



Understanding behavioural biases which influence investment decisions – An exploratory study

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Abstract

Behavioral finance is a new field with a research combination of psychology and finance. Since long the field encapsulates the cognitive behaviour of the psychology and the investment decisions of the investors. This paper is an addition to the research and investment analysis done and it revolves around the history, present and future predictions of the field. It also talks about the factors involved in the field related to loss, profit, budgeting and financing. At the end the paper is drawing a unique conclusion with respect to the integration of all these factors towards a predictable financing decision of the investors.

Keywords: behavioral finance, sentiment shifts, pricing inefficiencies, biases, momentum investing, contrarian investing, loss aversion, corporate finance.

Introduction

Any financial decision for any nature of audience is used to be dependent on three main factors - portfolio allocation of expected return and risk, risk based asset pricing models ie CAPM, pricing of contingent claims, and last but not the least the Miller-Modigliani theorems and their augmentation by the theory of agency. But with the advent of behavioural finance and considerable influence of the same, nowadays the decision making is dependent on other factors like consideration of behavioural factors of the investors over a period of time. In any scenario the decision making is dependent on various flux variables like the

psychology of the investors, background culture, risk avidness and other personal and professional factors

In any investment decision the main point to consider is the decision making process of the investor. Decision making is dependent on the proper evaluation of the alternatives available with the investors. Hence the process becomes complex in due course of time as it considers the behaviour impact of the investors.

The main aspect of the behavioural finance is the consideration of the cognitive psychology aspects of an individual. Hence investors need to develop a positive vision, foresight, perseverance to handle the same. Considering this aspect there are various other factors like demographic, education level, age, race, socio-economic background, and gender which play an important role in the investors decision towards investments.

In the present scenario, behavioural finance is becoming an integral part of the decision-making process, because it heavily influences investors' performance. They can improve their performance by recognising the biases and errors of judgement to which all of us are prone. Understanding the behavioural finance will help the investors to select a better investment instrument and they can avoid repeating the expensive errors in future.

Emergence of Behavioural Finance

Investment in any scenario is the observation of market and then taking relevant measures to invest money. The same is applicable since ancient times when the people were involved in the barter system and used to invest in the right kind of materials. In modern times since the invention of stock markets the same got converted to buying stocks of big companies with lieu of getting high returns. Hence the objective of any investment is to make money by investing a set of money into stocks or bonds of high performing companies. The role of investors is to consider the market trends and also considering his risk taking capabilities. Here the role of behaviour finance came into being to consider the investment decisions. If we consider and compare the earlier scenarios with today's scenarios then the main difference is the technique used, in earlier scenario the same was based on the performance, forecasting, market timing, and company growth trends to name few whereas nowadays the same is based mostly on the behaviour of the investor. The main reason against the same is huge availability of information and investor awareness.

The main element in the behavioural finance is the psychology of the investor. Many investors have, for long considered that psychology plays a key role in determining the behaviour of markets. However, it is only in recent times that a series of concerted formal

studies have been undertaken in this area. Paul Slovic's paper on individual's misperceptions about risk and Amos Tversky and Daniel Kahneman's papers on heuristic driven decision biases and decision frames played an influential role. The results of these studies were at variance with the rational, self-interested decision-maker posited by traditional finance and economics theory.

The aim of this paper is to establish the existence of such fundamental issues, driven by various psychological biases, in the investment decision-making process. Behavioral economists firmly believe that psychological factors influence investment decisions. They argue that today's investment decisions demand a better understanding of individual investors' behavioral biases. However, many economists believe completely in the application of traditional theories in the decision making process and hence do not consider the concept of irrational behavior. In this context, it seems relevant to check whether the behavioral factors have an influence on the decision making process.

Objective of paper

The main objective of this paper is to understand the history behind the behaviour finance and then to analyse the biases involved in the same. The paper also revolves around the next steps on the basis of the research done in the field.

Literature Review

To fully understand behavioral finance as it is today, one must first learn how it came to be. Shiller (2003) helps readers take this first step as the author offers a great overview of the behavioral finance's evolution through the decades. In the 1980's, the consistency of the efficient markets model was starting to be challenged. One issue that troubled the efficient markets complete acceptance was the problem of excess volatility. Several theories were formed to describe the wide swings in stock prices, however it proved challenging to reconcile the idea that a stock price was the present value of all future dividends (as most finance theorists would argue) with the volatility observed in stock prices. This meant that finance was either completely wrong about what made up the value for a stock, or investors were not fully rational. Following this revelation, Shiller (2003) pushed the idea that markets might be efficient on the micro level, but wildly inefficient on the macro level. In summary, this means that individual stock movements make more sense than the movement of the entire market. In the 1990's, the amount of evidence contrary to efficient markets had become so much that behavioral finance started to gain traction as a legitimate field.

Complementing to Shiller's piece Heukelom (2014) provides a comprehensive account of how behavioral economics and finance were founded on the personal level.

Behavioraleconomics began largely as the result ofprospect theory as developed by Daniel Kahneman and Amos Tversky. Interestingly, Kahnemanand Tversky were both psychologists with no or little training in classical finance. Prospect Theory proved useful to economics however, because it attempts to model the way people actually make decisions as opposed to simply relying on the utility decision-making strategies that made up finance theory. As Heukelom goes on to write, prospect theory argues that people make decisions based on the potential value of gains and losses rather than the utility of the decision. Richard Thaler, who was already a finance theorist at the time added the economic and finance theory necessary to apply prospect theory to financial markets. **All three of these men, Amos Tversky, Daniel Kahneman, and Richard Thaler, are today considered to be among the founding fathers of behavioral finance.**

At its core, behavioral finance is about identifying and explaining inefficiencies and mispricing in financial markets. No article shows this better than the seminal work of Lamont and Thaler (2003). In their paper, the authors explore equity carve-outs of tech sector companies and their inherent mispricing following the Initial Public Offering (IPO) of the newly formed firm. Shleifer and Vishny (1997) discuss this topic in their seminal work “The limits of arbitrage.” In it, the authors point out that limited capital, agency problems, and other constraints hinder the ability of arbitrageurs to correct inefficient prices. One of the biggest limits of arbitrage derives from situations when the arbitrageur is managing other people’s money. This causes the arbitrageur to not take as highly leveraged positions, because he could be forced to close out his positions at a loss if investors want their money back. Further, most arbitrage occurs in foreign exchange, bond, and futures markets where there is a set payoff at sometime in the future. In other markets the uncertainty makes arbitrage much more difficult.

Chen and Lai (2013) focus not on arbitrage and inherent mispricing, but rather on how the framing of a company can impact expected returns. The authors focus on the effects that areclassification can have on a company. In their paper, the authors look at 352 Taiwanese companies that had their Standard Industrial Classification (SIC) code changed as the result of a government initiative or because the nature of their business changed. Theoretically, this reclassification should have had absolutely zero impact on the stock prices as nothing in the underlying companies had changed. However, the framing changes caused significant price changes 10, 20, and 30 days after the new classification system was implemented. Also of note is that the returns included both negative and positive results.

According to various studies there came into light various biases which factors and influences the human behaviours and which lead to investment decision making of a human. Having said that below is a snapshot of the biases which hampers the human investment decisions at a large,

NAME OF BIAS	KEY EFFECTS ON INVESTOR	CONSEQUENCE
Heuristics - Overconfidence	- Too many trades, too much risk, failure to diversify	Pay too much brokerage and taxes, chance of high losses
Heuristics - Representativeness	- Tendency to associate new event to a known event and make investments based on it	Purchasing overpriced stocks
Heuristics - Anchoring	- Tendency to consider logically irrelevant price level as important in the process of decision making	Missed investment opportunities, or bad entry timing into the market
Heuristics - Gamblers' Fallacy	- Taking too much risk after a lucky win	Chance of high losses
Herding	Lack of individuality in decision making	Bubbles, and bubble bursts
Framing - Cognitive Dissonance	Ignore new information that contradicts known beliefs and decisions	Reduced ability to make rational and fair investment decisions
Framing - Regret Aversion	Selling winners too soon, holding losers too long	Reduced returns
Framing - Mental Accounting	Low or no diversification	Irrational and negative effects on returns
Framing - Hindsight	- The tendency to feel that a past event was obvious when it really was not, at onset	Incorrect oversimplification of decision making

According to Ritter (2003, p.429), behavioral finance is based on psychology which suggests that human decision processes are subject to several cognitive illusions. These illusions are divided into two groups:

- Illusions caused by heuristic decision process and
- Illusions rooted from the adoption of mental frames grouped in the prospect theory (Waweru et al., 2008, p.27).

These two categories as well as the herding and market factors are also presented as the following.

Heuristics are defined as the rules of thumb, which makes decision making easier, especially in complex and uncertain environments (Ritter, 2003, p.431) by reducing the complexity of assessing probabilities and predicting values to simpler judgments (Kahneman & Tversky, 1974, p.1124). In general, these heuristics are quite useful, particularly when time is limited (Waweru et al., 2008, p.27), but sometimes they lead to biases (Kahneman & Tversky, 1974, p.1124; Ritter, 2003, p.431). Kahneman and Tversky seem to be ones of the first writers

studying the factors belonging to heuristics when introducing three factors namely representativeness, availability bias, and anchoring (Kahneman & Tversky, 1974, p.1124-1131). Waweru et al. also list two factors named Gambler's fallacy and Overconfidence into heuristic theory (Waweru et al., 2008, p.27).

Representativeness refers to the degree of similarity that an event has with its parent population (DeBondt & Thaler, 1995, p.390) or the degree to which an event resembles its population (Kahneman & Tversky, 1974, p.1124). Representativeness may result in some biases such as people put too much weight on recent experience and ignore the average long-term rate (Ritter, 2003, p.432). A typical example for this bias is that investors often infer a company's high long-term growth rate after some quarters of increasing (Waweru et al., 2008, p.27). Representativeness also leads to the so-called "sample size neglect" which occurs when people try to infer from too few samples (Barberis & Thaler, 2003, p.1065). In stock market, when investors seek to buy "hot" stocks instead of poorly performed ones, this means that representativeness is applied. This behavior is an explanation for investor overreaction (DeBondt and Thaler, 1995, p.390).

The belief that a small sample can resemble the parent population from which it is drawn is known as the "law of small numbers" (Rabin, 2002, p.775; Statman, 1999, p.20) which may lead to a **Gamblers' fallacy** (Barberis & Thaler, 2003, p.1065). More specifically, in stock market, Gamblers' fallacy arises when people predict inaccurately the reverse points which are considered as the end of good (or poor) market returns (Waweru et al., 2008, p.27). In addition, when people subject to status quo bias, they tend to select suboptimal alternative simply because it was chosen previously (Kempf and Ruenzi, 2006, p.204).

Anchoring is a phenomena used in the situation when people use some initial values to make estimation, which are biased toward the initial ones as different starting points yield different estimates (Kahneman & Tversky, 1974, p.1128). In financial market, anchoring arises when a value scale is fixed by recent observations. Investors always refer to the initial purchase price when selling or analyzing. Thus, today prices are often determined by those of the past. Anchoring makes investors to define a range for a share price or company's income based on the historical trends, resulting in under-reaction to unexpected changes. Anchoring has some connection with representativeness as it also reflects that people often focus on recent experience and tend to be more optimistic when the market rises and more pessimistic when the market falls (Waweru et al., 2008, p.28).

When people overestimate the reliability of their knowledge and skills, it is the manifestation of **overconfidence** (DeBondt & Thaler, 1995, p.389, Hvide, 2002, p.15). Overconfidence is

believed to improve persistence and determination, mental facility, and risk tolerance. In other words, overconfidence can help to promote professional performance. It is also noted that overconfidence can enhance other's perception of one's abilities, which may help to achieve faster promotion and greater investment duration (Oberlechner & Osler, 2004, p.3).

Availability bias happens when people make use of easily available information excessively. In stock trading area, this bias manifest itself through the preference of investing in local companies which investors are familiar with or easily obtain information, despite the fundamental principles so-called diversification of portfolio management for optimization (Waweru et al., 2003, p.28).

In the end, the reason behavioral finance exists is because not every person can possibly have and invest upon the same amount of information. Every person will read and observe different things, and every person will view the things they see differently. This is the crux of a series of works done on behavioral biases in investing. This issue is approached directly in Rieger (2012). In his work, Rieger looks at the complex framework of structured financial products and how investors view them. He concludes that several behavioral biases lead investors to make bad estimates on the probability of various outcomes tied to the payoff of the structured financial products, but that there may be ways to frame information on the products so as to not mislead investors. Taking the idea of biases one step further, Sahi, Arora, and Dhameja (2013) attempted to list the missteps investors tend to make in their piece "An Exploratory Inquiry into the Psychological Biases in Financial Investment Behavior." The authors came up with a host of different biases. These include the tendency to:

- Prefer known risks over unknown risks
- Rely on a point of reference
- Make investment decisions based on easily available information,
- Play it safe with regards to risk,
- Invest differently based on income source,
- Invest with a view of social responsibility,
- Invest in instruments which are familiar,
- Feel that past decisions could have been better or were inevitable,
- Be averse to losses,
- Feel regret,
- Be confident in one's own ability,
- Rely on family and friends,
- Follow trends.

The article is important because it provides a comprehensive list of biases observed from the interviewing of a diverse group of people that had significant experience in investing.

Speidell (2009) describe the limits of investing in emerging markets and how best to combat them. As it turns out, many of the same biases that are present in the developed world are also present in emerging markets. As the result of the familiarity bias that many investors have (seeking out things that are comfortable) most are hesitant to invest outside of their home country. Even those that are willing to take the leap often fall into what the author terms the “tyranny of the media” and are easily susceptible to thinking that the way the media might portray a certain part of the world is indicative of that entire region as a whole. In fact, as the article states some funds limit their emerging markets exposure to countries that fit the mould of “stability”, but what this type of strategy fails to recognize is that instability is a large driver of the profits available to be had by investors. This is because it is the fixing of this instability that leads to real change for a country and for investors, returns. If there was no more instability or uncertainty in emerging market, then there would be no reason to reward investors at a higher rate than in developed markets.

This article not only chronicles the problems foreign investors face, but also of local investors. According to Speidell, while foreign investors are present in certain countries, local investors account for the lion share of trading in many emerging markets such as Bangladesh and Kenya. In these countries, investors are extremely prone to feedback trading, or trading based off the trades of others. Another curiosity is that locals often much prefer to buy low-priced stocks because they get a better “bang for their buck” even though in reality the value of the stock is much better reflected in something like the P/E ratio. Along the same lines, locals appear to be enamoured with stock dividends even though they actually do not increase the portion of the company that an investor owns. Speidell finally states that if investors can navigate in between the pitfalls of foreign and local investors alike while understanding the uncertainty that is in place, there are significant profits to be made.

In the larger picture of behavioral finance, what Spiedell’s article shows is that markets undergo a transformational life cycle. Emerging markets as their name suggests are just beginning and have not necessarily shown high returns in the past. Along with this, these markets are riddled with inefficiencies and biases and massive bid-ask spreads. On the other hand, the modern markets of the developed world still have biases and inefficiencies but on a smaller level as compared to many other countries. What this disparity shows is that there must be a growth in the markets of a country in order to reach true efficiency and clearly no markets have reached that point yet. However, with the development of high frequency

trading, markets are pushing closer and closer to that line and investors looking to profit on behavior will be forced to work harder to find bias and inefficiencies as markets become more developed.

Application in the Real World

The true test of a financial theory is how it can be applied in the real world. Kahneman and Riepe (1998) detailed several biases and general characteristics that investors may possess. The authors also describe what they believe to be the best way to work around them as a financial planning professional. These biases and characteristics include:

- Overconfidence
- Over-optimism
- Hindsight bias
- Overreaction to chance events
- The use of a purchase point as a benchmark
- Short and long views
- The ability or lack thereof to live with the consequences of decisions
- Regrets of both omission and commission.

Like Kahneman and Riepe, Doviak (2015) approached behavioral finance from the point of view of a financial planner. In her paper, Doviak attempts to hone in on the advisor side and provide readers with strategies for applying behavioral finance to one's practice. Doviak stresses that while incorporating behavioral strategies is not for everyone, analyzing a client's tendencies and discussing the reasons behind their biases as well as ways to get around them can lead to increased success in the planning field.

Similar to Doviak's work, Bucciol and Zarri (2015) analyzed large amounts of data on the personalities and subsequent allocation of investment dollars of individuals to find out if there is any discernible connection between personality and the way someone invests their money. Interestingly, the authors found that those who scored low on tests for agreeableness or high for cynical hostility were significantly more likely to take greater risks with their investments. This is a significant advance in the understanding of investors, because before this work finance theory has assumed that investors decide on where to put their money in roughly the same way. However, what this article shows is that the way one sees their life and the world can actually have a sizable impact on their investments.

Aside from financial planning and advising, the largest application of behavioral finance in investing is in investment decision-making and securities selection. Wright (2008) looks at 16 self-proclaimed behavioral mutual funds to see whether applying behavioral finance to

investment decision-making is profitable one, and if there is anything not yet discovered about its success. Nonetheless, Wright found that the behavioral funds experienced an above average flow of dollars into the behavioral funds. Also, these funds generally beat S&P 500 index funds on a raw basis, but their risk-adjusted returns were more or less the same. The author also concluded that this increased risk comes from the so called “value factor”. Because their excess return came from the value factor, the author argues that behavioral funds at their core are simply value funds with better marketing as they attract higher inflows of capital not because they are actually better funds.

Impact on Corporate Finance and Capital Budgeting

One part of behavioral finance that is overlooked at times is its effect on corporate finance and capital budgeting. On this topic, Stein (1996) tackles the question of how finance managers should tackle capital budgeting in light of information brought to the forefront thanks to behavioral finance. Specifically, how should companies calculate required rates of return if a beta is not predictive of future results, and therefore the Capital Asset Pricing Model (CAPM) is rendered useless? Stein offers two ways for capital budgeting if CAPM is thrown out. The first is a model that attempts to project future stock returns. If this is the goal of the manager, then something closer to the Fama-French three factor model should be used. However, it can be argued the required returns calculated by the Fama-French model have relatively nothing to do with risk. So, if the goal is to accurately model the risk of the asset, one needs a model that will more accurately capture the real risk of the asset. Ironically, CAPM, or something like it may be one of the best options if this is one’s goal. This is because CAPM theoretically factors in the risk of the stock with a company’s beta. The trouble with only using this however is that normal CAPM betas are subject to considerable noise, and therefore may not be a great measure of fundamental risk. So, there is still room for discussion as to what the best model to use for capturing asset risk. Also, Stein concludes that a company’s choice on whether to use either approach should lie in whether the company is short term or long-term focused, and whether or not the company has financial constraints. If the company is short term focused it should use models that most closely model future prices, but if it is long-term focused and does not have financial restraints use of the asset risk model is likely to be more advantageous.

Also on the topic of corporate finance, Heaton (2002) looks at managerial optimism and how free cash flow can both help and hurt companies with overly optimistic managers. In the article, Heaton finds that managers who are overly optimistic over-estimate the NPV of company’s projects and also believe that a firm’s risky securities are undervalued. This

premise has two results. The first is that the manager will tend to take projects that are actually Net Present Value (NPV) negative, because they are overly optimistic about the project's true worth. In this sense free cash flow (FCF) is a bad thing because it makes it easier to accept bad projects.

On the other hand, if a manager views a company's securities as undervalued, then he will be less likely to want to issue new securities to fund NPV positive projects. This combination leads to significant loss for the company. In this sense, FCF is a good thing, because a manager will be able to accept NPV positive projects without issuing new securities.

Where Are We Headed

After covering what can be conservatively called a massive amount of information, it is still important to note that it is impossible to incorporate every aspect of a field especially a field like behavioral finance into one coherent paper without boring even the most respected reader to tears. However, just as important as covering as much about the current state and history of a field is projecting where it is going. With regards to this there are likely several different areas of behavioral finance that will shine in the coming years.

The first area is wealth and investment management. As stated in the paper, investment advisors must take on behavioral finance on two fronts. Advisors must be able to both understand the behavioral phenomena present in prices as well as the behavioral biases and heuristics present in their clients. As a result, I believe that there is likely to be increased research done on individual investor biases until there is the creation of a somewhat standard test for investor biases.

While financial advisors have much to look forward to in behavioral finance corporate finance will also benefit. This is because even though the CFO's and managers in charge of capital budgeting are professionals, overconfidence is still very prevalent in businesses. Also, because of the high arbitrage costs for outside investors these problems are much more likely to go unaddressed. Also, future corporate finance research should focus on the creation of a replacement to or more accurate version of CAPM that still measures asset risk.

Finally, there are two more areas that behavioral finance should look to in the future. First, researchers need to commit to and get behind a replacement for the Efficient Markets Hypothesis. If this is done, then behavioral finance will have a firm footing and a clear position on how it believes markets truly work. Secondly, it will be interesting to see if researchers can come up with a structure for a market life as mentioned in the previous review of Speidell (2009). What this means practically speaking is that research should be done to see if there is a consistent pattern of behavioral biases or mistakes that investors in

emerging markets exhibit that gradually become less and less prevalent as the market becomes more developed, or does each economy develop independently based on the population and its unique elements.

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