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Evolutions and Challenges of Behavioral Finance

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Abstract: ***This article presents the evolution of behavioral finance, which is a new approach in capital market. This study reveals the effect of psychological factors in investment decision making process, which was a strong contradiction to the Efficient Market Hypothesis. Behavioral finance is not a replacement to the classical finance paradigm, but an alternative solution to explain the market inefficiency and the irrational behavior of investor.***

Keywords: behavioral finance, classical finance, market efficiency, investment decision, psychological factors, market anomalies.

1. Introduction

The financial crisis of 2007-2008 spurred the relevance of understanding the human behavior. The researchers found that the root cause of the financial crisis is not a fundamental phenomenon. It is due to psychological distortion in judgment. The excessive optimism and the confirmation bias acted as the driving force behind the crisis.

The studies show that individuals' behavior is different from what modern financial theories draw for rational human behaviors (Fernandes, Pena, & Benjamin, 2009). Harry Markowitz formulated the first portfolio theory, in the title of "Modern Portfolio Theory" which was the first systematic financial theory (Markowitz, 1952). Modern portfolio theory evaluates return and risk of risky assets, using mean-variance pattern; and represents a normative pattern for portfolio selection. A normative pattern was generated by evaluating the performance of security and forecasting of returns. But contrary to the expectation, there was a huge gap between the available return and actually received return. This gap was called as " market anomalies " by the researcher. Hence an alternative approach name behavioral finance was developed, which incorporates psychological and sociological issues while investigating market anomalies and defining portfolio.

This paper is divided into three section : Section 1 gives an introduction of evolutionary process of finance theory ;Section 2 briefly explain the concept of behavioral finance and the key themes of behavioral finance and section 3 deals with the challenges of behavioral finance

2. Rational Finance Paradigm

"Homo Economicus "was the first decision making model formulated in the19th century. According to this model the investors are fully informed about investment options and alternatives and the possible outcomes of their decision. According to " homo economicus " investors are considered to Rational Economic Man (REM). With this assumption the financial markets are considered to be efficient, economic agents who are rational and obey the axioms of expected utility theory to make decisions.

The evolutionary process of finance theory is illustrated in the Figure.

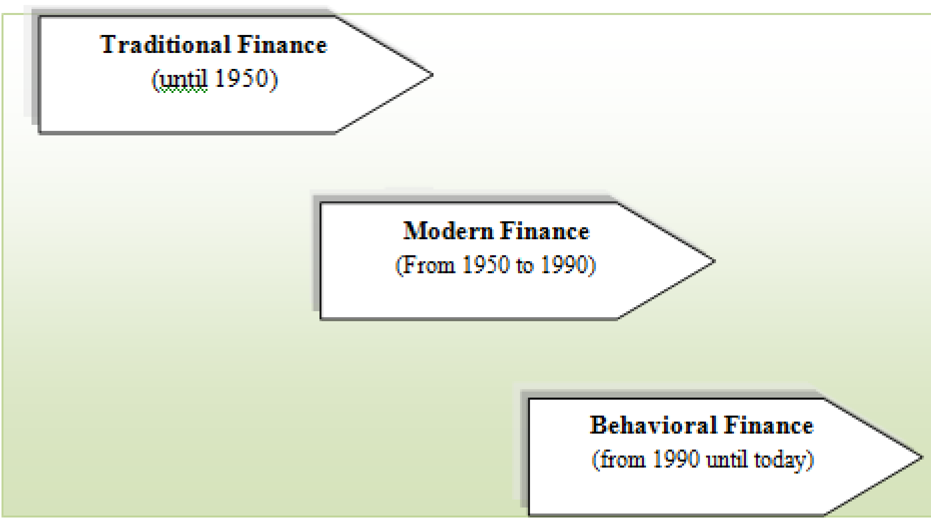

Figure 1: Evolutionary process of finance theory (Pimenta & Fama, 2014)

The finance theory was developed based on two fundamental aspects: Rationality and Irrationality. In other words Standard finance and Behavioral finance. Standard financé has two aspects: Traditional finance and Modern finance. The traditional finance explains the rationality of investor and decision making is based on Expected Utility (EU) Hypothesis (Neumann & Morgenstern, 1944) . Where as in modern finance, the underlying concept was maximizing the utility function of wealth based on informal efficiency of market. The following theories of rational finances were formed: Modern Portfolio Theory (MPT) (Markowitz, 1952), Life Cycle Hypothesis (Modigliani & Brumberg, 1954) , Permanent Income Hypothesis (Friedman, 1957), Efficient Market Hypothesis (EMH) by (Fama, 1991). The key assumption of all these theories is that activities of an economic human being are rational and his/her main target is profit maximization.

These theories are based on assumptions that the investor is rational, risk-averse and uses the utility curve to maximize his well-being. Although MPT and the EMH are considered as successful in financial market analysis, the behavioral finance model has been developed as one of the alternative theories for standard finance. Behavioral finance examines the impact of psychology on market participants' behavior and the resulting outcomes in markets, focusing on how individual investors make decisions: in particular, how they interpret and act on specific information. Investors do not always have rational and predictable reactions when examined through the lens of quantitative models, which means that investors' decision-making processes also include cognitive biases and affective (emotional) aspects. The behavioral finance model emphasizes investor behavior, leading to various market anomalies and inefficiencies. This new concept for finance explains individual behavior and group behavior by integrating the fields of sociology, psychology, and other behavioral sciences. It also predicts financial markets.

Summarizing financial behavioral researches, subjective irrational behavior hypothesis could be divided into two groups: theory of cognitive bias (Festinger, 1957) and prospect theory (Kahneman & Tversky, 1979). The basic idea of cognitive theory is that behavior of an individual is determined by his/her own mind, i.e. contemplation and self-perception determines both behavior and emotions (Beck, 2008).On the other hand, the prospect theory describes how investors perceive profit and loss. Making experiments and empirical investigations, Kahneman and Tversky (1979) stated that people view gains and losses differently and loss makes a greater emotional impact on investors than gain.

3. Behavioral Finance

In particular, there are two representative topics in behavioral finance: -cognitive psychology and the limits of arbitrage (Ritter, 2002). Cognitive psychology is the scientific study of human beings' cognition or the mental processes considered to form human behavior. It explains the systematic errors made by the investors in the way they take decisions in process of investment decision. The perspectives on the limits of arbitrage predict the effectiveness of arbitrage forces under any circumstances. Behavioral Finance suggests that there are "limits to Arbitrage" as there exist investor behavior to buy the overpriced and sell the underpriced securities in turn disturbing the parity condition in the short run because of the risk perception (Ross, Westerfield, Jaffe, & Jordan, 2008).

Many topics within the arena of behavioral finance relate to cognitive psychology are exhibited in Table 1. These topics cover various aspects in the behavioral finance literature that have been studied over the past 30 years. The validity of these topics is continuously examined by various research scholars.

Table 1: Behavioral Finance Topics

Anchoring	Financial Psychology	Cascades
Chaos Theory	Cognitive Dissonance	Fear
Cognitive Errors	Contrarian Investing	Crashes
Loss Aversion	Herd Behavior	Greed
Anomalies	Market Inefficiency	Fads
Over-reaction	Under-reaction	Framing
Mental Accounting	Irrational Behavior	Heuristics
Risk Perception	Behavioral Economics	Gender Bias
Overconfidence	Hindsight Bias	Preferences
Regret Theory	Economic Psychology	Manias
Groupthink Theory	Group Polarization	Risky Shift
Prospect Theory	Behavioral Economics	Panics
Affect (Emotions)	Behavioral Accounting	Issues of Trust
Illusions of Control	Cognitive Psychology	Issues of Knowledge
Downside Risk	Experimental Psychology	Familiarity Bias
Below Target Returns	View of Experts vs. Novices	Information Overload

Source: (Ricciardi & Simon, 2000)

(Bloomfield, 2006)stated that no behavioral alternative would ever rival the coherence and power of the traditional efficient market theory because psychological forces were too complex. Therefore, he emphasized that behavioral researchers should devote themselves to the standard science suggested by their new paradigm and perspective. For example, behavioral researchers can document and refine the understanding of how psychological forces influence individuals' behavior in financial settings, and how those patterns of behavior affect the market.

(Zaleskiewicz, 2006)focused on normal investment behavior introducing important concepts from these two growing fields of research: behavioral finance and the psychology of investing. He discussed three major topics in his essay: investors' errors from cognitive psychology, emotions in individual investors' behavior, and investors' preferences toward risk and ambiguity. He also admitted that behavioral finance has become more a norm than an extravagance, meaning that the difference between the terms finance and behavioral finance will ultimately disappear.

(Byrne & Brooks, 2008)) also applied the behavioral finance concept to key areas in the financial field such as limits of arbitrage, behavioral asset pricing theory, behavioral corporate finance, evidence of individual investor behavior, and behavioral portfolio theory.

4. Driving Forces of Investor Behavior

Irrational behavior of investor builds the foundation for behavioral finance. According to (Shefrin, 2007) "hope and fear" are two factors which lead people to behave irrationally. He put forth the concept and 'in emotional time line which is shown in Figure 2:

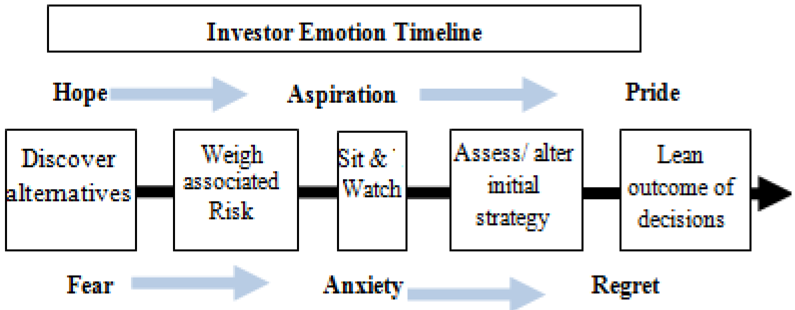

Figure 2: Investors Emotion Timeline (Shefrin, 2007)

The fear ultimately leads to regret and hope ultimately to pride. These are the two emotions that can often make investor irrational.

The field of investor behavior explains the psychological and sociological aspects of decision making. The two key topic of investor behavior were: Behavioral Finance micro and Behavioral Finance macro. The macro level explains the role of financial markets and "anomalies " in the Efficient Market Hypothesis . The micro level recognizes the various biases affecting the investment decision. Investor behavior examines the cognitive factors (mental processes) and affective (emotional) issues during investment management process. In practice, individuals make judgments and decisions that are based on past events, personal beliefs, and preferences.

5. Key Themes In Behavioral Finance .

The four key themes of behavioral finance are : a) heuristics ;b) framing ;c) emotions and d)market impact

a. Heuristics are the mental shortcuts that simplify the complex methods ordinarily required to make judgments (Nofsinger, 2011). That is the short cut used by the brain to reduce the complexity of information analysis (Kahneman, Tversky, & Solvic, 1982); (Simon, 1956). Psychologist use the term "heuristics" as rule of thumb and " judgment" as assessment. One of a good example of heuristic which normally affects in decision making is consideration of " past performance is the best predictor of the future performance" .Researchers has listed out more than 50 biases. Some of the familiar heuristics are representativeness, availability, anchoring and adjustment, familiarity, overconfidence, status quo, loss and regret aversion , ambiguity aversion , conservatism and mental accounting

Representativeness heuristics : Representativeness refers to judgments based on overreliance on stereotypes, a part of cognitive bias. The basic principles of representativeness was proposed by psychologist Daniel Kahneman and Amos Tversky (1972) and analyzed in a series of papers reproduced in the collection edited (Kahneman, Tversky, & Slovic, 1990). Representativeness is a heuristic which will leads the investor to make predictions that are insufficiently relative. Representativeness is defined as the tendency of investor to buy stock that represent desirable qualities such as strong earnings , high sales growth and good management (Shefrin, 2000).

Anchoring and adjustment is a psychological heuristic that influences the way people intuit probabilities. It refers to a decision making process where quantitative assessment are required and these assessments may be influenced by suggestions. Investors will fix some reference points (anchors) , for example the past winning stock prices. If someone is asked to estimate a value with unknown magnitude, he/she begin by envisioning with these "anchor" and after adjust it up or down in order to reflect the subsequent information and analysis.

Availability is a judgmental heuristics arises when people use the ease of imagining an outcome in their judgments of probabilities. This bias may lead to ignoring (or underweighing) risks that cannot be imagined or overestimating risks that can be imagined very vividly.

Mental accounting describes people's tendency to categories and evaluate economic outcomes by grouping their assets in a number of nonfungibile mental accounts. The people mentally allocate wealth ever three classifications: current income, current assets and future income. The propensity to consume is greatest from the current income account while the future income is treated more conservatively (Shefrin H. , 2000).

Overconfidence: Overconfidence bias is a bias in which people demonstrate unwarranted faith in their own intuitive reasoning, judgments, and/or cognitive abilities. This overconfidence may be the result of overestimating knowledge levels, abilities, and access to information. The main facet of overconfidence are miscalibration of knowledge and better than average. Overconfident investor underestimates the variance of risky asset and trade more aggressively (Kourtidis, Sevic, & Chatzoglou, 2010) , (Giardini, Coricelli, Joffily, & Sirigu, 2008);(Caballe & Sakovics, 2003) through overestimating information (Glaser & Weber, 2007).

In a published article of Brad Barber and Odean , " Boys will be boys : Gender , overconfidence and Common stock investment" , listed out the characteristics of overconfident investors (Barber & Odean, 2001) as follows:

i. Overconfident investor overestimate their ability to evaluate their investment avenues.
ii. Overconfident investor trade excessively based on their intuitive reasoning and by overestimating knowledge.
iii. Because of overestimating their abilities , overconfident investor may underestimate their downside risks.
iv. Overconfident investors hold undiversified portfolios.

Status Quo Bias , coined by Samuelson and Zeckhauser (1988), is an emotional bias in which people do nothing (i.e. maintain the "status quo") instead of making a change. People are generally more comfortable keeping things the same than with change and thus do not necessarily look for opportunities where change is beneficial. Given no apparent problem requiring a decision, the status quo is maintained.

Regret aversion*:* is a human tendency to feel the pain of regret for having made errors, even small errors. Regret is an emotion experienced for not having made the right decision. If one wishes to avoid the pain of regret, one may alter one's behavior in ways that would in some cases be irrational. Regret theory may help explain the fact that investors, as explained in the section covering loss aversion, defer selling stocks that have gone down in value and accelerate the selling of stocks that have gone up in value (Hersh Shefrin, 1994). The theory may be interpreted as implying that investors avoid selling stocks that have gone down in order not to finalize the error they make and in that way avoid feeling regret. They sell stocks that have gone up in order not to feel the regret of failing to do so before the stock later fell

b. Framing

Framing deals with the way people code events. Framing separates form from substance and thus deals with perceptions. Framing has been defined as a decision maker's view of the problem and possible outcomes (Ackert and Deaves, 2010). People exhibit frame dependence, either due to cognitive or emotional reasons. The cognitive aspects concern the way people organize their information while emotional aspects deal with the people the way they register the information.

c. Emotions and Self-Attributes

Emotions, such as fear, hope, anger, regret, pride, worry, excitement, guilt and mood may also influence investment decision making. These emotions determine the risk tolerance level of an investor. According to Nofsinger (2010), the influence of emotions on decision is larger for more complex and uncertain situations. Damasio (1994) even finds that without emotions, reasonable decisions are impossible.

d. Market impact

Decision making is the process of choosing a specific investment alternative from the basket of alternatives. The process of "choosing" is done after evaluating all the alternatives. The behavioral finance assumes the investors are irrational in the process of "choosing and selecting" their investments. They will react according to the new information's. In these conditions their decision may undergo mispricing due to limit to arbitrage. This will affect the market price to deviate from the fundamental values. It has identified by various researchers that the deviation from the fundamental values are the main empirical anomalies which lead to a reevaluation of the efficient market hypothesis.

6. Challenges to Behavioral Finance

The strongest critic of behavioral finance theories E. Fama, a founder of the Efficient Market Hypothesis Fama (1998) criticized the behavioral finance theories, the cognitive deviation of which is mostly suitable to explain financial behavior of individuals in certain situations. According to Fama (1998), a frequency of obvious over-reaction to information is similar to that of under-reaction in terms of EMH by considering anomalies as chance results. Abnormal returns that occurred previously persist after a certain event, and this phenomenon appears in post-event reversal as well.

Behavioral finance argues that the rational market hypothesis has been discredited, but Rubinstein (2001) paused, and recounted the considerable number of reasons as to why this hypothesis was so generally acknowledged in mainstream finance, at least in academic circles.

He explained six major anomalies in terms of the EMH, claimed that many anomalies were just empirical illusions, and he showed that investors did not enjoy excessive ex ante expected returns. The six anomalies are (a) Excessive volataity, (b)Risk premium puzzle (c)book to market ratio (d)close end fund discount (e)calendar effect (f) Stock market crash (Rubinstein, 2001). He also emphasized that several psychological assumptions and phenomena were considered in the EMH.

The financial market has many characteristics that strengthen market efficiency against opinions that individual investors' irrationality determines price. Research in standard finance insists that it is too rash to abandon the EMH, and this opinion is considered a persuasive theory in the market.

7. Conclusions

It is very evident that the investors behave irrationally. The irrational behavior is mainly due to bias that generated from past experiences or heuristic. However, emotional and cognitive biases play a vital role in the decision making process. In conclusion, the common behavior of an investor can be categorized as follows: Investors often do not participate in all investment avenues; they exhibit loss-averse behavior; they use past performance as an indicator of future performance; they behave on status quo.

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