

Bridging the Gap between Psychology and Economics: The Role of Behavioral Finance

Robert Awobgo-Moah Amoah

College of Adult & Graduate Studies, Ohio Christian University, USA

ABSTRACT: *This article is a descriptive presentation of how behavioral finance plays key role in providing insight into how individuals' investment behavior typically deviates from traditional economic theories. The efficient market hypothesis (EMH) and capital asset pricing model (CAPM) theories have gained prominence in modern finance platform. The adequacy of these popular, rational-based behavior theories has however, remained skeptical among many scholars including Daniel Kahneman, Amos Tversky, and Richard H. Thaler. While the EMH and CAPM theories have contributed significantly to the investment world, some scholars contend the theories fail to fully explain certain inconsistent behaviors exhibited in the investment world. Behavioral finance is a new theory that attempts to fill the void between psychology and economics by providing a better understanding of investor behavior through the theories of psychology. Investment decisions are impacted by an array of irrational behavioral biases. The article identifies some finance and economic theory anomalies such as the January effect, equity premium puzzle, and others, which shift away from the traditional economic theories. Understanding these anomalies not only would assist individuals have a sense of how investors generally behave in the investment arena but also would help in efficient capital allocation.*

KEYWORDS: *Capital asset pricing model, efficient market hypothesis, January effect, rational behavior, theory anomaly*

I. INTRODUCTION

While economists may employ aggregate behavior theories to explain phenomena, psychologists adopt individualized, empirically real-time behavior theories that depart from economic theories to explain human behavior. This article examines the key role that behavioral finance, a new development from conventional finance, plays in providing insight of how individuals and investors' behaviors can impact their economic and investment decisions. It is of paramount importance that individuals and potential investors have a good understanding of how cognitive biases can interfere with their economic decision-making process. Traditional finance and economic theories inform that individuals, households, and investors act rationally toward their decision choices. The rational and theory-based perspective of the traditional or empirical finance assumes that people would behave rationally and logically when it comes to decision making. However, such is not always the case in real-life situations. Investors sometimes make irrational decisions that contradict the traditional rational-based theories. Scholars argue that economic theories and assumptions are inconsistent with the reality of human behavior. Results from behavioral economics and judgment and decision making (JDM) refute this rational behavior inherent in people (Knoll, 2010 [10]). At a certain point in time, depending on the situation and the individual's characteristics, irrational and unpredictable behaviors tend to manifest themselves which finance and economic theories failed to explain. The disconnect between traditional economic theories and empirical behavior calls for behavioral finance which employs the tools of psychology to better explain human behavior. Behavioral finance attempts to utilize psychology as a behavioral discipline, to explain how individuals and investors actually behave in making their financial or investment decisions (Pompian, (2012 [15])). Advocates of this new finance theory include behavioral economists Richard H. Thaler, and Kahneman and Tversky.

This paper first identifies some finance and economic theory anomalies such as the *January effect*, *equity premium puzzle*, *size effect*, and *winners' curse*, which prove otherwise to the traditional economic theories. Understanding these anomalies not only would assist individuals have a sense of how investors generally behave in the investment arena but also would help in an efficient capital allocation. Subsequent sections delineate some of the behavioral biases including *availability bias*, *confirmation bias*, and *over confidence bias*. Other irrational behavior biases include *mental accounting*, *loss aversion*, *probability neglect*, *gamblers' fallacy*, and *herd mentality*.

II. TRADITIONAL THEORY ANOMALIES

Traditional finance and economic models play a crucial role in aiding investment decisions. What makes scholars skeptical is the prevalence of theory anomalies that do not fully provide understanding of human behavior. An anomaly is a fact that highlights the inconsistency of a theory (Thaler, 1992 [21]).

Two prominent finance theories that assume rationality among humans and further explain how people behave in making financial and economic decisions encompass the capital asset pricing model (CAPM) and efficient market hypothesis (EMH). While EMH theory assumes that the market price of a security reflects and includes all available new information regarding the security and no investor can beat the market in whatsoever, CAPM theory for the most part, establishes the relationship between a security risk and its expected return (Fama & French, 2003 [6]). CAPM predicts that the expected return of a financial security or asset is equal to the risk-free rate and the asset's own beta. Though the CAPM and EMH theories have well been received and practiced widely by economists and academicians, the theoretical models did not go without attack. From the critics' stand point, though these and others existing economics and finance theories contribute to the investment world, they essentially do not account for the irrationality aspect of human behavior. The theories have been critiqued not only based on their rational-based assumptions but also based on their theoretical and empirical assumptions. Subsequent sections of this article explain some of the anomalies such as the January Effect, Equity Premium Puzzle, Winners Curse and size effect and how they impact investor decisions.

2.1 Theory Anomaly: The January Effect

January is the first month in the calendar and a lot of events occur, giving cause to forecasters to predict what the future image would look like. In the stock market, investors are always filled with perceptions as to whether or not the market would experience a bullish or bearish market trend especially when power changes hands. In the stock market, the "January effect" is an anomaly that reveals the weaknesses of both CAPM and EMH theories. As part of market timing; a buy and sell decision strategy, most investors make irrational decisions in the month of January called the January effect. The January effect is a phenomenon that hypothesizes that, stock prices generally face an upward surge in January than in subsequent months. According to Thaler (1987 [19]), the January effect hypothesis was tested by Rozeff and Kenney, (1976). Rozeff and Kenney found that the average monthly return of stock prices in the New York Stock Exchange (NYSE) market in January was about 3.5 percent versus 0.5 percent in subsequent months. This finding was skewed in favor of small firms or small cap stocks.

Research analysts assigned tangible reasons to the January effect phenomenon. One such reason is what is described as tax-loss selling to realize capital loss (Thaler, 1987). Impliedly, investors would purposely reduce their stock holdings by selling out a good fraction of their low performing stocks during the tax season and would reinvest at the beginning of the year. Buying stocks in January therefore influences high stock prices. The January effect also was observed in some countries where tax-loss selling is absent (see Richard H. Thaler, 1987) and the results were the same. This behavior of market participants stemming from the January effect is irrational, hence violates the efficient EMH and CAPM assumptions of rationality. The January effect specifically violates the EMH in that high prices of stocks in the month of January are essentially not linked to any market information as the EMH theorizes. The efficient market hypothesis states that stock prices typically follow a random walk, thus making it impossible for market participants to predict future stock prices and returns based on past stock prices and publicly available information (Thaler, 1987).

Researchers also studied and reported CAPM theory flaws in the investment world. Studies, according to Richard H. Thaler, reported that small firms, firms with low price-earnings ratios, and non-dividend paying stocks were higher than the CAPM prediction.

2.2 Theory Anomaly: The Equity Premium Puzzle

Another theory anomaly that reveals economics and finance theory gap is the equity premium puzzle (EPP). The capital asset pricing model predicts that investment in a financial asset with higher risk is associated with a corresponding higher returns to compensate for the risk otherwise investors would be better off holding their wealth in risk-free (Short-term government T-Bills) assets. Equity premium is an additional return to the risk-free return acceptable by investors to compensate for the risk. However, the question that remains is, how large should this excess return (expected return less risk-free return) is economically acceptable or tolerable? This question was the motivation of Mehra and Prescott (1985) and Mehra, (2006 [13])'s study entitled "the equity premium. A puzzle." Mehra and Prescott (1985 [14]) reported that the average stock returns and risk-free government bonds over the past century were 6 percent and 3 percent respectively. The magnitude of this observed premium (about 50% more than the risk-free rate) is at variance with CAPM theory (Benartzi, & Thaler, 1993 [4]). The implication of this is that observed data becomes somewhat a deviation from what economics and finance theories actually predict. The genesis of the puzzle is the fact that the premium is extremely large for risk-averse investors to see it as attraction for capital allocation based on the prospect theory as explained by Kahneman and Tversky, (1979 [9]).

2.3 Theory Anomaly: *The Winner's Curse*

An economic activity that promotes irrational behavior in the wake of decision making and thus, exposes the weaknesses of the rational-base theories is in auction sales of assets including salvage cars, homes, and other tangible properties. The rational-based economics and finance theory in auction activity, would once again assume that individuals participating in the auction have a good knowledge about the intrinsic value and all available information of the underlying asset. In the auction sales market, there are two parties involved in the process; the auctioneer, who sets the floor for bidding, and a pool of bidders, who bid competitively for the same asset.

In a common-value auction, the theory of rational bidding requires that potential bidders bid less when the number of bidders increases (Thaler, 1992). The winners' curse phenomenon, however, proves otherwise of the assumptions. "In an auction with many bidders, the winning bidder is often a loser." (Thaler, 1992, p1). The winners' curse as a theory anomaly, argues that in an auction sale, the winner (highest bidder) has the tendency of overbidding and paying an amount that exceeds the true value of the asset due to lack of adequate knowledge and information about the asset. Thaler, (1988 [20]) brought to light the cause of the overpayment and its attendance consequences. Thaler asserted that in an auction process, two factors – number of bidders and aggressiveness to own the asset – motivate bidders to bid upward for the item. According to Thaler, the consequence of the curse is that the winner not only overpays the asset but also is more likely to suffer some financial losses subsequently. A worst case scenario, for example, is overpaying for a salvage car which may need a substantial investment of money to get it back on the road or overpaying for a home which may require a huge sum of money for renovation. There would be absence of winners' curse and its consequences if all potential bidders were rational as economic theory dictates. Thus, all bidders would stop at a fixed maximum price for the item if they have all the available information of the asset.

2.4 Theory Anomaly: *Size Effect*

The question whether firm size (market capitalization) is a factor to consider for investment decisions remains unclear. Some scholars argue small cap firms and large cap firms performance differ with the former recording higher returns than the latter. Small caps have had long history of outperforming large caps. Surprisingly studies exist that, large caps outperformed small caps in recent times (Laundon, 2014 [11]). Laundon (2014) admitted that the underperformance of small caps in 2014 between S&P 500 and S&P 600 small cap index is an anomaly; an anomaly which is at variance with the basic tenets of EMH. The EMH assumes that the intrinsic value of a firm reflects all available market information. Most financial advisors argue that to form a strong portfolio investors need to invest in both firms. Investors may be attracted to the high performance potential of small cap firms versus large cap firms as best picks. It is argued that this may result in investment catastrophes as large cap firms are less volatile and provide stable returns than small cap firms are. Other researchers argue small cap firms are cyclical and sensitive to economic shock such as recession. .

III. IRRATIONAL BEHAVIOR BIASES & INVESTMENT MISTAKES

Oftentimes, investors deviate from the rational behaviors as theorized by investment economists. Behavioral economists believe investors' investment decisions are to a large extent, based on their emotional and psychological biases. These emotional and psychological biases tend to have a negative impact on their investment goals.

Behavioral economists have identified a myriad of emotional and psychological factors that influence investors' decision making process. Psychologists group these factors as cognitive biases resulting from heuristic behaviors. Some of the cognitive biases that may lead to investment mistakes include availability bias, mental accounting, confirmation bias, loss aversion, probability neglect, disposition effect, herd mentality, and overconfidence bias. Each of these biases is elaborated below.

3.1 Availability Bias

Prominent among behavioral concepts that triggers irrational behavior among individuals is the availability bias. This irrational behavior concept explains that if an event occurred in the recent past, it is "cognitively available" and people tend to exaggerate the likelihood of its future occurrence (Sunstein, 2014 [18]). Sunstein became a victim to this bias when he sold a considerable amount of his investment in 2011 following the stock market meltdown in 2008 (read more on the BloombergView). Cass, R. Sunstein, is an investor and a professor in the Robert Walmsley University at Harvard Law School and a former administrator of the White House Office of Information and Regulatory Affairs. In their study "A heuristic for judging frequency and probability" Kahneman and Tversky (1973 [8]) confirmed that events and scenarios ever occurred in life have effects on how individuals make their decisions. Investors tend to make their investment

decisions based on the occurrence of previous events and their attendant negative or positive consequences. Decision makers attach greater probability to history likely to repeat itself.

3.2 Confirmation bias

Availability bias may lead to confirmation bias if what existed before can potentially influence one's beliefs and practice. Confirmation bias is an irrational behavior where people embrace evidence that aligns with their pre-existing personal beliefs and practices while discounting those at variance with them. People are often filled with preconceived opinions and would confirm or disregard certain information based on their preconceived opinions. In the investment field, investors would give credence to those information that tend to align with their investment beliefs and practice and reject those that are contrary to them, leading to faulty investment decision. However, the rule of thumb is that expert opinion should be sought regarding all investment information prior to making any investment decision.

3.3 Mental Accounting

The tendency of people to segregate their financial resources - income and investments - into separate accounts based on what they are intended for is described as mental accounting. Mental accounting is analogous to conservative practice of shying away from change and innovation which has no place in modern finance. The concept of mental accounting has received much attention by behavioral finance researchers due to its impact on investment decisions. A real estate investment study conducted in 2010 by Seiler, Seller and Lane [16] reported that participants held their real estate investment separately from other investments versus holding them as a portfolio of mixed-asset class. Mental accounting is tied to disposition effect where investors are quick to dispose off their investment at the least increase in price and are reluctant to sell a declining of value of an investment versus seeing them as part of a portfolio where gains and losses can trade off (Beach & Rose, 2015 [3]). According to Beach and Rose (2015), though dividing investments into separate accounts makes it easier for one to evaluate, the practice can distort the wealth maximization.

3.4 Loss Aversion

Many people carefully make decision choices based on their emotional tolerance levels between success and disappointment. The extent to which one can tolerate disappointment versus success epitomizes their loss aversion. Loss aversion has gained prominence in the investment world. The concept is based on prospect theory which states that people tend to maximize gains and minimize losses as the emotional toll of the latter is relatively high. Prospect theory is based on specific key assumptions: certainty, probability, and loss aversion.

In the world of choice, gains and losses lie in different ends of the decision making continuum. This new way of thinking was dated back in 1979 when Kahneman and his coauthor Tversky challenged the adequacy of the utility theory as a descriptive model for decision making under uncertainty. Kahneman and Tversky (1979) explained the value or utility function with different gradients for losses and gains. In the value function, losses have a steeper gradient than gains have, indicating the possible pain a potential decision maker would feel versus the satisfaction associated with gains irrespective of its magnitude. According to prospect theory, how people make decision choices depends on their tolerance levels (weighted values) on what is certain and what is uncertain (Kahneman & Tversky, 1979). Investors would make investment decisions based the weights they attach to certainty (promised gains) and uncertainty (probable gains and/ or losses) and are more likely to ask for higher premium when the latter decision is chosen. According to Yan and Liyan (2012 [22]), investors' loss averse is manifested in their sensitivity of loss relative to gains of the equal magnitude.

Nevertheless, there is a crack in the prospect theory regarding loss aversion. In the world of uncertainty people may be indifferent to the outcome of their decisions based on the initial cost of the decision. Accountants would agree that materiality concept explains how different firms treat expenses differently. What is material to firm **A** in terms of cost may be immaterial to firm **B**. Assuming there is an announcement over the radio about a Powerball jackpot which recently rose to \$750m. People would rush for a Power Ball lottery ticket knowing the probability of losing is 0.9999 or 99.99%. At this point, spending just \$2 on a lottery ticket and standing the chance of winning or losing millions of dollar amount may be immaterial to the decision maker.

3.5 Probability Neglect

Probability neglect may be directly tied to availability bias. There is a common belief that history repeats itself. Thus, a one-time event is more likely to reoccur given that it had already occurred. Probability neglect is a cognitive bias in which people focus their attentions on worse-case scenarios to the neglect of the likelihood of the scenario occurring or not occurring. In 2011, Prof Sunstein shortened his investment holding when he paid greater attention to another chance of stock meltdown in the near future while discounting whether or not the event was probable. As Sunstein (2002 [17]) stated in his essay "when intense emotions are engaged, people tend to focus on the adverse outcome, not on its likelihood" (p 62). Many investors would think more

about the adverse outcome of another financial meltdown than its tendency of reoccurring. Decisions made based on this bias tend to be irrational especially when little or no consideration is given to probability.

3.6 The Gamblers Fallacy

The belief that no condition is permanent may be a strong motivation for gamblers to move forward with their unpredictable bids. But this belief may have little to no room in the investment world. Gamblers fallacy is a bias that postulates that the frequency of an event occurring is likely to reverse. This bias neglects the probability concept of independent events. A tossed coin, for example, which landed on head view severally and continuously still stands the chance of landing in a head in the next tossed. On the contrary, gamblers would believe that the next toss is more likely to result in tail after landing on head several times.

Gamblers fallacy has an impact on the stock market. Investors are gamblers who often are faced with rising and falling stock prices. Investors with the gamblers fallacy mentality may see the price of a particular stock consistently rise for a period of time. They believe that this trend of rising price will reverse to their disfavor, hence sell their existing stocks. Investors can avoid financial pitfalls by discarding gamblers fallacy mentality. Making investment decisions based on historical data or trend may be catastrophic. The stock market is a moving trend which is independent of past data or trend as predicted by the efficient market hypothesis. Focusing more on research or expert advice and less on historical data may save an investor from daring financial mess.

3.7 Disposition Effect

Procrastination may be the theft of time but making hasty decisions can be disastrous too. People tend to make hasty decision only to regret later. Disposition effect is a cognitive bias that is of great concern in modern finance. In an investment related scenario, people are too quick to dispose or sell their investment holdings (stocks) following price increases while holding on falling- price stocks with hopes of future rise in prices (Barberis & Xiong, 2009 [2]; Sunstein, 2014 [18]). According to Barberis and Xiong, (2009), the explanation for this tendency is not clearly established. However, Odean, (1998) as cited by Barberis and Xiong, (2009), documented informed trading, rebalancing, and transaction cost as potential explanations. Disposition effect is tied to prospect theory for loss-averse investors similar to what's called gamblers fallacy. According to gamblers fallacy the prolonged occurrence of an event is likely to reverse overtime. In this case, investors will sell stocks whose prices continue to rise for fear of a downward trend. This bias violates the principle of independent probability that states independent events are not mutually exclusive.

3.8 Herd Mentality

The idea of "majority carries the vote" is welcome in a democratic dispensation but has no place in behavioral finance. The herd mentality is cognitive bias that explains the tendency of individuals to follow the action of the crowd. This is common in our daily shopping experiences especially when prices of items such as apparel, big-ticket items, and grocery are marked down. Most people, especially women, fall victim to this bias when it comes to impulse buying. The motivation for this irrational behavior could be linked to the belief that the majority cannot be wrong. Everybody moving in a particular direction means there are better things ahead, hence following the crowd.

The investment world is not devoid of "follow the crowd mentality." This behavior is common in the stock market where most investors are being influenced by other investors to buy or sell their stock simply because others are doing so following the market trend or current information. Investors buy and sell stocks based on perceived new and more rewarding investment opportunities because others are buying and selling (Fafoglia, 2015 [5]). Following the crowd in making investment decisions can lead to huge financial losses and regret. The rule of thumb is to do your own research to make informed or educated investment decisions.

3.9 Overconfidence Bias

Overconfidence is a major motivation for entrepreneurial initiatives but may lead to investment flaws. Overconfidence is a bias that manifests itself when individuals gauge their skill levels. Overconfidence bias is a subjective judgment or overestimation of one's skills, capabilities, and confidence in achieving one's goal. Studies have documented that most people would overestimate the precision of their knowledge (Barbar, & Odean, 2001 [1]) when it comes to subjective judgment of events. Overconfidence may lead to poor investment decisions and inefficient capital allocation. In the investment field, most investors would overestimate the prospects of certain stocks or investment opportunities while underestimate the risk associated with them. Barbar and Odean (2001) study revealed that overconfident investors not only invest excessively than the average investor but also reported that men are more prone to overconfidence trading than women are. Overconfidence investors believe they have better knowledge of the stock market than their peers and would stay away from the "follow the crowd" mentality of making investment decisions.

IV. BRIDGING THE GAP

The existence of conventional finance and economic theory anomalies call for the adoption of behavioral finance in explaining why investors behave the way they do when it comes to investment decisions making. It should be noted that behavioral finance is not at variance with fundamental finance and economic theories. Behavioral finance attempts to identify economics and finance theory deficiencies and to contribute in understanding the inadequacy of these theories in the investment world. Decision makers are not always rational as posited by traditional economic and finance theories. Oftentimes investors make decisions that are based on heuristics (mental shortcuts) that may lead to cognitive bias (resulting errors) and investment failures as a consequence (Hicks & Kluemper, 2011 [7]; Lockton, 2012 [12]). According to Hicks and Kluemper, (2011), the use of heuristics versus analytics (rule-based) often dominates our problem solving efforts leading to inevitably cognitive bias during decisions under uncertainty. CFA senior portfolio manager Nick Fafoglia admitted that behavioral finance gained its roots from the fact that people tend to make economic decisions based on their emotional and psychological influences that cause unpredictable and irrational behaviors. This is contrary to the traditional finance theory that generally assumes people are rational in maximizing their wealth (Fafoglia, 2015).

V.

CONCLUSION

Traditional economics and finance theories provide insight of how individuals and investors make economic decisions as rational beings. However, there is behavior disconnect between these rational-based theories and what psychologists believe lead to irrational decisions. In the investment world, investment mistakes exist due largely to what can be described as behavioral biases. Though behavioral biases contribute to poor financial or investment decisions, understanding these biases can potentially save investors from financial pitfalls. By having a good working knowledge of these biases, chances are that investors' wealth creation goal would less likely be held back. That's what this article is intended for. Understanding the behavior patterns of investors and the motivation behind them can essentially minimize potential financial decision making errors. Exercising due diligence (especially to gamblers fallacy bias) by investigating a potential investment opportunity may be a best practice. Also seeking financial experts' opinion as a source of alternative voice of reason or people with contrarian perspective of a given decision can result in an efficient capital allocation.

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