



A Moderate Viewpoint to Efficient-Market Hypothesis and Behavioral Finance: the Efficiency of the Behavior of Participants in Transactions

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Abstract

After behavioral finance was introduced, disagreements arose between advocates of behavioral finance and the efficient-market hypothesis. The two financial areas were regarded as contradictory by experts in the profession. In contrast to the prevailing view, it seems that the two approaches are not at odds. Therefore, this paper aims to address these two financial areas through a moderate approach. The present study examined works existing in finance using the analytical-critical method and finally extracted the concept of “market behavior efficiency” through deductive reasoning. Accordingly, the present research's prevailing view states that “at any point in time, the degrees of concepts presented in the efficient-market hypothesis and behavioral finance prevail in the stock market,” influencing the prices. This paper concludes that the market price of any financial asset is composed of three components: producers’ cost (primary cost or value); the effect of investors’ proper reaction to the right and bad news about the firm issuing the financial asset; and the effect of investors’ improper responses to the available information (i.e., the effect of investors’ errors when making decisions). An analysis of the prevailing conditions in a market and factors influential on forming its available assets provides a vital insight into how related officials, domestic and international investors act. So, it brings about outcomes for determining investment strategies and academic literature.

Keywords: Efficient-Market Hypothesis, Behavioral Finance, Market Behavior Efficiency

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1. Introduction

In the economy, markets play a beneficial role in the optimized allocation of rare economic resources, contributing to economic development and improvement of social welfare. A market comprises a set of buyers and sellers, mostly investors and economic units, to the extent that the latter provide a considerable amount of their resources through the former. On the other hand, investors share the benefits of transferring their excess financial resources to economic units from the former's activities. Therefore, this kind of interaction helps financial resources be spent in generative units, leading to economic growth and boom.

Financial markets, including stock market and bond, are instances of markets addressed by many researchers. Financial markets consist of a set of investors and firms. Considering their expectations and using available information, the investors purchase the firms' stock or other financial assets based on market prices. Accordingly, what factors influence the price of these assets is of utmost prominence. Regarding financial assets, the extent to which the price of securities reflects available information and the factors affecting the prices have been dealt with by a large number of studies in the field of finance. According to Fama (1970), if at any point in time, the price of securities in a market fully reflects all the available information, the market is efficient. Later, several other researchers outlined the impact of other factors, namely, participants' behavior in a transaction, on the price of securities, calling this field of study behavioral finance. As advocates of the efficient-market hypothesis, a number of researchers have recently attempted to balance out findings of behavioral finance studies, which unfavorably influence the efficient-market hypothesis. On the other hand, behavioral finance proponents try to present evidence contradicting the efficient-market hypothesis in their studies. The way advocates of efficient-market hypothesis and behavioral finance behave towards each other has made others see the two approaches as contradictory. They address them in their books and studies with such an inconsistent attitude.

Adopting a moderate attitude, the present study was conducted to clarify the efficient-market hypothesis and behavioral finance. Contrary to the prevailing view, the study argues that the two approaches are not opposed. Accordingly, assuming that efficient-market hypothesis and behavioral finance are two ends of a spectrum, it asserts that "in the best case possible, the market fully follows efficient-market hypothesis and in the most undesirable case it complies with behavioral finance." Therefore, given that in the real work seldom does such a thing happen, that is, the market being in its best or most undesirable status, it is argued that "at any point in time, degrees of concepts introduced in efficient-market hypothesis behavioral finance prevail the market." This attitude is adopted in the present study because the market is regarded as a set of participants in transactions (i.e., buyers and sellers) who gather together and do business during specific periods in a specified place, whether physical or virtual. Accordingly, it was evident that such a situation (market) is directly influenced by how participants in transactions behave. Thus, it seems that the effect of participants' reactions in transactions is systematically and fairly reflected in the assets price. Therefore, it is safe to say that the prevalence of efficient-market hypothesis and behavioral finance in the market depends on the deficiencies in the behavior of those involved in transactions, determining the distance of this prevalence from ideal conditions. The presence of participants only conceptualizes the market, and the price of assets is specified in the supply and demand process of the same participants. Consequently, it is entirely natural that buyers' characteristics and preferences and producers' costs are reflected in the price of goods and products supplied in the market. Likewise, the present study states that the level of "market behavior efficiency" should be determined to decide the asset price's precision level.

A factor that seems to impact market behavior efficiency is how participants react

towards economic, political, and environmental conditions. Under such conditions, participants in transactions are regarded as a mediator between asset price and these conditions. It is argued that the more such conditions influence them, the more prices are systematically and fairly affected. It should be noted that their reactions to the conditions can be both rational and irrational. So, individuals' reasonable and unreasonable reactions to events they face the level of market behavior efficiency.

In the next section of the article, theoretical concepts and issues presented in standard economics and standard finance (modern) and theories and viewpoints introduced in behavioral economics and behavioral finance are explained. Subsequently, evidence on the way humans make decisions and mistakes they make are provided. Also, here market behavior efficiency and its related concepts are presented. In the end, the issues addressed through the paper are discussed, and conclusions are drawn.

2. Review of the Literature and Theoretical Foundations

2.1. Standard Economics and Standard Finance

The concepts presented in standard Economics and standard finance are almost similar. So, it seems that simultaneously addressing the two fields is advantageous to the present study's objectives.

2.1.1. Standard Economics

In standard Economics, there is a fundamental idea called rationality, which provides the basis for economic theories, predictions, and recommendations. That is, it is assumed that all people are rational. The assumption states that people appreciate the value of their everyday life options and select the best possible way to act (Ariely, 2008). Accordingly, in standard Economics, it is assumed that individuals systematically and purposefully opt for the best way of achieving their goals based on available opportunities.

Studying individuals' decision-making process can shed some light on some of the puzzling economic phenomena. Here, there is a classic question: why is water so inexpensive, whereas diamond is so expensive? Humans need water to survive while diamond is unnecessary for survival. Nonetheless, people tend to pay enormous amounts of money for a diamond than what is spent on the water. People's willingness to pay for a good is based on the marginal benefit yielded from an extra unit of the good. Although water is vital, the marginal use of an additional glass of water is small as it is plentiful. Contrarily, diamond is not necessary for one's survival, but as it is so rare, people tend to attach a sizeable marginal benefit to an additional diamond (Mankiw, 2010). The way people behave in such matters reveals their rational behavior. However, as presented in subsequent parts, evidence indicates that people do not always behave rationally in all areas.

In 1776, the economist Adam Smith, in his book entitled "*An Inquiry into the Nature and Causes of the Wealth of Nations*," stated that the market price of any particular commodity (goods or service) is regulated by the proportion between the amount brought in the market and demand of those who are willing to pay the natural price of the commodity (effectual demand). When the amount of the commodity transferred into the market is lower than the market's effectual demand, some people tend to spend more money on it. As a result, competition arises between them, causing the market price to soar beyond the natural price, such that the degrees of competitors' deficiency, wealth, and wanton luxury either stimulate or lessen their eagerness to compete. Among competitors of equal wealth and luxury, the same deficiency will generally occasion a more or less eager competition, to the extent that the commodity's acquisition happens to be of more or less importance to them.

When the amount of products brought to the market is larger than the effectual

demands, all of them can not be sold to the customers willing to pay their natural price. Consequently, the excess amount should be sold to those who tend to purchase them at a lower price. As a result, the price decrease will influence all the commodities transferred to the market, causing market prices to fall far less than the natural price. Moreover, when the amount of commodities brought to the market is simply sufficient to supply the effectual demand, the market price will naturally near the natural price or precisely will reach it.

Given what is mentioned above, all market product suppliers wish that the amount of products was never larger than the effectual demand. In comparison, others want to that the amount of available commodity was not smaller than the effectual demand. Accordingly, these two groups' measures cause the amounts of goods brought to the market to rapidly approach effectual demand or equal it, leading the market price to move towards the natural price.

Smith asserts that households and firms interact in markets as if they are guided by an "invisible hand" that leads them to desirable market outcomes. Adam Smith's idea is that prices are an instrument that directs economic activity through that invisible hand. In any market, buyers take account of the primary price when determining the demand levels. Sellers consider the primary price when deciding the degree of supply. Therefore, the outcome of the decisions adopted by buyers and sellers leads to the formation of the market's final price. So, in an open economy, the consumers' taste and the producers' costs are reflected in the prices.

Smith's idea is based on the assumption of peoples' being rational. He holds that participants in the economy are motivated by self-interest and that the "invisible hand" directs this self-interest towards promoting general economic well-being. In such a way, participants in transactions purposefully follow the best path to achieve personal interest. Thanks to the invisible hand, this act by participants results in improvements in the general welfare. It is evident that unless people act rationally, the invisible hand will lose its power. That is to say, if a large number of individuals behave irrationally in their transactions, general welfare will decrease.

Like Smith, Mankiw (2010) believes that the price of goods and services is formed during participants' supply and demand in transactions. Accordingly, to determine how any event or policy influences market behavior efficiency (i.e., the efficiency of participants' behavior in transactions), it is necessary first to decide how they affect participants' supply and demand process in transactions. In other words, to determine the degree of the effect of an event on market behavior efficiency, its effect on buyers' and sellers' behavior should be first decided.

2.1.2. Standard Finance

The assumption that participants in transactions are rational is among the fundamental concepts in standard finance as well. It is presupposed that ordinary peoples' decisions are unbiased and adopted to maximize their interests. Thus, they desire a higher expected output in return for their higher levels of risk-taking. Likewise, standard finance presupposes that if participants in a transaction commit an error in their decision-making, it indicates their lack of solidarity. They cannot influence prices (Baker & Nofsinger, 2010).

Efficient-Market Hypothesis (EMH)

One of the fundamental concepts in standard finance is an efficient-market hypothesis. According to Fama (1970), an efficient market refers to how securities prices fully reflect all the available information. Moreover, he had previously defined an efficient market as a market where actual prices are reasonable estimates of intrinsic values at any point in

time (Fama, 1965). Three levels of efficiency presented in Fama’s study 1970 include (1) weak-form efficiency, in which the set of presented information is only historical prices, (2) semi-strong-form efficiency, in which the collection of information is effective on forming prices that are available to the public (e.g., declaring annual earnings, stock splits), (3) strong-form efficiency, in which all information, public and private, influences prices formation. That is, there must be no one who has monopolistic access to any kind of information regarding the formation of prices (Fig.1. shows market and various levels of its efficiency).

Furthermore, according to Fama, future securities prices occur completely independent of past changes in the same prices. In other words, price changes follow the Random Walk Model. Hence, no one can predict future changes and earn excess returns based on past price changes. Fama (1970) has introduced conditions for the efficiency of investment markets that can efficiently adjust prices according to the information. He contends that in an efficient market: (1) there is no transaction expense for doing business using securities, (2) all the available information is accessible to the participants in a transaction at no cost, (3) there is a unanimous agreement regarding the implications of current information for the current price and future distribution of any securities. Moreover, Fama holds that though these conditions are sufficient for market efficiency, they are not, however, necessary. For instance, as regards the second condition, a market can be efficient if an adequate number of investors have easy access to the available information.

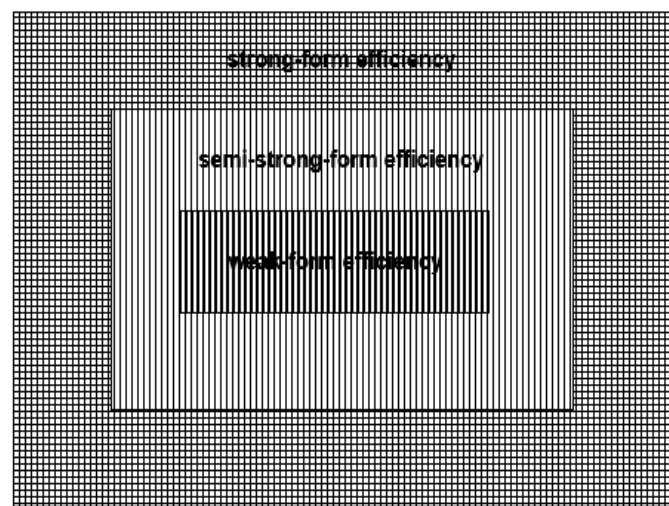


Figure 1. Various Levels of Efficiency

The efficient-market hypothesis suggests that the smartest people cannot outperform the least intelligent ones in investment performance. Their superior understanding has been previously reflected in stock prices (Shiller, 2015). The fundamental assumption of the efficient-markets hypothesis, such that advocates of behavioral finance have strived to reject this hypothesis thus far.

Considering that the efficient-market hypothesis is based on investors’ rational behavior, it is safe to conclude that the hypothesis assumes only the information that determines supply and demand levels. In other words, investors’ access to new information is regarded as a motivation to determine their demand level. Likewise, the information decides the level of supply as well. Since it is assumed that participants in a market act rationally, their supply and demand are determined through rational analysis. As a result, assets price nears or equals its actual price. Nonetheless, the critical point taken into account in the efficient-market hypothesis is that participants in transactions

might act irrationally, hence the distance between asset price and actual price and the reduction of market behavior efficiency.

2.2. Behavioral Economics and Behavioral Finance

A fundamental observation of human society reveals that individuals who are in contact with each other regularly tend to think similarly. Knowledge of the origin of this similar thinking is of utmost significance as it can help us judge the rationality of some theories. Consequently, if this assumption is correct, and many transactions possess irrational thinking, it can lead to market booms and busts (Shiller, 2015).

Economic theories of Herd Behavior and Information Cascades (i.e., sequentially transferred information) suggest that even entirely rational individuals can engage in herd behavior as they base their decisions on others' judgment. This herd-based behavior is caused by information cascades (Shiller, 2015). It is because people tend to resort to secondhand information than to their personal experiences more widely.

Though the above-mentioned economic theories are not conceived of as a stock market reaction theory, they can provide the grounds for analyzing how rational investors are misled. So, as the level of market prices is influenced by how all investors behave, the odds are that assets are not properly priced even if all the investors are rational. What is mentioned above implies that the assumption of people being rational, which is the basis for standard Economics and standard finance, does not prove to be true at all times and under various conditions, hence the introduction of behavioral economics and behavioral finance.

2.2.1. Behavioral Economics

The revolution of behavioral economics, which incorporated psychology and other social sciences into economics, initially occurred in the 1980s, even though it was not publicly known until the 1990s (Shiller, 2015). Contrary to the assumption of standard Economics, people's rationality states that people are usually irrational.

Some of the behavioral economics concepts introduced by Mankiw (2013) include: (1) people are not always rational. Peoples' systematic mistakes identified in human decision-making studies reveal that they are overconfident, give too much weight to a small number of vivid observations, are reluctant to change their minds, (2) people care about fairness, and (3) people are inconsistent over time.

2.2.2. Behavioral Finance

Modern finance was seriously addressed when Prospect Theory presented by Kahneman and Tversky (1979) and Tversky and Kahneman (1981) was included in asset pricing studies. Prospect Theory is developed based on a variety of experimental-psychological researches regarding human choice-making in risky conditions. Therefore, the theory analyzes human behavior when decisions making and choices under risk-laden conditions. Previously, Tversky and Kahneman (1974) had explained biases that occur during decision-making under uncertainty. Likewise, it seems that behavioral finance issues rose to prominence when findings obtained by several studies (Banz, 1981; Reinganum, 1981; DeBondt and Thaler, 1985, on investors' overreaction towards news; Shefrin and Statman, 1985, on disposition effect; Lamoureux and Sanger, 1989; Saunders, 1993, about the effect of weather in New York on stock price; and Benos and Johec, 2013, on the impact of patriotism on stock prices) indicated a variety of effects efficient-market hypothesis and Capital Asset Pricing Model (CAPM was developed by Sharpe, 1964, Lintner, 1965, and Black, 1972), as the main bases for modern finance, could not explain. In other words, the capital asset pricing model could not explicate these effects, showing that the information is not properly reflected in the prices, hence being

contradictory to the efficient-market hypothesis. Other effects such as the end of the month, end of the year, January, weekend, Yom Kippur, and Value Line effects posed new challenges to modern finance theories, hence introducing behavioral finance to solve these issues. It should be noted that some of the effects are called “anomalies,” defined as a tolerable aberration from a dominant belief system (Frankfurter & McGoun, 2002).

Combining behavioral and cognitive psychological theory with standard Economics and finance, behavioral finance seeks to shed light on how people make decisions. The increased number of behavioral finance studies has been due to the inability of traditionally expected utility maximization by rational investors in explaining most of the experimental patterns in the efficient market framework. Accordingly, behavioral finance attempts to resolve these incompatibilities by providing explanations based on human groups and individual behaviors. In other words, behavioral finance addresses the effect of the irrational reaction of participants in transactions on their decision-making as well as the reflection of such a reaction in stock exchange prices. The effect influences the prices through an improper stock sale and purchase lines, based on second-hand information obtained from other investors’ way of decision-making (for more information, refer to Fig.2).

So, one of the underlying assumptions of behavioral finance is that the information structure and characteristics of participants in transactions systematically influence peoples’ investment-related decisions as well as market outcomes (Baker & Nofsinger, 2010).

Frankfurter and McGoun (2002) contend that advocates of modern finance are trying to assimilate behavioral finance with modern finance, hence using “anomalies literature” instead of “behavioral finance.”

Instances include Ball (1996) and Fama’s (1998) opposition to behavioral finance trying to marginalize and discredit it.

Another study suggests that people are assumed to be rational in standard finance, whereas in behavioral finance, the assumption is that they are normal. Moreover, according to the same study, the battle of market efficiency continues, and the believers will succeed unless nonbelievers do not lose (Statman, 1999).



Figure 2. Behavioral Finance: Irrational behavior of participants in transactions

3. The Truth about Human and Market Behavior Efficiency

According to what has been presented thus far, the asset market price is directly affected by participants' behavior in transactions. Therefore, if their behavior is rational, assets price is most likely appropriately constructed; that is, commodities market price

nears or equals their actual price. Nonetheless, evidence shows that people do not always act rationally. Accordingly, it becomes clear that people make mistakes in the subsequent sections during decision-making, hence the likely distance between goods price and their actual price.

3.1. The Truth about Human

3.1.1. Human Decision-Making

In the book entitled "*How We Decide*" in 2009, Jonah Lehrer stated that dopamine neurons help humans predict events and phenomena that are predictable. Furthermore, he says though these cells are highly helpful, they can lead people astray, particularly when confronted with random events. Regardless of the randomness of events, brain cells seek lucrative patterns. Thus, humans seek to identify significant trends through an imagined system rather than considering random events. As a result, since stock price volatility occurs randomly, the odds are that people make mistakes when predicting stock prices, leading to improper choices. Therefore, it is safe to conclude that over time a dopamine system can occasion dangerous stock-market bubbles.

To explain how dopamine neurons function, suppose an investor invests 10 percent of all his/her assets in the stock market. After a short period, he/she observes that the market is dramatically booming. It is at this very point in time that the fictive-error learning signal appears. While he/she is enjoying the profits, his/her ungrateful dopamine neurons are fixated on the profits he/she has missed, wishing to have invested all of his/her assets instead of 10 percent. As such, cells compute the difference between the best possible return and actual return.

Consequently, when there is a massive difference between what has happened and what could have happened, which is an unfortunate experience, it is more likely that an individual takes completely different measures the next time. Therefore, it is safe to argue that these computational signals are the leading cause of many financial bubbles. It seems that when the market is going up, individuals are led towards larger investments in the boom. Accordingly, their greedy brains are convinced that they have discovered the stock market solution, such that they do not think about the possibility of losses. But, the very time investors are convinced that there is no bubble, the bubble bursts. The opposite can exist when the market experiences a downward trend.

3.1.2. Human Errors

One of the concepts of human errors is called the Bad apple Theory, which states that human errors cause two-thirds of accidents. Furthermore, the theory suggests that a system's safety problems are occasioned by a few bad apples playing the system's roles. The bad apples do not always follow the rules as well as do not always watch out carefully (Dekker, 2014). Also, Lee and Harrison (2000) hold that human frailties are identified as causing many accidents. Even though most of them are predicted in safety rules, prescriptive procedures, and management treatises, people will not properly perform what they should have done.

As a result, human errors can be the cause of many market problems. The errors might result from features of peoples' tools, tasks, and operating environment. Since the way people act influences the group; a holistic view, it is safe to conclude that even the errors or irrational behavior of some of the participants in transactions can considerably divert assets prices from their actual price, hence affecting the level of market behavior efficiency.

3.2. Market Behavior Efficiency

Our view towards the efficient-market hypothesis and behavioral finance is a moderate one. We tend to address entirely impartially, believing that they are contradictory in no way. From our point of view, the market is a set of participants in transactions. Moreover,

as previously mentioned, we hold that the available assets price is influenced by how the participants decide about their supply and demand levels. As it was implied that people tend to commit errors when making decisions and their actions are usually error-laden, the odds are that assets price is distant from their actual price at any point in time. The distance is caused by mistakes in participants' decisions and choices.

According to what has been presented thus far, we believe that the market price of any financial asset in any period is composed of three components: (1) producers' cost (primary cost or value), (2) good and bad news about the firm issuing financial asset, which is reflected in prices through the effect of investors' proper reaction to the news, (3) the effect of investors' improper reaction to the available news, which can reduce to zero. Therefore, a market enjoys high behavioral efficiency levels when a considerable number of its transaction participants behave rationally and do not commit errors when making decisions. Accordingly, the price of available assets in such a market nears or equals its actual price. It seems that as the number of irrational participants, who make wrong decisions, is larger, the lower the levels of behavioral efficiency of that market will be. Different markets have varying degrees of behavioral efficiency, whose high and low levels depend on participants' rational and irrational behaviors.

Evidence reveals that peoples' reactions to various information and conditions differ; that is, an individual may react rationally to some information and conditions while he/she shows an irrational behavior towards some other information and conditions. Thus, it is likely that the market enjoys different behavioral efficiency levels in various economic and political conditions. Moreover, it seems that participants in a transaction act as a mediator between asset price and the conditions. The conditions affect participants' behavior, and their reaction to these conditions influences asset price, hence the change in the levels of market behavior efficiency (Fig.3). It depicts how levels of behavioral efficiency change. It also helps us understand the relationship between the three fields: efficient-market hypothesis, behavioral finance, and market behavior efficiency).

For example, Arshada et al. (2016) ranked stock market efficiency levels in 11 countries during various economic boom periods and busted in different business cycles in 14 years from 1998 to 2012. Their findings revealed that the rank of various countries' stock market efficiency was affected by different turns in business cycles. That is to say. The results indicated that the prevailing conditions in countries and the world significantly affect stock market efficiency. Accordingly, we argue that given participants' rational and irrational reaction to these conditions, countries' level of market efficiency has changed in various periods.

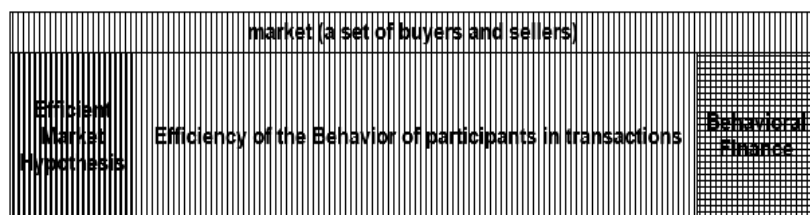


Fig.3. Market Behavior Efficiency

Ariely (2008) contends that peoples' irrational behaviors are not random and senseless. Instead, they are systematic, and as their frequency is high, they can be predicted. Accordingly, it seems that predicting participants' irrational behaviors and errors and determining the effect of these behaviors on assets price will determine the deviation of the market price from actual price. Therefore, as mentioned previously, market assets price comprises three components: producers' cost and participants' behavior and predictable errors. However, the remaining component, information (news), is

unpredictable and is randomly reflected in the prices. Thus, at any point in time, market assets price can be partly estimated, and the lower the level of market efficiency, the easier this price estimation will be and vice versa.

4. Concluding Remarks

Markets play a valuable role in allocating rare economic resources, mostly through market assets price based on transactions. Accordingly, an analysis of the prevailing conditions in a market and factors effective on forming its available assets provides a vital insight into how related officials, domestic and international investors act. So, it brings about outcomes for determining investment strategies and academic literature.

In studies concerning the stock market, two financial areas, namely, efficient-market hypothesis and behavioral finance, have caught the attention of their advocates as well as other related members. The prevailing view on these two fields implies an intense contradiction between them, such that proponents of each approach attempt to provide evidence supporting their area and/or rejecting and discrediting the other perspective.

The present study adopted a moderate viewpoint in these two areas. Accordingly, the current research's prevailing view states that "at any point in time, the degrees of concepts presented in the efficient-market hypothesis and behavioral finance prevail in stock market," influencing the prices. It regards the market as a group of buyers and sellers. It is safe to argue that prices are directly affected by participants' behavior in transactions as asset prices are formed in the same participants' supply and demand process. Thus, it is likely that deficiencies are affected by prices through participants' irrational behaviors. Hence, the introduction of the concept of market behavior efficiency, which is directly influenced by participants' behavior in transactions.

Besides, participants in transactions are conceived as a mediator between economic-political conditions and assets price. It should be noted that the effect of their reaction to each other is transferred into prices. Consequently, the velocity and type of effectiveness of securities price under these conditions are dependent on the velocity and type of reaction participants have to these conditions. Moreover, evidence indicates that people react differently to information and conditions. In other words, the odds are that an individual can behave rationally to some information and under some conditions. At the same time, he/she shows irrational behavior towards other information and conditions, hence a market's likely varying efficiency levels under various political and economic conditions.

According to what has been presented thus far, it is safe to conclude that a market will not enjoy high market behavior efficiency levels unless it contains a considerable number of its members showing rational and error-free behavior. So, the asset price available in such a market is nearing or equals to its actual price.

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