Risk appetite on the other hand refers to the level of risk the investor is willing to take on.

From a behavioural finance point of view, both risk appetite and risk capacity need to be further broken down into known and unknown risks. Known risks are when investors can comprehend, understand and measure risk where in the case of unknown risks these actions are not possible (Pompian, 2016). The importance of knowing risk is that it enables one to determine what level of risk is acceptable. It is also necessary to take note that some risk,
unknown risk, cannot be quantified and therefore not be considered in the investment
decision. In this context one has to consider that a behavioural approach to investment may
possibly lead to investment decisions based on emotions rather than rational fact.

An interesting finding related to risk is that females tend to be more risk averse and has a
lower level of risk tolerance (Mahapatra & Mehta, 2015:7). In additional Bayyurt et al.
(2013:73) indicated that females compared to males normally display a lower level of
confidence in the market and investment.

Behavioural finance, previously referred to as a behavioural approach to investment, is
defined as a study where psychology influence the behaviour of investors and in addition
Sewell (2010) indicated that it may have a consequent effect on the market. In contrast
classical investment theories assume that investors always make rational investment decisions
with the intent to maximise return and minimise risk. The latter seems not to be true in all
cases since through research it is proved that investors are not always rational and markets
are not always efficient (Chaudhary, 2013). It therefore may be argued that behavioural
finance specifically exists because of the phenomenon that investors do not always make
rational decisions nor are markets always efficient. Behavioural finance as a subject,
therefore attempts to explain why individuals takes certain actions and why markets are not
always behaving as expected. It logically follows and is highlighted that often investors make
investment decisions based on emotions and not logic (Chaudhary, 2013).

Efficient market theories are challenged by the behavioural finance approach as it argues that
markets can be inefficient due to irrational investment decisions by individuals. One has to be
cognisant of the fact that behavioural finance considers both psychology in an individual and
sociology in an interpersonal context.

Jagongo & Mutswenje (2014) decomposed behavioural finance into different theories namely
the regret theory, theory of mental accounting, prospect/loss aversion theory, over/under
reacting theory and the theory of overconfidence.

**Regret theory**

The emotional reaction of people after realising an error was made in judgement is called the
regret theory (Quiggin, 1994). This theory specifically considers the consequences of making
an investment which does not generate positive returns, in other words, investors invest in
stocks that did not increase in value as expected. Regret averse investors do not want to experience the regret emotion caused by a loss or nonperforming investment (Zeelenberg & Pieters, 2007). These investors in their attempt to avoid the emotion of regret tends to follow conventional wisdom and invest where the rest of the market participants invest. In the cases where investors experience regret; investors attempt to steer away from the emotion by managing, deny, or suppress the emotion in any possible way.

**Mental accounting**

In this case life experiences are grouped into mental compartments and the experience of the difference between these compartments can possibly impact investment behaviour more than the life experience itself. From an investment perspective, the theory of mental accounting can be explained as follows: an investor invests money and receives initial excessive gains, however gains over time regresses to normal or less than normal gains but still the investor hesitates to sell. The opposite is also true that although due to poor returns investors should have sell off investments they, however hang on to the investment in the hope to generate positive returns (Jagongo & Mutswenje, 2014).

**Prospect/Loss aversion**

The prospect theory deals with an individual’s propensity to deal with risk of individual investment opportunities without consideration of the risk return relationship of alternative investments choices (Edwards, 1995). From theory it seems that different emotions are expressed towards gains and losses. Investors tend to be more concerned about prospective losses than being pleased with “normal” or excessive gains. In cases where the investment generate negative returns investors often hold onto these investments with the hope that negative returns will convert to positive returns. They are even prepared to take on additional risks to avoid losses in capital. The intent is to realise positive returns. In line with the latter, loss aversion theory indicates that investors will hold onto the ‘losers’ and sell ‘winners’, due to belief that today’s ‘losers’ will become tomorrow’s winners. The motivation is to avoid losses, the problem is that one sells good performing stock and hold onto nonperforming stock. The result being that the investor ends up having a large portfolio of nonperforming stocks.
Over/Under reacting

The over/under reacting theory highlights the fact that investors get optimistic about a booming market with high anticipation of continuance in performance. Therefore, during market downturns, investors are pessimistic and hold the pessimism until proven different (Hong & Stein, 1999). Moreover, over/under reacting is the result of placing too much emphasis on current events and market conditions, in the process anchoring happens and they forget to include historical information into decision making. From an asset pricing perspective negative news may cause excessive price decreases and good news excessive price increases. This may lead to high levels of optimism or pessimism. When considering optimism the highest level of achievable optimism leads to greed creating a demand for stock which may cause stock prices to increase beyond intrinsic value. The intrinsic value of stock is defined as the present value of future cash payments (including dividends and proceeds from the sale of stock) discounted at a risk-adjusted required rate of return (Bodie et al., 2011:766).

Overconfidence

Overconfidence theory states that knowledge, abilities and the precision of information are often overestimated. Also the investment decision is normally not based on the fundamental value of the asset and can be regarded as a consequence of emotion, in this case overconfidence (Tapia & Yermo, 2007). The two main contributing factors towards overconfidence seems to be the illusions of control and knowledge. Typically this type of investor believes he/she has the ability to consistently outperform the market. Thus, this type of behaviour may lead to excess trades which causes costs in the hope of creating additional profits.

Derived from the above one may conclude that the phenomenon where investment decisions is based on emotion rather than on fact is known as behavioural finance. The latter means that investors under certain conditions may make emotional rather rational investment decisions. Therefore an opportunity exists to consider if or how investment decision making is influenced within the context of behavioural finance under certain conditions.
1.2 Problem statement

Some individuals follow a behavioural finance rather than a rational decision making approach in order to determine in what or where to invest. One burning question is how behavioural finance influences investment decisions across age and gender.

1.3 Objective of the study

1.3.1 Primary objective

The primary objective for this study is to determine how behavioural finance decisions influence investment decisions across age and gender.

1.3.1.1 Sub objectives

- The primary objective of article one for this study is to identify which behavioural finance bias is most common in each respective age category.
- The primary objective of article two is to identify which behavioural finance bias is most common for males and females.

1.3.2 The influence of behavioural finance on investor behaviour in different age categories – Article One

The primary objective of article one for this study is to identify which behavioural finance bias is most common in each respective age category.

1.3.2.1 Theoretical objectives

- To differentiate between investor types for example conservative-, moderate-, growth- or aggressive investors.
- To analyse the different life stages where investors find themselves in; and
- To analyse the theories of behavioural finance in terms of investor decisions.

1.3.3 Behavioural finance: the influence of gender on investment decisions - Article Two

The primary objective of article two is to identify which behavioural finance bias is most common for males and females.
1.3.3.1 **Theoretical objectives**

- To differentiate between investor types for example conservative-, moderate-, growth- or aggressive investors.
- To determine if gender has an influence regarding investor type classification; and
- To analyse the theories of behavioural finance in terms of investor decisions.

1.4 **Research and methodology**

This study will compose out of a literature and an empirical study.

1.4.1 **Literature review**

The literature study will focus on the different classification types of investors and also the behavioural finance theories (causes of market inefficiencies that led to the existence of behavioural finance). This theory takes into account previous research on focus areas in both South Africa and abroad. The use of articles, textbooks and journals are some of the typical sources that will be used in the literature review.

1.4.2 **Empirical study**

Questionnaires were used to collect data for the empirical section of this study. The data collection process included obtaining data from clients of a financial advisory company. The sample includes any investor that made investment decisions and made investments with the aid of the financial advisory company. Assistance was obtained from financial advisors to collect the data.

Out of the 250 questionnaires that was distributed, 200 was received back from respondents. It is important to note that in a few cases non structured “interviews” was conducted to assist respondents to complete the questionnaire.

The choice of the financial advisory company, the clients of whom, to include in the research was based on convenience, however the clients to include in the sample was selected in a random manner to obtain an unbiased sample.

1.4.3 **Statistical analysis**

Captured data were processed and statistical analysis done, using IBM SPSS Statistics 23 and Microsoft Excel 2013. Statistical procedures used to include:
• Chi Square tests: and
• Significance tests.

1.5 Chapter classification

Chapter 1: Background

Focused on the background information and the scope of the study.

Chapter 2: Behavioural finance and investment decisions

Chapter 3 - Article one: The influence of behavioural finance on investor behaviour in different age categories

This article focused on the literature of behavioural finance in terms of the respective theories. Not only was a differentiation given between the types of investors, but also an analysis for investor behaviour in different life stages.

The first empirical aim was to determine which behavioural finance bias is most common in respective age categories. The final test was to determine which category was mostly subjective towards behavioural finance.

Chapter 4 - Article two: Behavioural finance: the influence of gender on investment decisions

This article focused on the literature of behavioural finance in terms of the respective theories. Not only was differentiation given between the types of investors, but also an indication of whether females are more risk averse than males. An analysis was also done to determine which type of behavioural finance is most common for males and females.

Chapter 5: Conclusion and recommendations

A summary and conclusion of the study. This chapter highlights the influence of behavioural finance on investment decisions.
Chapter 2

Behavioural finance and investment decisions

2.1 Introduction

Markets are neither strictly efficient nor strictly inefficient (Haugen, 2001:574). The degree of market efficiency is determined by the availability of information reflected in the prices of securities (Fama, 1970). Therefore, Barberis and Thaler (2002) is of the opinion that efficiency is where market prices are an unbiased estimate of the true value of an investment. The Efficient Market Hypothesis (EMH) defines an efficient market as a market where new information is quickly and correctly reflected in the price of a security (Lim, 2011). Fama (1970) identified sufficient conditions for capital market efficiency namely (1) no transaction cost in the trading of securities, (2) all market participants have access to available information at no cost and (3) market participants agree on the implications of current information for the current price and distributions of future prices for securities. An efficient market is known to be characterised by security prices reflecting all available information. Efficient markets have been empirically tested to determine if prices fully reflect particular subsets of available information. As a result, three forms of efficient markets were identified namely weak, semi-strong and strong form (Fama, 1970).

The perfect market is where prices reflect accurate prices for resource allocation, thus enabling firms to make production investment decisions where investors can choose among securities that are representative of a firm’s activities (Fama, 1970).

It is believed by the EMH, that irrationality on behalf of some investors (also called ‘noise traders’), will not have a remarkable influence on the overall functioning of the market as long as the majority of investors are rational (La Blanc & Rachlinski, 2005). It seems that irrational investors are likely to undertake more risk in the hope to be rewarded with higher returns. Thus, under the EMH a small group of irrational investors will probably have a small effect on market prices. As a result, the EMH claims that all securities are accurately priced, which restricts irrational investors to overpay for securities.

The EMH states that irrespective of the beliefs and preferences of the investors, the price paid for securities is an efficient price that reflects the securities’ true value. However it can be
argued that the expectations of a large number of irrational investors grouped together can influence the market price of the asset.

The above arguments gave birth to the concept of market anomalies. This concept exists when the change in the price of the asset cannot be associated with current market information or the release of new information. Normally anomalies occur either when a market is inefficient or if inadequacies exist in asset-pricing (Schwert, 2003). Keim (2006) highlighted that it is specifically market anomalies that gave birth to the behavioural finance theory which is a definite factor in investment decisions. Investors should have an understanding of their own investment behaviour orientation in the context of behavioural finance in order to enable them to select the most appropriate investment and to avoid possible future errors (Kannadhasan, 2009). The previous differs from a rational approach where investment decisions were based on market timing, forecasting or actual performance. During this process it was observed that due to unrevealed reasons there was a major deviation between forecasted and realised returns. Extensive research proved the main reason for this deviation between forecasted and realised returns was inaccuracies in the decision-making process. Lintner (1988) concluded that psychological factors contributed towards making inaccurate decisions. As a result, it is believed that psychology plays a major role in determining the behaviour of the market. Therefore, behavioural finance is ultimately defined as “the study of how humans interpret and act upon on information to make informed investment decisions” (Lintner, 1988).

In addition Chaudhary (2013) highlighted the fact that investors make decisions based on emotions and not logic. In this context one may ask the question whether behavioural finance does not lead to the propensity to speculate. If one assumes that investors tend to speculate one may conclude there will be a tendency to buy assets at low prices and sell high. It can also be argued that the tendency to speculate is exacerbated if panic mode is triggered. Panic is obviously associated with the emotion of fear one of the two main emotions that primarily influence investors, the other one being greed. The fear of losing invested money is experienced as three times larger than the emotion of generating a positive return. Irrational behaviour can also be caused by people moving in herds, where a group or groups of people follow a specific direction in some cases for no obvious reason, one such a situation may be when stock market behaviour is not supported by fundamentals in the economy. As a result, the efficient market theories based on the assumption that investors act rationally in line with
availability of information are challenged. The latter is supported by behavioural finance theory which argues that markets can be inefficient due to human irrationality. In this context it is important to note that EMH consider availability and absorption of information while in the case of behavioural finance one may argue that investors either do not specifically pay attention to or choose to ignore available information.

2.2 Efficient market hypothesis

The notion that stocks in the market reflects all relevant and available information is known as the EMH (Bodie et al., 2013:235). An efficient market is where information is circulated with speed and the considered impact of the information is reflected in stock prices. A dispute exists about the term “all relevant information” that is reflected in prices. The question arises whether investors would possibly spend time and resources to find new or hidden information that can contribute towards higher investment returns. According to Bodie et al. (2013:237) the degree of efficiency differs across various markets. Thus, it is not true that “all” information is reflected in stock prices. The explanation of what is meant by the term “all relevant information” as related to the three forms of market efficiency demonstrated in Figure 2.1.

Figure 2.1: Presentation of all relevant information in the three markets

Source: Haugen (2001)
2.2.1 Weak form

In the weak form the available information is based on historical prices or returns. Stock prices are assumed to reflect any past information of the specific stock (Haugen, 2001:574). The information reflected in stock prices can be derived from analysing market trading data which includes historical past prices, trading volumes or short interest. Moreover, the information obtained in this form is costless and easily obtainable (Bodie et al., 2013:238). Therefore, the more the information is distributed publicly, the easier it is for investors to lose interest in the stock as the value of the stock is decreasing which in return can cause a price hike (Fama, 1970).

2.2.2 Semi-strong form

The semi-strong form is characterised by the speed of price adjustment to all publicly available information. All stock price information is publicly known and available (Dimson & Mussavian, 2000:963). In addition to information on past prices as in the case of weak form efficiency the semi-strong form includes for example fundamental data on a production line of a firm, management quality, composition of balance sheet, patents held, earnings on forecasts, and accounting practices. It is argued that if the above mentioned information is available from public sources, it should be reflected in stock prices (Dodson, 2006:52).

2.2.3 Strong form

The strong market form incorporates all existing information known as historic, public and private (also called inside information) (Clarke et al., 2009). Traders in the strong form should shift focus to not generate excess profits even if the investment decisions are based on information not publicly known. The strong form of the EMH states that insiders of a company should not be allowed to make a gain from access to inside information by buying company shares before making the information publicly available. Controversially, based on inside information available to certain investors, investors tend to react different in the market than expected. As a result, the inside information is therefore reflected in stock prices (Bodie et al., 2013:238).

Markets can have characteristics of efficiency and as a result stocks behave as if it priced in a purely rational manner. On the other hand, in an inefficient market, pricing behaviours tend to be a result of emotions or psychology (Haugen, 2001:576).
2.3 Behavioural finance

An investor only invests if the possibility of making a profit exists. In earlier years, investment decisions were based on forecasting, market timing and performance (Lintner, 1988). This investment technique was viewed as ordinary which delivered ordinary results (Kannadhasan, 2009). The gap between perceived returns and actual returns received, left some room for questions to be asked. According to previous studies, it was found that the difference between the realised and expected returns were based on errors in the decision making process (Marx et al., 2013:4). The latter were blamed on irrational investment decision-making. When this irrational investment decision concept came to light, then only did the impact of psychological factors on investment decisions start to receive attention. Thus, although traditional financial theories viewed investors as rational and utility maximising Singh (2012:117) in contrast is of the opinion and explains that, cognitive psychology view investors as irrational decision makers therefore they are subject to cognitive illusions. The concept of cognitive illusions is illustrated by Figure 2.2.

**Figure 2.2: Cognitive illusions**
Behavioural economists noted that heuristics (mental shortcuts) are often utilised in humans’ decision making processes. Within the investment context, heuristics can lead to either poor and / or good investment decisions (Singh, 2012:117). To better understand the impact of heuristics on investment decision-making the subsections as illustrated in Figure 2.2 needs further scrutiny.

**Representativeness**

Representativeness refers to making decisions based on stereotypes in other words seeing things the way other people see it. As a result, it is argued that investors base investment decisions on perceptions of patterns which might have never existed (Kannadhasan, 2009). The result is a tendency to overreact because it is believed that recent trends will be repeated (Singh, 2012:119). In this case investors will only consider high return stocks and not stocks which performed poor in the past. In this context one has to consider the argument that if markets are fully rational, as claimed by Fama (1970), recent trends of stocks should not have any impact on future expectations of stock prices. It therefore has to be asked whether markets are always fully rational or whether the representative approach to investing make sense or may drive markets to be not fully rational.

**Overconfidence**

Bodie *et al.* (2013:267) indicates that confidence is closely related to courage, but it is not the only factor that needs to be considered to achieve investment success. Within an investment context the issue is that illusions may exist within overconfident investors which cause these investors to overestimate their abilities. It seems that as part of overestimating predictive abilities investors attempt to time markets regarding buying and selling of shares prior to stock movements (Singh, 2012:118).

**Anchoring**

Kannadhasan (2009) refer to anchoring as a tendency in which humans’ excessively rely on a single piece of information when making decisions. A specific example is where investors tend to evaluate the worth of stock by using old trade information as reference and one may probably add this as an indicator of expected investment performance. The propensity of investors’ reliance, solely on historical trends make responses to investment based decision adjustments to new information relatively slow.
**Gamblers fallacy**

As a general notion one may say that gamblers in general believe and are confident that they can outperform a market or system. In an investment context the gamblers fallacy is portrait and evident when “gambler” investors incorrectly predict trend movements and or reversals. “Gambler” investors may for example follow the financial performance and or another trend of a specific investment if the trend followed is consistent and moving in a specific direction. Gamblers convinced of their ability to outperform, in this case the market, may take a view that this trend will either change and/or follow a reversed direction in the near future and may bet on it (Singh, 2012:118).

**Availability bias**

According to Kannadhasan (2009) availability bias occurs when decisions are based on only the most recent available information (in the absence of background information or incorrect interpretation of current information). Therefore, decisions based on new or recent available information can lead to a possible decrease in investment and or investment returns and as a consequence in poor portfolio returns as only recent available information is considered.

The prospect theory was developed by Kahneman and Tversky (1979:263) and it reasons that several states of mind can influence the investors’ decision making process. The prospect theory explains choices made by individuals under specific conditions of risk (Edwards, 1995). Subsections of the prospect theory as illustrated in Figure 2.2 are discussed below.

**Loss aversion**

Loss aversion refers to the fact that people mentally experience a penalty regarding a given loss more severely than the reward from a gain of the same size (Singh, 2012:120). One may therefore conclude that different emotions in terms of joy, excitement, anxiety and probably a few others may be experienced and/or expressed in cases where gains and losses are realised. A consequence in the case of negative returns may be that investor’s hold on to investments which have negative returns and will even take more risks to avoid further losses rather than to sell and eliminate losses. A result of this approach is that, investors do not sell non-performing investments they rather hold on to the investment with the hope that the investment returns will return to positive. Obviously the argument is if one does not sell one does not lose anything – the latter can in this context be a valid argument only in times of
general bear markets and even in this case it is a questionable approach. From an investment point of view one of the big issues of hesitance to sell and eliminate one’s losses is potentially the opportunity cost of staying in underperforming investments. In conclusion one may argue that loss aversion investment theory indicates that investors will hold onto the ‘losers’ and sell ‘winners’, due to the belief that today’s ‘losers’ will possibly in future outperform today’s ‘winners’.

**Regret aversion**

The emotional reaction of people after realising an error was made in judgement is called the regret theory (Quiggin, 1994). From an investment point of view, the regret theory takes the form of monetary payment consequences where investors invest in assets and regret steps in investment decision due to lack of reasonable return realisation. The concept regret aversion argues that in the case of non- or underperforming or financial loss the pain experienced by the decision-maker is not limited to pain caused by the financial loss only, it includes a feeling of responsibility for making an incorrect decision. According to Zeelenberg and Pieters (2007) most investors are known to be regret averse and will attempt to manage situations to avoid regret. To avoid, combat or overcome regret it seems an option for investors to follow conventional wisdom and attempt to invest where the rest of market participants invest. The latter based on the experience of sheltering may create a feeling of comfort leaving the investor with the expectation to earn a reasonable return without being exposed to excessive risk or chance to loss. Taking this option one may argue will leave the investor in a position of most probably not being able to earn excessive returns nor being exposed to excessive losses. From a financial needs point of view the question remains whether it is adequate to follow other market participants’ actions or whether it is necessary to make ones’ own investment decisions based on research in an attempt to generate an acceptable rate of return and being exposed to limited risk. One may therefore conclude that circumstances in some situations may “dictate” investment decision nonetheless it does not safeguard the investment decision-maker from being exposed to both the positive and negative experiences for correct and or incorrect investment decisions. Whatever the situation in cases of poor investment results where regret becomes a reality, and decisions cannot be reversed, it seems as if investors tend to steer away from negative experiences by managing, deny, or suppress the regret emotion in any possible way.
Mental accounting

According to the mental accounting theory the information related to certain events are grouped into mental compartments. It is further suggested that the differences caused by information, as related to specific events in these compartments, can possibly impact behaviour more than the experience of the events itself. The theory of mental accounting can be explained considering two events, the first of two events may be when an investor invests money and receive excessive gains compared to the second event where an investment realise normal returns. Bottom line is if the returns from investments in the two events are compared the investor may be hesitant to dispose investments with relative low profit margins. The situation is that once a high yielding gain/profit is received it motivates the individual based on comparison between compartment information to wait until more gain/profit is achievable (Jagongo & Mutswenje, 2014). Problem is the anticipated “more gain/profit” situation may never materialise.

Self-control

Self-control aims at avoiding losses and protecting investments. Earlier studies indicated that investors who lacks self-control are open to temptation therefore in an attempt to combat giving in to temptation they aim to find tools to improve self-control. One method available is to mentally divide financial resources into capital funds and money available for spending pools, in this way control can be exercised over consumption spending (Kannadhasan, 2009).

Due to the fact that these biases form part of the everyday decision making process one has to consider that it may possibly cause distortions in market behaviour. In this context Singh, (2012:120) indicates that the above mentioned biases of prospect theory and heuristics have in reality caused market prices to deviate from vital values. The majority of heuristic biases describe investor’s to be over optimistic regarding past winners and over pessimistic about past losers. This expected either positive or negative reaction of investors can most probably cause a deviation in share price from the fundamental value. Listed below are the most common results of the biases (Singh, 2012:121):

- It leads to an extrapolation of historical trends in an attempt to predict future expected investment results.
- Lack of appropriate reaction to price changes.
- Excessive focus on popular stocks with desirable returns; and
● Deficient attention to fundamentals underlying a stock.

These behaviours may lead to miss-pricing, leaving investment opportunities to be exploited to capture above average risk adjusted returns. Under the EMH it is argued that smart money will exploit such anomalies which will cause prices to return to fundamental values (Bodie et al., 2013:266). However, previous research showed that rational investor behaviour is not able to fully offset the actions of irrational investors (Barberis & Thaler, 2002).

2.4 Risk tolerance and behavioural finance

Behavioural finance attempts to understand how investors make decisions, individually or as a group. According to prospect theory investors’ experiences can potentially affect their behaviour when making investment decisions and cause potential bias in the market. Some of these experiences are based on historical events and personal beliefs which can cause decisions to deviate from logic and reason. A specific consequence may be selective consideration of or totally ignoring of risk in making investment decisions. The latter one may conclude is influenced by the willingness of the individual to tolerate risk.

Risk tolerance according to Pompian (2016) have two components namely risk appetite and capacity. Risk appetite and risk capacity in turn can be divided into known and unknown risks as illustrated in Figure 2.3. The unknown component of risk under risk appetite and capacity specifically has potential to create behavioural problems in the investing process.

Figure 2.3: The risk tolerance equation

![Risk Tolerance Diagram]

Source: Pompian (2016)

2.4.1 Defining risk

Within the context of defining risk, there may be more, but one probably has to consider at least the concepts risk and uncertainty. According to Coetzee (2016:230) uncertainty proclaims a form of randomness to outcomes where the concept risk according to Bessis
(2010:26), refers to an outcome that has an adverse effect on wealth. Whether risk comes in the form of uncertainty or a negative effect on wealth, previous research highlights that one has to also consider and differentiate between the willingness and ability to take on risk (Bodie et al., 2011:981). Thus, the willingness to take on risk is classified under the term risk appetite whereas risk capacity is the ability to take on risk. As a result, risk appetite or the willingness to take risk can vary according to the expected return (Reilly & Brown, 2015:8). Therefore, investors seeking significant returns and are willing to accept severe losses are known to have a high risk appetite. In contrast, investors who tend to be risk averse and are concerned about stability are known for having a low risk appetite (Pompian, 2016).

Moreover, risk capacity refers to the actual risk an investor can tolerate. Factors that influence ability to absorb or tolerate risk are numerous but significant ones that one may consider include financial position, propensity to take risk, physical attributes including age of the individual as well as family matters. Pompian (2016) states that risk capacity enables investors to absorb losses which are moderate to their profile without damaging financial goals. When one within age groups consider the wealthy, the middle class and the poor one may argue that the wealthy has a higher capacity to take and tolerate risk because a loss may not necessarily have a huge effect on the “wealth” of individual. When considering the middle class, making a mistake and losing money may have a huge effect simply because it is possible that sufficient reserves are not available to cover the losses. Considering the poor, risk taking capacity may be low but willingness to take risk high because although losses may have a huge negative effect it is possible that this group in case of losses loose very little. The terms uncertainty and risk indicate that some things might be known and others less well known.

2.4.2 Known and unknown risk

In context of behavioural finance, known and unknown risks are considered to be components of both risk capacity and appetite. From an investment point of view it is important for investors to understand what risks are taken when investment decisions are made (Pompian, 2016). Obviously all risks considered are known and can easily be identified, measured and be accounted for (Coetzee, 2016:232). Unknown risk simply cannot be identified and or accounted for. Given that investors can consider and understand only known risks it is important to realise that performance results from investments made based on specific known risks might be relatively or easily acceptable. The bigger problem of
unease with performance results occurs when certain unknown risks come into play. Behavioural finance problems are identified in the unknown risk arena. Unknown risks exposure features when investors’ belief all risks are included in the risks they considered, however in reality some risks are not easily detectible or obvious and therefore exist beyond the risks investors considered. Investors seem to not understand nor are they willing to accept the outlier risk or risk not accounted for, or considered (Bessis, 2010:30). Coetzee (2016:232) support this view and specifically indicated that unknown risks can’t be accounted for and causes uncertainty for investors.

2.4.3 Risk versus reward

A change in the trade-off between risk and reward take place as soon as the risk tolerance level of an investor changes. It is a general known fact that high risk investments can deliver either significantly high, normal or very low returns. On the other hand, it is also known that low risk investments often lead to low levels of variability in returns and chances to suffer huge capital losses also decrease and it happens simultaneously (Coetzee, 2016:232).

Marx et al. (2013:103) propose the three approaches listed below to manage the risk and return trade-off for investors. In addition risk-return investment options based on the three approaches are highlighted in Table 2.1.

- Risk appetite should be managed;
- Losses should be minimised; and
- Returns be maximised.

Table 2.1: Risk versus reward matrix

<table>
<thead>
<tr>
<th></th>
<th>Low Reward</th>
<th>Moderate Reward</th>
<th>High Reward</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
<tr>
<td>Moderate Risk</td>
<td>F</td>
<td>E</td>
<td>D</td>
</tr>
<tr>
<td>Low Risk</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
</tbody>
</table>

Source: Coetzee (2016)

The table indicates that low rewards are associated with the different levels of risk that may be taken. Investment A represented by the letter A, and the same for the other letters, in the low reward column and low risk row is associated with the low risk and low reward while
investment G is associated with the low reward and high risk. In the high reward column the investment I is associated with high reward for high risk taken. Therefore if a low risk is taken by the investor, a low reward can be expected (investment A in the table). Coetzee, (2016:234) explains that investors attempt to take investment decisions that have an acceptable degree of risk that would minimise losses and maximise rewards. Investments with risk-return characteristics as represented by the cells HEDI should therefore be the preferred investment option for an investor, illustrated by block C.

2.5 Risk tolerance and behavioural finance

From the above and based on the discussion this far one may conclude that individual investors based on a variety of factors may have specific investment and money management preferences. Individuals in their early- to middle working years according to Reilly and Brown (2010:33) are categorised as to be in the accumulation phase of their life cycle. Typically individuals in this phase attempt to satisfy immediate needs. Also this group seem to have accumulated relative little wealth or have a small net worth. A consequence may be that individuals in this group are willing to invest in relatively high risk investment opportunities with expected high returns. One reason may be that these individuals are of the opinion that they can afford to take a chance of losing money on high return high risk opportunities. An argument often offered are that there will be sufficient time left to make up for the loss because there are a long time/investment time frame still to come before retirement or end of the ability to generate income.

Individuals in the consolidation phase are at or past the midpoint of their careers. Some characteristics of this group are that normally most of the debt is paid off and earnings usually exceed expenses. In some cases a 20-30 year investment horizon is still possible and it seems as if they are willing to take on moderate risk investment opportunities.

Another group of people are termed to be in their spending phase and are mostly retired individuals. Typically they live from returns from prior and or current investments, social security income and pension plans. Therefore, retired individuals in some cases are very cautious and wants to protect capital amounts (Reilly & Brown, 2010:34).

The previous discussion concluded that people in different life cycles, with unique propensity to take risk and specific preferences to invest in income generating opportunities form part of the investment community. Pompian (2016) in dealing with the intricacies of investor
orientation and associated risk developed a risk tolerance - behavioural finance type biased framework as portrait in Table 2.2 where the relationship risk tolerance and types of behavioural finance investment biases are displayed.

**Table 2.2: Investor type classification and risk tolerance**

<table>
<thead>
<tr>
<th>Risk Tolerance</th>
<th>Conservative</th>
<th>Moderate</th>
<th>Growth</th>
<th>Aggressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td>Very High</td>
</tr>
<tr>
<td>Cognitive biases</td>
<td>Emotional</td>
<td>Cognitive</td>
<td>Cognitive</td>
<td>Emotional</td>
</tr>
<tr>
<td>Biases</td>
<td>Endowment, loss aversion, status quo, anchoring, mental accounting</td>
<td>Regret, hindsight, framing, cognitive, dissonance, recency</td>
<td>Conservatism, availability, confirmation, representativeness, self-attribution</td>
<td>Over-confidence, self-control, affinity, illusion of control, outcome</td>
</tr>
</tbody>
</table>

Source: Pompian (2016)

The point of departure when considering the table is to realise that wealth is created by placing assets to the most productive use to earn income which will outweigh the opportunity cost of making the investment. Opportunity cost is the revenue that could have been earned if money was invested somewhere else (Marx, 2005:3). The return an investor expects from an investment should compensate for the time funds were invested, the expected rate of inflation and the uncertainty of financial benefits in the future. The main decision in creating wealth lies upon the decision of asset allocation. Based on willingness to assume and or tolerate risk as indicated in the table investors may be classified as either conservative-, moderate-, growth- or aggressive investors (Pompian, 2016).

**Conservative investors**

Conservative investors as indicated in the table tend to have a low risk tolerance which indicates that the risk appetite and capacity to take risk is low. As a result, this group of investors has typical characteristics such as mental accounting, loss aversion, anchoring, and endowment which often tends to uphold the status quo. These investors typically gain wealth through either inheritance or by investing in low risk investment opportunities. A characteristic that stands out is the cautiousness to take on excessive risks (Megginson et al., 2010:161). Therefore the investment portfolio for these investors tend to be tedious due to either the lack of or slow reaction to market changes. The main focus for this group of investors are to sufficiently provide on future generations. Moreover, one has to take note that
there is a strong correlation between investment and personal life behaviour. Related to the latter previous research indicated that as investors females tend to be more conservative than males (Bernasek & Shwiff, 2001:355).

**Advice for conservative investors**

Even though it is difficult to provide conservative investors with good financial advice because these investors are driven by emotions, financial advice is a necessity. Conservative investors need to see the bigger picture and detail surrounding standard deviations and Sharpe ratios might cause a lack of attention (SEC, 2012). For these investors it is important to know how the composed portfolio can create wealth for future generations. It is important for the financial adviser to gain the trust of a conservative investor after which the conservative investor will become the financial adviser’s best friend. Conservative investors value the professionalism, expertise and objectivity of financial advisers in investment decisions. It is possible to persuade conservative investors to take added risk on the portfolio of which benefits can be enjoyed if risks are managed correctly (Pompian, 2016).

**Moderate investors**

Moderate investors attempt to reduce risk and increase returns proportionately (Stifel, Nicolaus & Company, 2012). Unfortunately, this group of investors tend to lack investment knowledge and will follow the trend set by friends or colleagues. Typical emotions experienced by moderate investors after investments made are regret, hindsight, regency, framing, cognitive and dissonance. Long term financial planning are unimportant to these investors as they normally focus on the here and now situation. This leads to a situation where only current popular investments options are considered for investment purposes. It is further highlighted that moderate investors often tend to overestimate their ability to tolerate risk (Pompian, 2016).

**Advice for moderate investors**

Moderate investors seems to be either unwilling to or not to have the skills or ability to arrive at investment decision on their own. Therefore the tendency for this group is to follow the lead of other market participants. It obviously needs to be questioned whether the lead of skilled rational investors or market participants acting on emotion are followed. Another observation is that these investors will continue to invest in line with what other market
participants do without considering risk or having a grasp of their own ability to tolerate risk. If an investment reaps benefits, these investors convince themselves they knew it all along which might cause increasing future risk taking behaviour. Moderate investors seem to easily agree to an investment without considering long term implications. Therefore this group needs to be specifically careful when investment options are considered. As indicated above the ability to absorb risk is often overestimated, it is therefore of the essence for moderate investors to take special care not to invest in opportunities bearing risk higher than willing to accept (Pompian, 2016).

**Growth investors**

Growth investors as indicated previously have high risk tolerance levels. Behavioural characteristics associated with this group include representativeness, availability, conservatism, confirmation, and self-attribution. Moreover, growth investors are self-assured and trust their gut feelings when making investment decisions. As a result, these investors are willing to accept a portion of returns from irregular capital gains and are comfortable to take risks (Dow, 2007:9). To conclude, growth investors attempt to outperform the market to realise higher returns on investment portfolios (Pompian, 2016).

**Advice for growth investors**

When the independent views of growth investors are respected, growth investors are more willing to listen to financial advice. Growth investors tend to follow their own minds and belief in their abilities and decisions. Education seems to be the best approach to over time change the investment behaviour, as just indicated, of these investors. For this group an approach to improve investment behaviour is to not focus on failures but instead to focus on investment related education. Specifically these people need to better understand portfolio management with special attention being given to diversification. Other concepts which need to be addressed is the development of and implementation of long term financial plans (Pompian, 2016).

**Aggressive investors**

Characteristic associated with aggressive investors are the willingness to tolerate and take very high risk to maximise returns. Also aggressive investors tend to be over-confident in their abilities (Stifel, Nicolaus & Company, 2012). In the chase for maximum returns it is
almost a given that the investment portfolios of aggressive investors will change regularly simply because there will be an effort to continuously include the highest rate of return investment options into the portfolio. Related to the latter Megginson et al., (2010:163) indicates that the investment portfolios of aggressive investors tend to change according to or in line with market tendencies.

**Advice for aggressive investors**

This group of investors tend to be the most difficult when it comes to accepting financial advice especially so if losses have been experienced. Moreover, aggressive investors are known to be involved and prefer to control investment decisions, therefore advice offered or given to limit exposure risk is often ignored. Another characteristic related to this group is that optimism is encountered when investments perform well, even if the optimism is irrational (Pompian, 2016).

### 2.6 Conclusion

Markets are not always efficient due to various market anomalies that exist. Therefore, share prices do not always reflect the true value of shares causing investors to either underreact or overreact based on the type of investors they are classified as. Different type of investors have different potential biases which influence the choice of investments. Greed and fear it seems are the main emotions investors’ experience. This can possibly cause irrational investment behaviour leading to a situation where markets are not accurate in the pricing of assets in line with underlying value.
Chapter 3: Article one

The influence of behavioural finance on different age categories

Abstract

The study field of behavioural finance is well-known in the financial and investment environment. The concept implies that investors do not necessarily make rational investment decisions. It argues that investment decisions are often influenced by emotional or other non-rational factors leading to irrational investment choices. One may conclude that in many instances investors display investment behaviour in line with behavioural finance theory without realising it. The study field of behavioural finance based on the “emotional” experiences of investors when investing identified different “types of emotional experiences” labelled as behavioural finance biases which may lead to or cause subjective investment decision-making.

The aim of this study was to configure whether behavioural finance biases influence the investment decisions of different categorised age groups and if so which age category is mostly affected by which bias.

A questionnaire based on previous research and adjusted for relevance, was developed and distributed to study participants with the help of a financial advisory company. Results from the study indicated that a deviation exists between the theoretically expected level of risk that investors will assume and the real level of risk assumed. Behavioural finance biases seems to be largely responsible for this deviation. As an example it was found that investors in the spending phase (retirement phase) are mostly subjected to the availability bias.

KEYWORDS:

Behavioural finance, age; investors

3.1 Introduction

One of the most known heuristic beliefs is that the older people get the less risk tolerant they become. In line with the latter Marx et al. (2013:269) indicate that older individuals tend to invest in less risky portfolios. Some reasons behind the risk averse attitude of older individuals may be firstly that because of age there is limited time to recover from financial losses. Secondly less acceptable investment opportunities may be available in the limited
time available. Thirdly it is possible that older individuals are either not actively earning income anymore, have limited time to earn actively or are capable to earn less than required. It is interesting to note that the whole investment or financial industry accepted the above notion, works on and promotes the idea that older individuals firstly should not invest in risky opportunities and secondly should be conservative in their investment approach. In this context one may argue that risk aversion may be a preferable option for older people but that willingness to assume investment risk cannot be dictated by age alone. One may argue that financial position or level of financial independence probably is as a significant if not a more significant factor than age when willingness to assume investment risk is considered. Given the current tendency of longevity, the worry about whether sufficient financial provision has been made for retirement may play a significant role when considering investment options. Question is, is it sufficient to invest in low yielding, low risk investments if financial provision for retirement is insufficient.

In contrast, young or younger investors seems to have a high or higher risk tolerance level than older people. The reasons may be as indicated above a longer time to recover from a loss, more investment opportunities available over time and they are still actively earning and still have a long time span to earn (SEC, 2012). A concerning and general known fact is that most people during their life are able to only accumulate sufficient wealth to own a house.

Bodie et al. (2013:137) highlight the fact that financial advice for or knowledge of prospective investors should pivot around the range of investment opportunities available with consideration of the riskiness of each investment. It is further essential that a prospective investor should be aware of his / her willingness to assume risk. The goal of this approach is to create an investment portfolio that generates an acceptable rate of return and meets the risk profile of the investor. In this context it is necessary to mention that a significant determinant of financial need and or required rate of return is current financial position compared to desired future financial position. An important question that now needs to be answered is whether the investor can, given the difference between current and desired financial position achieve the desired financial position by investing according to the so-called personal acceptable risk profile. This within the context of the financial rule of thumb that the higher the required rate of return the higher the expected risk or vice versa the higher the expected risk the higher the required rate of return. Obviously the latter is only one of many possible reasons why a deviation may occur between the investment risk and rate of return.
relationship investors are willing to assume and the investment risk and rate of return relationship that is assumed in reality.

3.1.1 Problem statement

Against the notion that older investors tend to be more risk averse and young people tend to have a high risk appetite and are willing to absorb more risk some questions need to be asked. A yet unanswered question is whether investors, according to age or position in the life cycle, when investing or making investment decisions tend to act in line with their so-called risk profile. The latter leads to a further question namely whether certain age categories are more or less affected by behavioural finance biases.

3.1.2 Primary objective

The primary objective of this study is to identify which behavioural finance bias was most common in influencing investment decisions for each respective age category.

3.1.3 Theoretical objectives

- To differentiate between investor types for example conservative-, moderate-, growth- or aggressive investors;
- To investigate the investment considerations in the different life stages; and
- To analyse the theories of behavioural finance in terms of investor decisions.

3.1.4 Empirical objectives

- To determine which behavioural finance bias/es is/are most common within the respective age categories; and
- To determine whether age influences how investment decisions are taken.

3.1.5 Research method

A questionnaire based on previous research and adjusted for relevance was developed and distributed to study participants with the help of a financial advisory company. Out of 250 questionnaires that was distributed, 200 usable responses was received back. It is important to note that in a few cases non-structured “interviews” were conducted to assist respondents to complete the questionnaire. While the choice of company was based on convenience, the sample was selected in a random manner to obtain an unbiased sample.
3.2 Literature review

Financial advisors base their professional advice on a method that indicates the percentage that could possibly be used to make risky investment decisions. The method subtract an individual investor’s age from 100, which will result in the percentage that can possibly be invested in a more risky portfolio (Marx et al., 2006: 244).

The investment portfolio of an investor is a pool of investment assets (Bodie et al., 2013:36). The investment assets can typically be grouped into broad asset classes such as bonds, shares, commodities, real estates and others. Financial advisors construct an investment portfolio by making two investment decisions based on risk profile results. The first decision is the asset allocation decision which involves the choice surrounding broad asset classes. The second decision is the security selection decision which involves the choice of having certain securities within each asset class (Bodie et al., 2011:11).

Individual investors are mainly influenced by the phase of the investment life cycle (Marx et al., 2013:16). The norm in the market is that there is an inverse relationship between age and risk tolerance. Three phases of the individual life cycle exists namely the accumulation phase, consolidation phase and the spending phase as illustrated in Figure 3.1. Young investors will find themselves in the accumulation phase. This phase is characterised by substantial growth and a high degree of risk acceptance (Reilly & Brown, 2012:8). The consolidation phase are known as the mid-career phase which are characterised by a long time horizon and some degree of risk tolerance. However, investors in this phase are in preference of less aggressive and more conservative features (Marx et al., 2013:17). The long time horizon (i.e. 20 years) enables investors to recover from negative market returns which may occur in the minority of time horizon (Greer, 2004). Majority of investors approaching retirement will find themselves in the spending phase. This phase is characterised by low risk tolerance and investors typically focus on capital preservation rather than on earning high rates of return (Bodie et al., 2007:704). According to Natixis Global Asset Management (2015), South Africa is ranked 130th out of 150 countries in terms of ability to live comfortably, quality of health services, quality of financial services and quality of life. Thus making retirement very difficult in South Africa. Risk tolerance is characterised by an investor’s risk appetite and risk capacity which indicate the level of risk that can possibly be taken on (Pompian, 2016). To realise the capital preservation approach the weight of investments in fixed income generating instruments normally increases (Reilly & Brown, 2010:33).
Attitudes of investors tend to shift from high risk tolerance towards risk aversion as investors pass through various life stages. Risk tolerance is composed out of risk capacity, which is indicative of the amount of risk to be taken on, and risk appetite; the amount of risk willing to be taken on (Pompian, 2016). Investors are mainly classified as either a conservative-, moderate-, growth- or aggressive investor depending on the amount of risk to be tolerated (Pompian, 2016). In Table 3.1 the different type of investors are listed in correspondence with the amount of risk tolerance that can be tolerated for each type of investor. From the risk profile received from a financial advisor, the investor type classification is revealed and advice provided regarding the asset allocation decision. A conservative investor is characterised with a low risk tolerance and can be influenced by typical emotional biases such as mental accounting, anchoring and so on. A moderate investor has a medium risk tolerance with typical biases such as regret, framing etc. whereas a growth investor takes on high risk tolerance with biases such as availability and representativeness. However, a growth investor has a high risk tolerance which is indicative of a high risk capacity and high risk appetite.
Table 3.1: Investor classifications

<table>
<thead>
<tr>
<th>Risk Tolerance</th>
<th>Conservative Investor</th>
<th>Moderate Investor</th>
<th>Growth Investor</th>
<th>Aggressive Investor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>Very High</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive biases</th>
<th>Emotional</th>
<th>Cognitive</th>
<th>Cognitive</th>
<th>Emotional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowment, loss aversion, status quo, anchoring, mental accounting</td>
<td>Regret, hindsight, framing, cognitive, dissonance, recency</td>
<td>Conservatism, availability, confirmation, representativeness, self-attribution</td>
<td>Over-confidence, self-control, affinity, illusion of control, outcome</td>
<td></td>
</tr>
</tbody>
</table>

Source: Pompian (2016)

Conventional theories of finance assume investors act in a rational manner and decisions are made to maximise wealth (Bhattacharya, 2012:147). However, market anomalies exist in investor behaviour which cannot be explained by conventional theories of finance. Market anomalies exist when the price of an asset cannot be linked to current relevant information known in the market (Schwert, 2003). Irrational investment behaviour which is contradictory to conventional theories of finance is mainly triggered by emotional and cognitive biases of investors (Bhattacharya, 2012:147). In this context investor emotion as much as market fundamentals drive investor behaviour (Greer, 2004). Bhattacharya (2012:147) indicates that two theories namely the prospect and heuristic theories exist in the domain of irrational investment. As such irrational behaviour of investors are referred to and is known as behavioural finance.

The prospect theory highlights that there is a difference between the emphasis on perceived gains and perceived losses (Kahneman & Tversky, 1979:263). This theory states that the amount of gains has a smaller emotional and psychological impact on investors than the amount of losses (Bhattacharya, 2012:149). This theory is depicted in Figure 3.2 which plot gains/losses against the emotions of joy and pain. In a hypothetical scenario indicated by the slope of the line indicates that the pain experienced from a R10 loss is more than the joy of a R10 gain.
The prospect theory, as can be concluded from Figure 3.2 consists of the following biases (Kannadhasan, 2009):

**Loss aversion**

Loss aversion is based on prior gains and losses - the notion is that a loss experienced after a previous gain is less painful than usual because the previous gains function as a cover for the latest loss (Barberis & Thaler, 2002:1248). Singh (2012:120) in this context indicates that people tend to be more sensitive to losses than gains specifically where losses occur after previous losses the situation is experienced as more painful than usual.
Regret aversion
Regret is an emotion experienced by investors when losses are realised due to erroneous choices (Zeelenberg & Pieters, 2007). Investors attempt to avoid the regret emotion as it is not a favourable emotion to experience.

Mental accounting
Investors tend to assign different values to money obtained from various sources (Bhattacharya, 2012:150). It is more beneficial to pay off expensive loans rather than to receive a low rate of return on income. Also money received in the form of gifts are regarded as cheap is more easily spend (Jagongo & Mutswenje, 2014).

Self-control
Through exercising self-control investments can be protected and losses minimised. Investors are open to temptations and should exercise self-control on a continuous basis (Subrahmanyam, 2007:23).

On the contrary, under the Heuristics theory investors make biased investment decisions as indicated in Figure 3.2 namely representativeness, overconfidence, anchoring, gambler's fallacy and availability bias.

Representativeness
The representative bias refers to investors that base investment decisions on stereotypes (Jain et al., 2015:10). In other words, investors assume that future returns will be the same as past returns without taking into account the reasons for good historical returns.

Overconfidence
With overconfidence, investors belief they are smarter than other investors in terms of investment decisions (Bhattacharya, 2012:151). Overconfidence is the result when investors amplify their capabilities and ignore external factors which could result in outcome variability (Jain et al., 2015:10). Often overconfident investors overestimate their abilities and underestimate uncertainty.

Anchoring
Investors anchor themselves in a certain position where they fail to do enough market research and make the decision to cling to one specific piece of information. These investors are also stagnant and refuse to adjust to a changing environment (Kannadhasan, 2009).
**Gamblers fallacy**

Incorrect estimations and predictions are made based on a set of events known as gambler’s fallacy (Jahanzeb *et al.*, 2012:533). In this case, investors’ belief if something happened recently in the market, the probability of the same occurrence increases and probability of the opposite occurrence increases.

**Availability bias**

Investors overestimate the probability of an event occurrence based on the most information available while making decisions (Klier & Kudryavtsev, 2010:54). The availability bias causes investors to overreact to market result whether positive or negative.

### 3.3 Research design

A questionnaire was provided by the financial advisory company which measures behavioural finance biases. The survey made use of a 5 point Likert scale. The neutral column were left out and the Agree and Strongly Agree columns were added together and an average were used. Similarly, the Disagree and Strongly Disagree columns were added together and an average was used.

### 3.4 Empirical results

This study was based on a questionnaire distributed by a financial adviser towards 200 randomly selected clients/investors. Out of the sample 40% was black, 15% Asian, 7% Coloured and 37% White. Majority of the sample was self-employed which earned an income more than R15 000. In Table 3.1 the results of this sample is displayed.
The sample consisted of 200 adult (38 of the age between 18 and 25 years, 65 of the age between 26 and 35 years, 12 of the age between 36 and 45 years, 39 of the age between 46 and 55 years, 26 of the age between 56 and 65 years and 20 respondents over the age of 65 years) who responded on the questionnaire. Ages ranged from 18 to over 65 years. The Chi Square test illustrates which variables are significant, in other words if there is a difference
between the age categories (Pallant, 2010). Significance is realised by any value higher than .005 (Pallant, 2010). Significance was highlighted through tests for the Self Control bias (agree) with a Chi Square result of 0.007. Thus, the result is indicative of a difference between the age categories for investors. Simultaneously, the Chi Square result for Overconfidence bias (agree) is .001 which illustrates no difference for investors in various age categories. Also, a significance (.007) exist between investors for the Anchor bias of disagree. Gamblers Fallacy bias (agree) are also tested to be significant with a value lower than 0.005 for the different age categories. For the different age categories investors indicated a difference for the Availability bias (disagree).

In the age category of 36-45, majority of respondents (36.2%) indicated that the Regret emotion was more likely to be experienced. Mental Accounting was experienced by 40.1% of the respondents compared to 26.7% that did not experience this biases in the age category of 36-45 years.

Some of the respondents in the age category 56-65 experienced more (16.5% compared to 12.2%) of the loss aversion bias where investors firmly belief that negative growth investments will outperform current positive growth investments. Self-control is better exercised in the age category of 26-35 years and age category 56-65 years.

Respondents in the age category of 46-55 years tend to make investment decisions based on stereotypes and belief that recent investment trends will be repeated. However, the age category of 56-65 only indicated that 17.4% are overconfident regarding own investment capabilities compared to 16.7%, however only 19.7% compared to 18.4% of the respondents are subjected to the Anchor bias. Moreover, more investors are subjected to the gambler’s fallacy bias (32.6% compared to 22.4%) in the age category 46-50.

Investors in the spending phase (investors older than 65 years) are more subject to the availability bias (9.3% compared to 5.4%).

3.5 Limitations of this study and areas for further research

The study was based on various theories using a fixed questionnaire from a financial advisory company. Thus, the questionnaire served as secondary data and it was used for interpretation. Further scope may include an incorporation of more theories and more in depth questions in the questionnaire.
3.6 Conclusion

Behavioural finance is a known topic in the financial world. This study highlighted the fact that investors are influenced by behavioural finance. Moreover, different age categories are influenced by different behavioural finance biases. The questionnaire that was used served as a platform to test if investors are subjective to behavioural finance theories. From the results it was clear that some significant results were found from the Chi Square which indicated that different behavioural finance biases affect different age categories.
List of references


Chapter 4: Article two

Behavioural finance: the influence of gender on investment decisions

Abstract

The study field of behavioural finance is well-known in the financial and investment environment. The concept implies that investors do not necessarily make rational investment decisions. It argues that investment decisions are often influenced by emotional or other non-rational factors leading to irrational investment choices. One may conclude that in many instances investors display investment behaviour in line with behavioural finance theory without realising it. The study field of behavioural finance based on the “emotional” experiences of investors when investing identified different “types of emotional experiences” labelled as behavioural finance biases which may lead to or cause subjective investment decision-making.

The aim of this study was to configure whether behavioural finance biases influence the investment decisions of males and females and if so which gender is mostly affected by which bias.

A questionnaire based on previous research and adjusted for relevance was developed and distributed to study participants with the help of a financial advisory company. Results from the study indicated that a deviation exists between the theoretically expected level of risk that investors will assume and the real level of risk assumed. Behavioural finance biases seems to be largely responsible for this deviation. As an example it was found that female investors are mostly subjected to the regret bias.

KEYWORDS:
Investment profiles, behavioural finance, gender, investors

4.1 Introduction

Efficient market theories are challenged by behavioural finance as it proves that markets can be inefficient due to human irrationality. Moreover, behavioural finance is based not only on psychology but also on sociology. The theories that capture behavioural finance, in terms of choice under uncertainty, in different groups are the regret theory, theory of mental accounting, prospect/loss aversion theory, over/under reacting theory and the theory of
overconfidence (Jagongo & Mutswenje, 2014). The emotional reaction of people after realising an error was made in judgement is called the regret theory (Quiggin, 1994). From an investment point of view, the regret theory takes the form of monetary payment consequences where investors invest in stocks and regret steps in investment decision due to lack of return realisation. The concept regret aversion argues that in the case of non- or underperforming or financial loss the pain experienced by the decision-maker is not limited to pain caused by the financial loss only, it includes a feeling of responsibility for making an incorrect decision. Investors can follow conventional wisdom and attempt to invest where the rest of the market invest to be regret averse. In the case where regret occurs, and the decision cannot be reversed, investors tend to deviate away from the emotion by managing, deny, or suppress the emotion in any possible way.

This study aims to determine to what extent females and males are subjective towards behavioural finance biases. In most studies it is found that females are less confident in their investment choices and are less informed on market trends (Goldsmith & Goldsmith, 1997). Moreover, previously females tend to be moderate risk seekers whereas males tend to be risk aggressive (Mahapatra & Mehta, 2015).

4.1.1 Problem statement

There seems to be a difference between female and male investors. The common notion is that female investors tend to be more risk averse than male investors. This study is based on determining which gender is mostly affected by behavioural finance biases.

4.1.2 Primary objective

The primary objective of article two is to identify which behavioural finance bias is most common for males and females.

4.1.3 Theoretical objectives

- To differentiate between investor types i.e. conservative-, moderate-, growth- or aggressive investors
- To determine if gender has an influence regarding investor type classification; and
- To analyse the theories of behavioural finance in terms of investor decisions.
4.1.4 Empirical objectives

- To investigate whether gender impacts investment decisions; and
- To analyse which behavioural finance bias is most common for males and females respectively.

4.1.5 Research method

A questionnaire based on previous research and adjusted for relevance was developed and distributed to study participants with the help of a financial advisory company. Out of 250 questionnaires that was distributed, 200 usable responses was received back. It is important to note that in a few cases non-structured “interviews” was conducted to assist respondents to complete the questionnaire. While the choice of company was based on convenience, the sample was selected in a random manner to obtain an unbiased sample.

4.2 Literature review

4.2.1 Investor type classification

Investors are classified into different categories of investors based on their individual risk tolerance. Moreover, risk tolerance is composed of risk appetite and risk capacity (Pompian, 2016). However, risk appetite and risk capacity can be decomposed into known and unknown risks as illustrated in Figure 4.1. As a result, the unknown risks under risk appetite and risk capacity has potential for behavioural problems within the investment process.

Figure 4.1: The risk tolerance equation

Source: Pompian (2016)
It is important to note that risk and uncertainty does not have the same theoretical meaning. Whereas, uncertainty proclaims a form of randomness to outcomes (Coetzee, 2016:230), risk refers to an outcome that has an adverse effect on wealth (Bessis, 2010:26). Previous research highlights the difference between the willingness and ability to take on risk (Bodie et al., 2011:981). Willingness to take on risk is classified under the term risk appetite whereas risk capacity is the ability to take on risk. However, risk appetite can vary according to the expected return (Reilly & Brown, 2015:8). Investors seeking significant returns and willingness to accept severity of losses are known for their high risk appetite. In contrast, investors who tend to be risk averse and are concerned about stability are known for a low risk appetite (Grable, 2000:625). Risk capacity is the actual risk one investor can tolerate. Moreover, risk capacity enables investors to absorb losses which are moderate to their profile without damaging financial goals (Pompian, 2016).

In context of behavioural finance, known and unknown risks are subsections of risk capacity and risk appetite. It is important for investors to understand what risks are taken in the investment decision (Pompian, 2016). A known risk can easily be identified, measured and be accounted for by financial advisers (Coetzee, 2016:232). If the known risk is understood, investors can more easily accept results from the investment decision. Behavioural finance problems are identified in the unknown risks. Unknown risks exist when the investor belief all risks are included in the known risk area, but in reality some risks exist beyond that belief and investors can’t seem to understand nor accept the outlier risk (Bessis, 2010:30). Unknown risks can’t be accounted for and causes uncertainty for investors (Coetzee, 2016:232).

**Conservative investors**

Conservative investors tend to have a low risk tolerance which indicates that the risk appetite and risk capacity is also low. As a result, this group of investors has typical characteristics such as mental accounting, loss aversion, anchoring, endowment and status quo. These investors typically gain wealth through either inheritance or by not risking capital to increase wealth. The investment portfolio for these investors tend to be tedious due to the fact of slow reaction to market changes. Moreover, there is a strong correlation between investment behaviour and personal life behaviour. A characteristic that stands out is the cautiousness to take on excessive risks (Meggison et al., 2010:161). The main focus for this group of
investors are on future generations. Previous research indicated that more females tend to be conservative investors than males (Bernasek & Shwiff, 2001:355).

**Moderate investors**

Moderate investors attempt to reduce risk and increase returns proportionately (Stifel, Nicolaus & Company, 2012). Unfortunately, this group of investors tend to lack investment knowledge and will follow the trend set by friends or colleagues. Typical emotions experienced by moderate investors after investments made are regret, hindsight, regency, framing, cognitive and dissonance. Long term plans are unimportant to these investors and they find popular investments as options to invest in. Also, an overestimation of risk tolerance is popular under moderate investors (Pompian, 2016).

**Growth investors**

Research indicated that growth investors have high risk tolerance with characteristics such as representativeness, availability, conservatism, confirmation, and self-attribution. Moreover, growth investors are self-assured and trust their gut feelings when making investment decisions. As a result, these investors are willing to accept a portion of their returns from irregular capital gains and are comfortable to take risks (Dow, 2007:9). Growth investors aim at outperforming the market through concentrated portfolios (Pompian, 2016).

**Aggressive investors**

Aggressive investors have very high risk tolerance and are characterised by over-confidence. Moreover, these investors are willing to take substantial risk in order to maximise returns (Stifel, Nicolaus & Company, 2012). Investment portfolios of aggressive investors tend to change accordingly to market conditions (Megginton et al., 2010:163).

### 4.2.2 What is behavioural finance?

An investor only invests when the possibility of making a profit exists. In earlier years, investment decisions were based on forecasting, market timing and performance. This investment technique was viewed as ordinary, ordinary results with ordinary futures (Kannadhasan, 2009). The gap between available returns and actual returns received, left some room for questions to be asked. According to previous studies, it was found that the difference between the actual and perceived returns were based on errors in the decision
making process (Marx et al., 2013:4). These errors in the decision making process is also known as irrational investment decisions. When this irrational investment decision concept came to light, then only did the impact of psychology in investment decisions receive attention. Traditional financial theories viewed investors as rational and utility maximising but in contrast, cognitive psychology view investors as irrational as decision makers are subject to cognitive illusions (Singh, 2012:117). It was argued that the better heuristics and biases are understood, the better judgements and decisions can be formed in event of uncertainty (Mahapatra & Mehta, 2015:6).

All the different concepts of behavioural finance formed by various researchers in the past which determine judgement and decision making are listed below:

The Prospect theory, as can be concluded from Figure 3.2, consists of the following biases (Kannadhasan, 2009):

**Loss Aversion**
Loss aversion is based on prior gains and losses - the notion is that a loss experienced after a previous gain is less painful than usual because the previous gains function as a cover for the latest loss (Barberis & Thaler, 2002:1248). Singh (2012:120) in this context indicates that people tend to be more sensitive to losses than gains specifically where losses occur after previous losses the situation is experienced as more painful than usual.

**Regret Aversion**
Regret is an emotion experienced by investors when losses are realised due to erroneous choices (Zeelenberg & Pieters, 2007). Investors attempt to avoid the regret emotion as it is not a favourable emotion to experience.

**Mental accounting**
Investors tend to assign different values to money obtained from various sources (Bhattacharya, 2012:150). It is more beneficial to pay off expensive loans rather than to receive a low rate of return on income. Also money received in the form of gifts are regarded as cheap is more easily spend (Jagongo & Mutswenje, 2014).

**Self-control**
Through exercising self-control investments can be protected and losses minimised. Investors are open to temptations and should exercise self-control on a continuous basis (Subrahmanyam, 2007:23).

On the contrary, under the Heuristics theory investors make biased investment decisions as indicated in Figure 2.2 namely representativeness, overconfidence, anchoring, gambler's fallacy and availability bias.

**Representativeness**
The representative bias refers to investors that base investment decisions on stereotypes (Jain *et al.*, 2015:10). In other words, investors assume that future returns will be the same as past returns without taking into account the reasons for good historical returns.

**Overconfidence**
With overconfidence, investors believe they are smarter than other investors in terms of investment decisions (Bhattacharya, 2012:151). Overconfidence is the result when investors amplify their capabilities and ignore external factors which could result in outcome variability (Jain *et al.*, 2015:10). Often overconfident investors overestimate their abilities and underestimate uncertainty.

**Anchoring**
Investors anchor themselves in a certain position where they fail to do enough market research and make the decision to cling to one specific piece of information. These investors are also stagnant and refuse to adjust to a changing environment (Kannadhasan, 2009).

**Gamblers fallacy**
Incorrect estimations and predictions are made based on a set of events known as gambler’s fallacy (Jahanzeb *et al.*, 2012:533). In this case, investors’ belief if something happened recently in the market, the probability of the same occurrence increases and probability of the opposite occurrence increases.

**Availability bias**
Investors overestimate the probability of an event occurrence based on the most information available while making decisions (Kliger & Kudryavtsev, 2010:54). The availability bias causes investors to overreact to market result whether positive or negative.

4.2.3 Gender differences

Previous studies found that females tend to be more risk averse with a low risk tolerance as indicator (Mahapatra & Mehta, 2015:7). Females are characterised in the market with lower confidence in general when it comes to investing than males (Bayyurt et al., 2013:73). Risk preferences for males and females differ which can be explained in four main points. First, there is a difference in the underlying attitude for risk (Eckel & Grossman, 2088:1071). The reason males tend to bear more risk are due to cultural, social and psychological factors. Secondly, previous studies highlighted that the differences in risk for males and females might be due to economic status (Bayyurt et al., 2013:74). Thirdly, females have a longer life expectancy and the probability of outliving their spouse exist, which could cause a hesitance to accept financial risk. Lastly, risk taking differs for males and females based on financial knowledge. Males tend to be more confident and have greater knowledge regarding investments compared to females (Bayyurt et al., 2013:74). This results in females to invest more conservatively and in lesser amounts compared to males. This is evident from the results of this study where females tend to exercise more self-control than males (64.0% vs 36.0%).

4.3 Research design

A questionnaire was provided by the financial advisory company which measures behavioural finance biases. The survey made use of a five point Likert scale. The neutral column were left out and the Agree and Strongly Agree columns were added together and an average were used. Similarly, the Disagree and Strongly Disagree columns were added together and an average was used.

4.4 Empirical results

This study was based on a questionnaire distributed by a financial adviser towards 200 randomly selected clients/investors. Out of the sample 40% was black, 15% Asian, 7% Coloured and 37% White. Majority of the sample was self-employed which earned an income more than R15 000. In Table 4.1 the results of this sample is displayed.
Table 4.1: Empirical results

<table>
<thead>
<tr>
<th>Theory</th>
<th>Male</th>
<th>Female</th>
<th>Chi-Square (Significance levels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regret – Disagree</td>
<td>60.0%</td>
<td>40.0%</td>
<td>.378</td>
</tr>
<tr>
<td>Regret – Agree</td>
<td>45.0%</td>
<td>55.0%</td>
<td>.231</td>
</tr>
<tr>
<td>Mental Accounting – Disagree</td>
<td>34.0%</td>
<td>66.0%</td>
<td>.321</td>
</tr>
<tr>
<td>Mental Accounting – Agree</td>
<td>56.0%</td>
<td>44.0%</td>
<td>.785</td>
</tr>
<tr>
<td>Loss aversion – Disagree</td>
<td>42.0%</td>
<td>58.0%</td>
<td>.311</td>
</tr>
<tr>
<td>Loss aversion – Agree</td>
<td>52.0%</td>
<td>48.0%</td>
<td>.698</td>
</tr>
<tr>
<td>Self Control – Disagree</td>
<td>45.0%</td>
<td>55.0%</td>
<td>.001*</td>
</tr>
<tr>
<td>Self Control – Agree</td>
<td>36.0%</td>
<td>64.0%</td>
<td>.101</td>
</tr>
<tr>
<td>Representativeness – Disagree</td>
<td>42.0%</td>
<td>58.0%</td>
<td>.365</td>
</tr>
<tr>
<td>Representativeness – Agree</td>
<td>55.0%</td>
<td>45.0%</td>
<td>.647</td>
</tr>
<tr>
<td>Overconfidence – Disagree</td>
<td>30.0%</td>
<td>70.0%</td>
<td>.003*</td>
</tr>
<tr>
<td>Overconfidence – Agree</td>
<td>63.0%</td>
<td>37.0%</td>
<td>.004*</td>
</tr>
<tr>
<td>Anchor – Disagree</td>
<td>48.0%</td>
<td>52.0%</td>
<td>.022</td>
</tr>
<tr>
<td>Anchor – Agree</td>
<td>46.0%</td>
<td>54.0%</td>
<td>.987</td>
</tr>
<tr>
<td>Gamblers Fallacy - Disagree</td>
<td>63.0%</td>
<td>47.0%</td>
<td>.002*</td>
</tr>
<tr>
<td>Gamblers Fallacy - Agree</td>
<td>52.0%</td>
<td>48.0%</td>
<td>.365</td>
</tr>
<tr>
<td>Availability Bias - Disagree</td>
<td>42.0%</td>
<td>58.0%</td>
<td>.021</td>
</tr>
<tr>
<td>Availability Bias - Agree</td>
<td>54.0%</td>
<td>46.0%</td>
<td>.004*</td>
</tr>
<tr>
<td>Total number of respondents per category</td>
<td>95</td>
<td>105</td>
<td>200</td>
</tr>
</tbody>
</table>

*Significance level lower than 0.005

The sample consisted of 200 adult (95 males and 105 females) who responded on the questionnaire. Ages ranged from 19 to over 65 years. The empirical results of this study is in cohesion with previous research. The results in the table above suggests that females often regret investment decisions, whereas 60% of males (57 males) do not disagree with their current investment decision. These results therefore agree with the study of Bayyurt et al. (2013:74) which found males to be more confident in their investment decisions. This finding is in cohesion with previous findings where females are less confident to perform financial analysis (Goldsmith & Goldsmith, 1997). Results further indicated that 56% of male investors are hesitant to sell at small profit margins and are generally motivated to wait for a gainful period (Jagongo & Mutswenje, 2014). Whereas female investors are more risk averse and would rather sell to avoid great losses. The majority of females (61 females) disagreed
with the loss aversion theory and indicates that they will not hold onto the ‘losers’ and sell the ‘winners’, due to the belief that today’s ‘losers’ will possibly outperform today’s ‘winners’. On the contrary male investors will tend to hold on to losing shares. However, the Chi Square values exceeded the 5% significance level indicating no difference between male and female investors.

Male and female investors do not seem to differ a lot in relation to the representative theory as the Chi Square values were not significant. Overall the results indicated that there is a difference between male and female investors in relation to the self-control theory, overconfidence theory and availability theory, as these Chi Square values were smaller than the 5% significance level.

4.5 Limitations of this study and areas for further research

The study was based on various theories using a fixed questionnaire from a financial advisory company. Thus, the questionnaire served as secondary data and it was used for interpretation. Further scope may include an incorporation of more theories and more in depth questions in the questionnaire.

4.6 Conclusion

Behavioural finance biases was prevailing for male and female investors. Moreover, males and females were tested on investment decisions to determine which gender is more subjective towards behavioural finance. As a result, females are known to be more risk averse in their investment decisions and also more conservative in terms of investment capabilities. This was tested and corresponds with previous studies.
List of references


Chapter 5

Conclusion and recommendations

5.1 Conclusion

Behavioural finance is relatively known in the financial world and is tested through various measures. However, this study highlighted the impact that behavioural finance biases have on different age categories and gender. Behavioural finance is known to be the different emotions people experience in the financial world. People tend to not only make investment decisions based on market information but are also influenced by emotions.

Thus, investors tend not to always follow the advice of the financial advisor, investors are overconfident in their own investment capabilities, investors’ tend to follow market trends etc.

Different age categories experience different types of behavioural finance biases. Majority of the behavioural finance biases are experienced by mid-age investors, thus in their 40’s. Minority of investors are subjected to behavioural finance biases in the spending phase (retirement phase).

Males on the other hand tend to be more subjective towards behavioural finance biases than females. Males are characterised by being overconfident and exercise less self-control than females. Females tend to be conservative with investment choices and are more likely than males to experience the behavioural finance bias of regret.

5.2 Recommendation

Recommendations for further studies may include the following:

- Determine how demographical factors influence risk tolerance;
- Find a link between different levels of risk tolerance and behavioural finance theories; and
- Expand the sample population to capture outliers.
List of references


SECTION A  
DEMOGRAPHIC INFORMATION

Please mark the appropriate box with a cross (X) or, if you wish to write your answer in full, please use the space provided.

1. **What is your country of origin?**
   - X South Africa
   - Other (please specify):

2. **In which province do you currently reside:**
   - Eastern Cape
   - X Free State
   - Gauteng
   - KwaZulu-Natal
   - Limpopo
   - Mpumalanga
   - Northern Cape
   - North West
   - Western Cape
   - Other (Please specify):

3. **Gender:**
   - Male  
   - Female

4. **Age:**
   - 18-25
   - 26-35
   - 36-45
   - 46-55  
   - X 56-65
   - >65

5. **To which ethnic group do you belong?**
   - African/Black
   - Asian/Indian
   - Coloured  
   - X White
   - Other (Please specify):

6. **Type of employment:**
   - Self-employed  
   - Government Job
   - Private Job
   - Business

7. **What is the highest educational qualification that you have obtained?**
   - Completed secondary school  
   - Completed Graduate Degree
   - Completed Post-Graduate Degree
   - Completed Doctoral Degree

8. **What is your current monthly income level:**
   - Between R0 – R15 000
   - Between X R15 001 – R30 000
   - Between R30 001 – R45 000
   - More than R45 000
SECTION B

Please respond by indicating your response with a cross (X) based on your agreement or disagreement with the following statements.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In the <strong>past</strong> I invested and one or more of my portfolios failed to deliver the expected returns.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>One or more of my <strong>current</strong> portfolios failed to deliver the expected returns.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I do not think it is a good idea to consult with a financial adviser before making an investment decision.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I have made or currently make investment decisions based on other <strong>informed</strong> market participants’ investment decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I have made or currently make investment decisions based on other <strong>uninformed</strong> market participants’ investment decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I do not regret following the advice of a financial adviser.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I am hesitant to sell my investments, even when my investments generate low rate of returns.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Most of the time I disagree with my financial adviser when he/she advises to <strong>hold</strong> investments that delivers acceptable returns.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Most of the time I disagree with my financial adviser when he/she advises to <strong>sell</strong> investments that delivers acceptable returns.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><strong>Recently</strong>, I make sure that I analyse investment rate of return to continuously make rational investment decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td><strong>Previously</strong>, I made sure that I analysed investment rate of return to make rational investment decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Presently, my fear of excessive losses is more important to me than the possibility of excessive gains.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I mostly mention past losses and the fear of losses to my financial adviser when making investment decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I have previously taken risks higher then I normally prepared to take to gain average returns.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I have remained in a risky investment position due to financial pressure with the hope that the return of my portfolio will improve.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I sometimes value assets and buy it at prices higher than the price I should pay.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>17</td>
<td>I belief investments that generate negative returns at a specific point of time will outperform investments that generate positive</td>
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</tbody>
</table>
returns at the same point of time in future.

18 When considering an investment, I focus on avoiding losses.

19 Ever since investing, I am hesitant to sell underperforming assets.

20 I am tempted to follow other market participants’ buy and sell of investment actions, but eliminate this temptation by exercising self-control over what I can afford.

21 I make investment decisions based on the assumption that previous repetitive market trends will reoccur.

22 I only consider investing in stock with a history of positive return on investment.

23 I am overconfident regarding my own investment analyses capabilities.

24 I attempt to time the market in terms of when to buy and sell shares.

25 I have previously engaged more funds in investments than what I could afford.

26 I currently engage more funds in investments than what I can afford.

27 I regard new market information as unimportant to make investment decisions.

28 I belief if a share shows a specific market trend, the market trend will soon be discontinued and a new trend will develop.

29 I often make mistakes in predicting the discontinuation of market trends.

30 I belief I generate low returns on my investments because I base my decisions only on recent historical available information.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>I cannot recall any incident in my life where I have used money to influence other people to do things for me.</td>
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<tr>
<td>32</td>
<td>I can recall many incidents where I have used money to influence people to do things for me.</td>
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<tr>
<td>33</td>
<td>I can recall some incidents where I have bought things to impress other people.</td>
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<tr>
<td>34</td>
<td>I can recall many incidents where I have bought things to impress other people.</td>
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<tr>
<td>35</td>
<td>I am still buying things to impress other people.</td>
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<tr>
<td>36</td>
<td>People I know tell me that I place too much emphasis on money as an indicator of success.</td>
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</tbody>
</table>