A Comparative Analysis of the Efficient Market Hypothesis and Behavioral Finance: A Comprehensive Literature Review

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Abstract

Behavioral Finance, which studies the decision-making patterns of individual investors and the financial effects of these decisions, argues that investors are not rational in the full sense, and that they are influenced by various psychological factors when making decisions. In this study, which was supported by a literature review in the light of the studies conducted between 2005 and 2022, behavioral finance is examined. The main purpose of this study is examine behavioral finance by comparing it with traditional efficient market hypothesis. As a result of the studies conducted in the recent literature, it has been observed that behavioral finance may provide mode reliable results thanks its more realistic approach by combining finance, sociology and psychology disciplines.

Keywords: Efficient Market Hypothesis, Behavioral Finance, Investors, Psychological Factors

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1. Introduction

Financial markets are physical or digital platforms that enable savings in a country to be converted into investments. The efficiency of financial markets enables financial markets to fulfill the process of transforming savings into investments more quickly and successfully. Therefore, the efficient market hypothesis (EMH) is very important in traditional finance. According to this hypothesis, the markets operate effectively and no anomalies are observed in the market.

In an efficient financial market, many types of financial instruments (rich variety of alternative financial instruments) are traded with high trading volume among investors (financial manipulation is unlikely), and there is no asymmetric information problem between investors as the prices of financial instruments reflect all related information about that instrument. (Chuvakhin, 2001). Thus, all investors earn normal profits (normal returns) in the mid and long term. In other words, there is no price anomaly in this market.

However, the real-life situation is quite different from assumptions of the efficient market hypothesis. In real life, there is an asymmetric information problem between investors. There may be some inefficiencies due to conflicts of interest among company managers, shareholders and investment banks. In addition, the psychological and sociological factors that investors are involved in the decision-making process can also be effective. Therefore, the assumptions of the efficient market hypothesis may not be realized in practice.

The rationality of investors hypothesis supported by traditional finance was insufficient to explain investor decisions and market anomalies towards the end of the twentieth century (Sharma 2014, 273). Behavioral Finance, which is formed by feeding from sociology, psychology and financial sciences that affect the decisions taken by market investors, has made it possible to explain the decision-making processes more realistically.

In this study, which started by explaining the efficient market hypothesis constitutes its conceptual framework, an effort was made to explain the differences between the efficient market hypothesis and behavioral finance with a comparative table in the theoretical information part. Psychological orientations are discussed under the headings.

The literature part of the study was narrowed down to cover the years 2005-2022 and efforts were made to benefit from current studies as the content that constitutes the most popular agenda of today's conditions. In the conclusion part of the study, it was concluded by referring to the findings obtained as a result of the literature review.

2. Theoritchal Framework

2.1 Efficient Market Hypothesis

According to the efficient markets hypothesis, which is generally attributed to Fama, there is a strong relationship between the prices of securities traded in the market and the information reflected in the markets (Fama, 1970 pp. 383–417).

EMH is closely related to the Random Walk Hypothesis, which reveals that successive price series are independent of previous prices. The Random Walk Hypothesis is based on the assumption that the flow of information is free, the information is reflected instantly on the share prices, the price changes of tomorrow are only affected by the prices of tomorrow and are completely independent of the price changes of today (Kulalı, 2016).

EMH says that the prices in the markets contain all kinds of information. It states that it will be impossible to generate an extraordinary return by using this information. "*EMH assumes that there are so many buyers and sellers that none of the price determinants can affect prices individually, and that traders can access all accessible information simultaneously and symmetrically with similar costs, and transaction costs are extremely low*" (Çelik, 2009 p.26).

In his article on Efficient Markets Hypothesis, in which Bayraktar analyzes EMH on a theoretical basis and makes a general assessment, he argues that the classification in the markets is formed according to the information reflected by the prices. According to the EMH theory, stock market price movements occur randomly and show a random distribution. Therefore, it is unpredictable. According to this hypothesis:

- Investors are rational,
- They have complete information,
- It accepts that they expect to maximize their benefits. (Bayraktar, A. (2012)

"Finance means money, funds, resources or capital that individuals or institutions can benefit from. Financing refers to the provision of funds. Financial management, on the other hand, includes the use of funds as well as the provision of funds." It will be possible to explain the explanation of the working areas of financial management as follows, with an example of the questions that a person intending to establish a business will seek answers to before engaging in commercial activity:

1. What will be the type of activity, what kind of equipment will be needed, (Investment Decisions)

2. How and where to find the necessary resources, (Financing Decisions)

3. How to evaluate the profit obtained as a result of commercial activities, (Dividend Decisions) (Aydın, Şen, & Berk, 2014 p.3).

According to the traditional finance theory, where human psychology is not important, investors always exhibit rational behavior. Benefiting from the available information in the market, these investors gain maximum benefit by considering only risk and return according to traditional finance theory (Akdeniz & Turan, 2021 p.1017).

Behavioral Finance has emerged based on the idea that traditional finance models are inadequate in explaining what has happened in the markets recently. It is tried to be developed

by supporting the findings obtained from studies in the field of cognitive psychology in social sciences.

Behavioral finance, in essence, tries to reveal how people behave during financial decision making process. Behavioral finance assumes that investors will consider other variables besides the concept of risk and return when making an investment decision. However, it argues that the evaluation of all variables is not a perfect process, that the decision taken is not focused on utility maximization and comes from a decision-making process in which the decision maker is satisfied. The findings described so far belong to human nature. It is possible to enrich economic analysis by transferring all these findings to financial models. Since behavioral finance accepts people as normal rather than rational, as stated in this prediction, what will happen if the concept of rationality is removed or handled more flexibly is the subject of behavioral finance (Bostancı, 2003, p.1-10).

2.2 Expectation Theory

The prediction in the expectation theory, which is the most influential theory among behavioral finance studies, is the existence of an unlimited rational behavior in the face of uncertainty. According to Thversky and Kahmeran (1992), the feelings of loss are almost twice as much as the pleasure of gaining the equivalent of loss. For this reason, the determining factor in people's preferences is to avoid losing (loss aversion) (Bostancı, 2003 p.1-10).

Differences between Efficient Market Hypothesis and Behavioral Finance can be outlined in table below as follows:

Table 1. Differences between EMH and BF

Efficient Market Hypothesis	Behavioral Finance
It is argued that investors are always rational.	It argues that investors do not always act rationally.
Emotions do not affect the decisions of investors, investment decisions are made within the framework of logic.	Psychological factors are effective in the investor's decision making.
Investors can access all new or existing information.	Access to all information is impossible.
The information is fully reflected in the prices, it always contains it.	All available information is not always reflected in prices.
There is no difference between experienced and inexperienced investors.	Investors are likely to differ according to their demographics.
There are no market crises.	Market crises are possible.

Source: (Bektur and Gümüş, 2019, p.62)

Behavioral factors that cause investors to act irrationally in the decision-making process can be listed as follows.

- **Overconfidence**

According to the theory of the overconfident investor and the biased self-attribution model developed by Daniel et al. (1998), investors shape their decisions with two psychological tendencies. Overconfidence, that is, the investor attaches importance by relying on the available information he has obtained himself. Investors are overconfident in their own knowledge in this prediction.(Daniel et al. 1998 p.1839-1885.)

- **Overoptimisim**

Excessive optimism, which can affect investment recommendations and earnings estimates, is a belief that people will make positive inferences in line with their expectations. They think that

misfortune will happen to other people. It also causes the mistakes caused by excessive optimism to be misinterpreted in line with this belief (Böyükaslan, 2012 p.136).

- **Representation**

This tendency, which was first put forward by Kahneman and Tversky, mostly refers to decisions based on generalizations. If we try to explain the representativeness trend with investors, it is possible to generalize for the foreign currency that has been winning continuously for a certain period of time, and they tend to show a tendency that this value increase will continue. It will be understood that, unlike the data, generalizations dominate this prediction, which is based on limited statistical information and analysis (Sansar, 2016 p.142).

- **Mental Accounting**

It is observed that people who are interested in where the money comes from and how it is earned in mental accounting, while they take risks between returns of the stock markets and the salary (labor force income), they become more flexible with the amount obtained in the stock market and displaye a more cautious attitude towards the salary. In rational evaluation, money has only one value written on it. (Sansar, 2016 p.142)

- **Status Diverse**

Status quo deviation is the situation in which the investor is hesitant to sell these portfolio assets as a result of the significant impact of the impulse to avoid regret on the decision-making mechanism. However, the gain to be obtained by the rational investor is important, there is no emotional connection between the assets in its existence. A rational investor evaluates investment opportunities accordingly (Sansar, 2016 p. 143).

- **Anching**

It accepts that previously owned and trusted information or explanation about any subject has an impact on the decision-making mechanism. The anchoring effect, which is observed quite frequently in investor behavior, is the target and expectation figures (Yörükoğlu, 2007 p.19).

- **Wrong Consciousness**

For example, an investor who expects that the value of his financial assets will increase in case of a wrong consensus, will ignore the expert's warning from the investment expert that these assets will lose value. It will be assumed that someone with the opposite view is wrong, even if he is an expert. In fact, he will be accused of being malicious. Investors are closed to opposing views within the framework of this situation, and they are far from making rational decisions (Sansar, 2016 p.144).

- **Emotional Affection**

After overconfidence and optimism, the situation that causes the most serious prejudiced perception is emotional affect. It is an irrational attitude that develops prejudiced behavior as a result of overconfidence and optimism, which does not allow them to make a correct analysis, attaches great importance to the positive aspects of the situation they are in (Sansar, 2016 p.145).

3. Literature Review

Taner and Akkaya (2005), in their article titled "Investor Psychology and Behavioral Finance", which contains general information about finance managers, provided a brief evaluation of behavioral finance. It is stated that investor psychology and perception style significantly affect decisions and market development accordingly. In the study, in which two dimensions on the basis of behavioral finance are mentioned, "Psychology of Perception" and "Arbitrage Limits" are also mentioned. In this study, it is expressed as "While the decisions made by investors under the influence of their past experiences and the environment they live in shape the market, on the other hand, the restriction of arbitrage opportunities creates an obstacle to the elimination of price differences between markets, at least in the short term." It has been concluded that it would be more beneficial for investors to consider Behavioral Finance as a complementary approach to the technical and fundamental analysis methods

used in stock valuation, rather than as a competitor to these techniques.

Nevzat (2015), in the light of the findings obtained in his study, which also includes traditional finance theory in order to provide a balanced structure of markets and price movements, he performed an effort to examine the behavior of the investor together with the basic building blocks of behavioral finance. It has been determined that traditional finance is insufficient to explain the functioning of financial markets and the reason for price movements towards the end of the twentieth century. In this approach, it is understood that psychology, sociology and finance are blended together in the formation of Behavioral Finance. Contrary to what is defined in traditional finance theory, people do not act completely rationally. Investors act with psychological bias, manipulations and cognitive weaknesses. Investment decisions are actually shaped by thoughts that come from intuition and feelings. As a result of these behaviors that are far from rationality, different deviations and inconsistencies are observed in the markets that are far from information-based predictions.

The study, which touched on the financial investment habits and behavioral finance trends of the Covid-19 pandemic process, which has become today's current and global problem, was created by accessing the individual answers of 384 participants via online survey method. Considering the factors that prevent a person from making rational investment decisions, the crisis caused by epidemic diseases such as Covid-19 has an impact on the investor's decision-making preferences during periods of instability and uncertainty. The behavioral tendencies of the survey participants in their investments covering this period were examined with their investment habits and socio-demographic characteristics. In the part that constitutes the conceptual framework of the article, the concept of behavioral finance is mentioned and the psychological factors affecting financial investment decision making are supported by a literature review.

Sansar (2016) stated that in order to bring the highest level of reality to investment decisions, it is necessary to prevent the investor's assets from melting due to their inherent structural features and to help the investor make the right decision by allowing them to recognize their own characteristics. In classical economics and finance theories, human beings are evaluated as a rational being and are purified from their emotional and human characteristics. In order for investors to make the right decision, they must be exposed to many variables and have the ability to interpret these variables correctly at the same time. As a result of this study, it has been reached the necessity of training the investors in a way that will be beneficial in making decisions under the guidance of rational information and documents, by introducing the pros and cons of all tools, free from the perceptions of the market and the personal weaknesses of the investor, together with the possible risks and returns.

Gümüş and Bektur (2019), the aim of the study on the efficient market hypothesis and behavioral finance models, is to investigate the existence of the January anomaly, which disrupts the efficiency of the markets, by investigating the differences in financial theories such as the efficient market hypothesis from past to present. It has been applied for the January anomaly with the power ratio test for the BIST 100 index of behavioral finance, which stands against the rationality of the investors, which is defended by the efficient market hypothesis, and includes human psychology. In this study, the existence of the January effect was also investigated. BIST 100 January anomaly between the period of 2000-2018, including the year 1999, has been examined. A total of 19 annual returns were calculated by taking the arithmetic average of 228 monthly returns, including December, from 229 closing prices, and the arithmetic average of 11 months of each year, excluding January. January anomaly was detected in 13 of 19 years. It is observed that due to the fact that companies announced information that may affect the prices of their stocks in December, investors acted accordingly and resulted from the increase in the return in January, while the increase in the money volume in January shows the tax processes. With the news announced to the public, it was concluded that the investors' emotional and behavioral transactions in line with these announcements and news increased the January return and the markets were not efficient.

Ertuğrul (2020), in his study, which reveals that the demographic characteristics and investment

attitudes of a total of 395 academicians working in engineering faculties in Istanbul, during the financial decision-making stage as investors, literature review and statistical study are conducted. As a result of the data obtained, personal characteristics are reflected in investor attitudes in different ways, together with their characteristics in investment attitudes. It has been concluded that investors do not act rationally while making investment decisions and are under the influence of emotional factors. Another view is that by increasing financial literacy, it can contribute positively to the ability of an individual to act rationally. Another requirement is to provide information about state-supported investment instruments with the aim of increasing individual saving tendencies. In order to reduce the level of being affected by emotional orientations, the level of financial literacy and awareness should be increased within the scope of seminars and training programs.

Akdeniz and Yiğiter (2021), in their study, which examines the attitudes and behaviors towards the private pension system within the framework of the behavioral finance approach, it was created by a questionnaire study applied to 464 people who participated in the private pension system living in the province of Erzincan. Analysis was done using SPSS and AMOS programs. In this study, which is scaled over the Savings and Private Pension System (BES), the trends covering the subject of behavioral finance are evaluated by considering the BES dimension. The content of this dimension consists of overconfidence, optimism, regret avoidance, loss avoidance and representational tendencies. In the first part of the study, in which the questionnaire form was composed of three parts, questions were formed to determine the demographic characteristics of the participants. The second part is designed to measure the opinions of the participants about the private pension system. In the last part of the study, it was prepared to determine the financial behaviors towards the private pension system by using the 5-point LIKERT scale. As a result, positive and significant relationships were determined between behavioral finance tendencies and the hypotheses created.

Akdeniz and Turan (2021), the aim of their article on the effect of behavioral finance trends on the level of risk taking is to try to determine how the behavioral tendencies of these investors during the decision-making process affect the risk tolerance of the investors while analyzing the irrational behaviors of investors. It tries to determine what kind of behavioral tendencies investors have while making investment decisions, which cannot be explained in traditional finance theories. In the research, behavioral finance models are mentioned within the scope of its conceptual framework, and behavioral tendencies that hinder rational decision making process are emphasized. The research was created with the data obtained from 401 participants, consisting of the call center employees of a company operating in the telecommunications sector, selected by random sampling method. By using SPSS 23.00, behavioral tendencies and risk taking levels of investors were measured with descriptive statistics. Relationship (correlation), effect (regression) and difference (t-test) analyzes were performed. It was determined that the financial risk taking levels of the participants whose behavioral finance attitudes increased, also increased, the behavioral finance tendencies of the participants on the investment decision were close to a high level. In terms of gender, it was found that men had higher risk tolerance scores than women. This research supported that people do not act mechanically while making investment decisions, but show an emotional orientation.

Köroğlu et al. (2022), in their study, the issue of the Covid-19 pandemic and its impact on financial investment decisions was created by supporting the literature review, which was examined at the domestic and international level, under a separate title. In this study, which was carried out in the form of a questionnaire, questions were prepared to determine sociodemographic characteristics and investment trends in the Covid-19 period, and scale expressions based on 5-point Likert scale were created to determine behavioral finance trends. As a result of the analysis, it has been determined that investors are more risk-averse in the uncertainty environment created by the pandemic, they tend towards investment options that seem reliable and are relatively less risky, aiming to protect capital. Those over the age of 56, retirees, family members and women were

the groups with the highest risk and uncertainty avoidance. The groups with low risk aversion tendency are the ones who follow the economic events frequently and show themselves as financially literate.

4. Conclusion

The efficient market hypothesis assumes that investors are rational in the decision-making process and that there is no problem of accessing information, that is, asymmetric information, especially among investors. According to this hypothesis, prices already effectively reflect any information about financial instruments. As a result, since no price anomalies will be observed in this market, it will not be possible for investors to obtain an abnormal return in the medium and long term.

However, as everyone knows today, there may be some anomalies in financial markets. Especially the financial crises experienced and the excessive volatility (price bubbles) in the prices of financial instruments are among the most significant proofs of this. As investors are affected by psychological and sociological factors in the process of investing in any financial instrument, they may show some reactions such as excessive interest and indifference to financial instruments. In this case, the occurrence of price anomalies is inevitable.

In today's environment, it was agreed as a result of the literature review that traditional finance was insufficient to explain the functioning of the markets. Behavioral finance, in which psychology, sociology and finance are blended together, provides a more understandable basis for the explanation of investors' decision-making processes. It would not make much sense to evaluate the behavior of the investor without emotional and psychological factors during the decision-making phase. It will be in contrast to the fact that investors who can act on their cognitive weaknesses exhibit completely rational behavior as predicted by traditional finance. As it is agreed in the literature review, the level of financial literacy and awareness can be increased through various trainings and seminars, and the level of being affected by emotionally based wrong decisions and orientations can be reduced.

Behavioral finance does not or should not rival the efficient market hypothesis. Behavioral finance, which is actually a relatively new hypothesis, integrates some behavioral factors into the efficient market hypothesis, making traditional financial theories more comprehensive and more compatible with real-life findings. It is thought that in the studies to be conducted in this area in the coming years, if the constraints of both approaches are well examined and studies are carried out to eliminate or reduce the effects of these constraints, very beneficial results will be obtained for both academic and financial market professionals and investors.

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