

An Insight into Quantitative Behavioral Finance

Ramona Birău, PhD

*Regional Public Finances General Directorate of Craiova
Craiova, Dolj county, Romania
bira ramona@yahoo.com*

Abstract

The main objective of this research paper is to highlight the global implications of quantitative behavioral finance. Quantitative behavioral finance represents a rather new psychology-based paradigm focused on statistical and mathematical applied methodology in order to highlight behavioral deviations in the context of investment process and valuation. The investment process can be significantly affected by irrational decisions generated by emotional biases or cognitive deviations. Quantitative behavioral finance constitute an essential cluster of concepts which assume at the elementary level that human behavior influences financial asset prices. The apparent conceptual symbiosis between certain quantitative and qualitative dimensions of modern finance is an unconventional approach which is considered an effective alternative method to traditional finance theory.

Keywords: Quantitative behavioral finance, Traditional finance theory, Valuation, Efficiency Market Hypothesis, Behavioral biases, Investment horizons

Introduction

The main motivation of this study is to highlight the major implications of behavioral biases in the context of investment process and financial valuation. Moreover, the leading voice in this research paper is the role of quantitative behavioral finance in conjunction with traditional finance theory. The fundamental objective of this interdisciplinary approach is mainly to accomplish optimal investment policies and risk control strategies. Technically, behavioral finance contradicts the rationality of market participants. Thus, it is suggested the influence of the psychological factors on financial market contractions. Financial investors have a certain limit regarding the processing and assimilating of new information (as a maximum level). Therefore, it is obvious that the price of financial assets do not incorporate all relevant informations.

Financial markets inefficiency is perceived on the basis of the psychological theory. Behavioral finance is a rather new approach which provides an interesting

alternative to conventional finance. Human emotions, psychological deviations and cognitive biases broadly affect the financial market behavior. Quantitative behavioral finance can be defined as a condition in which financial market anomalies receive up to a certain level a reasonable explanation. A behavioral analysis includes the study of experimental and applied behavior in order to reduce or minimize undesirable human behavior in the investment process. Specifically, the empirical support base has a significant impact on financial practice. In broad terms, the conjunction between cognition and emotion have been highlighted based on experimental research. On the other hand, the economic field has been widely perceived as a rather non-experimental science.

One of the most important component of this research article requires a critical comparative analysis in relation to conventional finance theory. Behavioral finance paradigm, by contrast, provide an effective alternative to the inherent imperfections of traditional approach. As a profane expression, behavioral finance is the science behind irrational decision that frequently occur in financial markets.

Dissemination of quantitative behavioral finance paradigm

In recent past, academics and financial practitioners revealed a growing interest in terms of identifying effective investment strategies. Financial markets are typically defined as having a chaotic and unpredictable behavior due to a severe nonlinear character. However, is utopian to imagine in terms of global economy that all available information is incorporated in financial asset prices. It is obvious that portfolio management is strongly influenced by cognitive psychology. In a highly volatile financial market exists some severe abnormalities and structural dysfunctions. In addition, quantitative behavioral finance focuses on certain issues such as financial frictions and misallocation of resources (capital) as categories of market incompleteness. An awareness of highly probable cognitive limits might facilitate the proper and transparent valuation process for financial asset or liability.

The central idea of efficient market hypothesis suggest the fact that stock market security prices always incorporate and reflect all relevant information. Moreover, according to Fama (1970) the ideal financial market would be guided by the principle that prices provide accurate signals for resource allocation. In other words, the concept of market efficiency implies that security prices at any moment of time „fully reflect” all available informations. Efficient market hypothesis suggests that the market provides correct pricing and current prices of securities are close to their fundamental values. Thus, in an efficient market the arbitrage opportunities are rather insignificant. Also, it is assumed that it's not possible to outperform the market over the long-term. According to Fama (1998): “Market efficiency survives the challenge from the literature on long-term return anomalies”.

The underlying assumption highlights the concept of perfect rationality of market participants. The concept of rational wealth maximizers or investors that pursue only their benefits and individual self-interest have meanings quite faded in the context of behavioral finance paradigm. Thus, the primary investment objective is maximizing the benefits for a given level of risk or vice versa, minimizing the level of risk based on a given level of stock returns.

Concrete reality of financial markets reveals that investors make irrational financial decisions. According to Malkiel (1995) investors' expectations can not be met as achieving an abnormally higher return because is not a realistic assumption. The investment decision making process frequently highlights deviations from normality assumption and rationalistic approach based on equilibrium theory. Moreover, in order to provide explanations for why market participants behave irrationally due to inherent random fluctuations. The current price of a financial asset deviates from its fundamental value as a result of the influence of behavioral biases of individual investors.

On the other hand, an important role in understanding the irrational behaviors is occupied by the prospect theory which supports the idea that people are loss averse. The impact of potential losses is much higher compared to an unfulfilment in terms of the obtained benefit or a missed gain. A risk averse investor will be reticent regarding the prospect of investing in high-risk asset portfolios. In other words, investors are risk averse when prefers lower stock returns with known risks rather than higher stock returns with unknown risks.

Initially, the investment community was quite reluctant in accepting the principles suggested by behavioral finance. Technically, one of the most significant early contributions belonged to Vernon Smith and subsequently concerns financial market complex mechanisms. Smith (1962) was interested in identifying a competitive economic model in order to determine the possibility that market dynamics could led to equilibrium. In other words, this pioneering experimental approach mainly aimed to establish if the market can reach equilibrium based on the principles supported by theory. Even more, Smith (1962) concluded that: "...In a real competitive market, such as the commodity or stock exchange, each marketer is likely to be ignorant of the reservation prices at which other buyers and sellers are willing to trade...real markets are likely to be continually subjected to changing conditions of supply and demand. "

According to Barberis and Thaler (2002) behavioral finance is focused on two fundamental parts, ie limits to arbitrage and psychology. The authors argue that it "it can be difficult for rational traders to undo the dislocations caused by less rational traders". Nevertheless, the concept of bounded rationality a comprehensive explanation on the practical significance of the concept of rationality in investing. However, a satisfactory alternative is the notion of bounded rationality which assumes that it is rather impossible to comprehend and process all of the potentially relevant information considering inherent cognitive limitations. Moreover, considering that the human capacity to absorb information is limited and so its the ability to process the knowledge, the concept of bounded rationality represents a particular form of rationality in which market participants are assumed to be rational, but up to a certain level.

Individual financial behavior is a very important factor that should not be ignored in order to achieve investment performance. The financial personality, although it seems a rather psychological concept, is essential in the context of understanding and avoiding as much as possible irrational decisions. Also, another factor of influence is heuristics, issue that generally leads to a certain degree of overconfidence. Experimental studies have demonstrated that it exists different degrees of overconfidence and social proof, in financial market, but this individual tendency

often degenerates. In other words, in the case of active investors this represents too much confidence in their own opinions, judgments, decisions and beliefs.

Essentially, a market participant should understand why he makes certain investment decisions and how it is expected that he will react under stressful conditions of uncertainty. Human emotion include several different subcategories such as: feelings, moods and affect. According to Shaver, Schwartz, Kirson and O'Connor (1987): "at the basic level of the emotion hierarchy one finds the handful of concepts (love, joy, anger, sadness, fear, and perhaps, surprise) most useful for making everyday distinctions among emotions". However, secondary emotion, or even tertiary emotions have a significant influence in financial investment decision making process, such as: anxiety, nervousness, irritation, agitation, annoyance, depression, despair, hopelessness, embarrassment, alienation, isolation, humiliation, panic, hysteria, mortification, enthusiasm, excitement, envy, euphoria. Furthermore, certain psychological reactions and features, such as emotional connections, embracing certainty, vividness bias, self-interest bias or failing to act (failing to buy, failing to sell) obviously affect decision-making process.

Conclusions

Behavioral finance paradigm is an alternative to the difficulties and limitations faced by conventional finance approach. Fama (1998) argued that various stock market anomalies can be corrected with reasonable changes in technique because those apparent anomalies are very sensitive to the methodology used to measure them. Despite the fact that behavioral finance paradigm provides an effective alternative in relation to the inherent limitations of conventional finance, in some circles is still considered a niche research area.

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