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Traditional versus Behavioral Finance Theory

La théorie de la finance traditionnelle contre la théorie de la finance comportementale

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Abstract

According to traditional finance theorists, in an efficient market, investors think and behave "rationally" when trading, buying, and selling stocks, and each investor considers carefully all available information before making any trading or investment decisions. The theory of the financial market efficiency or efficient market hypothesis (EMH) corresponds to the theory of competitive equilibrium applied to the financial securities market. Indeed, efficiency assumes the atomicity of the market actors and that all the participants are in active competition with the aim of maximizing profits, so that none of them can alone influence the level of prices which will establish themselves in the market.

However, behavioral finance, whose main purpose is to study the real behavior of investors in the financial markets, based on social and cognitive psychology, has come to demonstrate with convincing evidence that investors make major systematic errors and that psychological biases affect investors' investment decision-making. In other words, behavioral finance claims that investors tend to have psychological and emotional biases that lead to making irrational investment decisions.

In this article, we will try in the first part to examine the nature and the extent of knowledge on the theory of the financial markets efficiency, one of the fundamental paradigms in traditional finance. Despite its considerable contribution to economic and financial theory, it has been hotly contested in recent years. In the second part, we will focus on the theory of behavioral finance, its main theory (prospect theory), its main biases and heuristics as well as its contribution and its limits.

Keywords: Standard finance, Behavioral finance, Efficient market theory, Prospect theory, behavioral biases.

JEL Classification: G41

Paper type: Theoretical Research

Résumé :

Selon les théoriciens de la finance traditionnelle, dans un marché efficient, les investisseurs pensent et se comportent « rationnellement » lorsqu'ils négocient, achètent et vendent des actions, et chaque investisseur tient soigneusement compte de toutes les informations disponibles avant de prendre des décisions d'investissement. La théorie de l'efficience des marchés financiers correspond à la théorie de l'équilibre concurrentiel appliquée au marché des titres financiers. En effet, l'efficience suppose l'atomicité des agents et que les participants sont en concurrence active dans le but de réaliser des profits, de telle sorte qu'aucun d'entre eux ne puisse à lui seul influencer sur le niveau des prix qui s'établiront sur le marché.

Cependant, la finance comportementale, ayant pour finalité l'étude des comportements réels des investisseurs au niveau des marchés financiers, en se basant sur la psychologie sociale et cognitive, est venue démontrer avec des preuves convaincantes que les investisseurs commettent des erreurs systématiques majeures et que les biais psychologiques affectent la prise de décision d'investissement des investisseurs. En d'autres termes, la finance comportementale prétend que les investisseurs ont tendance à avoir des préjugés psychologiques et émotionnels qui conduisent à l'irrationalité.

Dans cet article, nous allons essayer dans une première partie d'examiner la nature et l'étendue des connaissances sur la théorie de l'efficience des marchés financiers l'un des paradigmes fondamentaux en finance traditionnelle. En dépit de son apport considérable à la théorie économique et financière, elle se trouve vivement contestée depuis ces dernières années. En deuxième partie, nous allons nous focaliser sur la théorie de la finance comportementale, sa principale théorie (théorie des perspectives), ses principaux biais et heuristiques ainsi que son apport et ses limites.

Mots clés : Finance traditionnelle, Finance comportementale, Théorie des marchés efficients, Théorie des perspectives, Biais comportementaux.

Classification JEL : G41

Type de l'article : Article théorique.

Introduction

The key goal of traditional finance theory is to understand financial markets using mathematical models that assume the rationality of investors. The field and study of finance have long been based on the idea of “efficient markets.” This term may mean different things to different people, but the Efficient Market’s Hypothesis (EMH), which classical finance theory is built upon, states that at any given moment in time the price of any and all assets and securities being traded is correct and reflects all available information. According to (Nofsinger, 2017) the field of finance has evolved over the past few decades based on the assumption that people make rational decisions and that they are unbiased in their predictions about the future. Individual investors are considered rational that take cautiously weighted economically decisions every single time. A rational investor can be defined first as a one that always updates his beliefs in a timely and appropriate manner on receiving new information, and second as one who makes choices that are normatively acceptable. (Massey & Thaler, 2005).

These rational investors focus on the relevance of public information circulating on the market, to their private information, to the anticipation of private information held by other economic agents and the calculation of the speed of incorporation and integration of data into the price of securities. However, this theory is unable to provide explanations and suitable and adequate demonstrations of some anomalies recently spotted in the financial markets, namely over/undervaluation, excess volatility, speculation bubbles, size effects and calendar effects, then it is clear that the questioning of the efficiency hypothesis will subsequently invalidate the notion of absolute rationality of stakeholders in the financial market, where any stakeholder is in the conquest of maximizing his profit regardless of the effort that must be made in order to manage the analytical calculations and the sorting of useful information.

Behavioral finance attempts to explain human behaviors in markets, importing theories of human behavior from the social sciences. Psychologists and economists have researched this field since the early 1970s. Behavioral economists study how people behave, learn and make economic decisions in reality. Behavioral finance emphasizes that rationality cannot be assumed as something that people should feature, whereas the term ‘irrationality’ in conventional economics means something that would and should be eliminated in a competitive market. Behavioral finance has given much interest in relation to investment decision-making. Its theories are based on cognitive psychology, which suggests that human decision processes are subject to several cognitive illusions. It takes into consideration different psychological biases that human possesses. These biases eventually lead to irrational decisions. Behavioral finance considers the theories based on the psychology to elucidate the anomalies in the financial markets.

The traditional finance or standard finance theories are based on the two major assumptions i.e. the investors are rational and the market is efficient (Fama, 1970). But neither the investors act rationally nor the market is efficient. Traditional finance theoretical body consists of many financial constructs and trends such as Expected Utility Theory, CAPM, and Modern Portfolio Theory. However, in this paper we are going to focus on the main influential theory that shaped the financial scene for decades which is the efficient market hypothesis, and also we are going to concentrate on the prospect theory and that consist of the behavioral finance paradigm.

1 Traditional finance:

Financial Market can be categorized into Traditional Finance often identified as conventional finance, and the recently developed Behavioral Finance. Earlier in the Financial Market, the focus was on the Traditional Finance theories of Efficient Market Hypothesis and Harry Markowitz Model based on investors’ rationality. Harry Markowitz who was a pioneer in the

development of modern portfolio theory which was based on the expected return of the portfolio, standard deviation and correlation within the portfolio. Apart from that, the other pillars of the modern portfolio theories include the Efficient Market Hypothesis (EMH) and the Capital Asset Pricing Model (CAPM). Research in finance has set itself the objective of designing a theoretical framework to make markets chance intelligible. From a reduced number of assumptions, traditional finance has managed to unify a set of results (CAPM formula, formula Black-Scholes, informational efficiency or Modigliani-Miller theorem). This success has been able to make some researchers consider that finance is "the most scientific of all social sciences".

Different theories have been developed and have broadly classified the financial market into Traditional Finance and Behavioral Finance theories. Traditional theory is based on the concept that investors act rationally, their aim is to maximize profit and they are usually risk-averse. These assumptions that the market is efficient are violated because of speculations and unpredictability in the market often termed as market anomalies.

1.1 The Efficient Market Hypothesis (EMH):

The efficient-market hypothesis emerged as a prominent theory in the mid-1960s. We can't state the hypothesis of market efficiency without mentioning the preponderant role of Eugene Fama for the conception of the said theory of efficiency or HEM (the hypothesis market efficiency). Indeed, it is thanks to the application of probabilistic mathematics to the financial environment, during the 50s to 60s, which served as a starting point for the modeling finance and the immediate development of new market finance tools. In 1970 Fama published a review of both the theory and the evidence for the hypothesis. These efficient market Hypotheses give the efficient machine processing information's related to the stock market and its efficiency that provide better decision-making ability of investment for present and future profits or gains.

To stand on solid ground, some definitions of Efficient Market Hypothesis should be mentioned before proceeding any further in elaboration of this matter. According to Fama's definition of market efficiency is logically intuitive: it means that asset prices in financial markets fully reflect all the available information (Fama, 1970). The efficient market hypothesis (EMH) assumes that efficient markets are efficient because prices in the market incorporate all types of information to the degree that individual investors cannot beat or outperform the market. EMH is popularly known as the random walk theory since prices are equally expected to rise or to fall and no investor can predict its path. In fact, according to (Malkiel, 2003) *the market and stocks could be just as random as flipping a coin*. The term "market efficiency" was first used in the context of financial markets by Fama (1965),

Fama clearly defined an efficient market as a market where there are large numbers of rational, profit maximizers actively competing with each other trying to predict future market values of individual securities, and where important current information is almost freely available to all the participants. According to the efficient market hypothesis, information in financial markets is supposed to be incorporated into stock prices. Accordingly, when investors try to gain profit by investing in undervalued stocks, EMH assumingly deems their trials futile. In other words, an average investor, whether an individual, or institutional (a pension fund, or a mutual fund) cannot hope to consistently beat the market and the vast resources that such investors dedicate to analyzing, picking and trading securities are wasted. (Shleifer, 2000).

According to (Shleifer, 2000) EMH is built on three assumptions that form its theoretical bases:

- Investors are assumed to be rational and value securities on the basis of maximum expected utility.

- If investors are not rational, their trades are assumed to be random, offsetting any effect on prices.
- Rational arbitragers are assumed to eliminate any influence irrational investors have on the market/security prices.

Consequently, the efficient market hypothesis is essentially related to two main concepts; the importance of information which is efficiently incorporated into asset prices at any point in time and cannot be used to foretell future price movements as assumed by the random walk theory, and the rationality of investors assuming that market participants are rational actors, who seek utility maximization.

1.2 The importance of information:

According to FAMA, the theory of efficient markets defines the efficiency of a market by its ability to perform its functions. A market is therefore efficient if the prices in it constitute reliable foundations for its actors to act. This highlights the informational element which will then take on an unavoidable dimension in this hypothesis. The classic definition of an efficient market is that of a market where the prices of financial assets generate and take into consideration all available information, no regulation or revaluation is possible to maintain the fair value of the securities at all times, it considers that in a sufficiently large market where information spreads instantly, taking the example of the stock market where operators react correctly and almost immediately to information if they have the cognitive ability to interpret it correctly. Thus, the price of a financial asset is at all times an unbiased estimate of its intrinsic value. It is therefore impossible to predict its future variations since all known or anticipated events are already incorporated into the current price. (Fama, 1970)

However, informational efficiency is fundamental for the proper functioning of markets, since it gives credibility and attracts investors. As a result, this efficiency is very fundamental for the development of financial markets. This is the reason why all the authorities of the markets and stock exchanges seek to establish the regulatory foundations and organizational to achieve this situation of informational efficiency. However, the reality of the markets means that the transmission of useful information via the price channel is not obvious since investors are hampered by the lack of information.

1.3 Investors' rationality:

The second acceptance of the concept of efficient financial markets depends, first of all, of the investors' rationality. According to this acceptance, as well as the principle of valuation, if the price of a financial asset reflects the expectation of future income it generates, then the market is efficient. The financial market is said to be efficient because prices listed assets only reflect investors' expectations of their future income. In fact, investors must not only understand correctly the base value of assets, but also understand correctly the actual model. Therefore, it is necessary to have an inventory of information large enough to reasonably analyze the trend prices in order to obtain the best conditions required. EMH is mainly based on the rationality of market actors; investors have full and instant information useful for decision-making, they react in a way appropriate to the data they receive, however, inspired by the maximization of the expected profit, this theory highlights that market players are perfectly capable of behaving precisely regardless of the nature of the information circulating and must maximize their potential gains for any given level of risk, disregarding their cognitive abilities that can interfere with their decision-making will at any time.

1.4 Forms of Efficient Market Hypothesis:

An efficient market hypothesis is a theory about participants knowing all the available information, and the prices reflecting this information, thus investors can make rational decisions when they exercise stocks trading. Consequently, abnormal returns become hard to

be achieved. This idea has been applied to models such as theoretical studies and empirical ones of financial securities prices. There are three forms of market efficiency.

Weak form is consistent with the random walk hypothesis, i.e., stock prices move randomly, and price changes are independent of each other. It states that security prices reflect all market information regarding the security, i.e., historical price data. Therefore, it is not possible to beat the market by earning abnormal returns on the basis of technical (trend) analysis (where analysts accurately predict future price changes through the chart of past price movements of stocks). The weak form hypothesis assumes that security prices are adjusted rapidly on the arrival of new market information, i.e., past price and return trends. So it is not possible for investors to earn abnormal return on the basis of previous information. Researchers test the weak form efficient market hypothesis through measuring autocorrelation among returns and by examining the impact of different trading rules on stock prices.

According to semi-strong form EMH, prices adjusted rapidly according to market and public information, i.e., dividend and earnings announcements and political or economic events. So it is not possible to earn abnormal returns on the basis of fundamental analysis. Semi-strong form means that all public information is incorporated in the prices of financial assets in the financial market. Therefore, investors will not be able to select undervalued securities and no individual investor would be able to gain abnormal profits by exploiting such knowledge. In this form of efficiency, current information is available to everyone. Consequently, market prices already reflect all current available information that includes balance sheets, income statements, dividends, earnings, etc.

In the strong form of market efficiency, prices are supposed to incorporate all types of information whether public or private. The core assumption of this form is that no investor can make higher profits even with earlier access to inside information. The actual situation of financial markets relatively supports the weak and semi strong forms of efficiency and that market cannot be completely efficient in the strong form.

1.5 The implications of market efficiency on financial managers:

According to the three forms of the efficiency of the financial markets that we have seen previously, the prediction and the correct interpretation of the information, on a financial asset, are two necessary elements to predict the future evolution of its price. Thus, the theory of informational efficiency consists in saying that the knowledge of the information which may affect the rise or fall of the price of a financial asset would not allow its holder to make profits on the financial market as long as the other players (suppliers and buyers) have the same information simultaneously. This information has different impacts on the price of an asset depending on its nature, hence some examples information and its consequences:

1.5.1 The impact of inside information:

The developed studies in this sense have shown that faced with this type of information, speculators must analyze the information correctly to predict future price movements, in addition to the periodic analysis of all internal and external constraints and information of the company will allow speculators to anticipate some events even before they occur.

1.5.2 The impact of external information:

In this context, several studies have been developed to assess the impact of public information on asset prices. These studies have shown the importance of the impact of macroeconomic events (politics, trading...) on asset prices, because this information is capable of influencing the market in its globally or on a few assets.

Take the following example, any change in the interest rates of a country is an event that takes on information at the same time. Knowledge of such information before it is disclosed

becomes particularly interesting for an investor. If they manage to anticipate a change in interest rates, through reliable sources, they may generate profits either by an upward or downward change of these stock market investments. Thus, if there is an increase in interest rates, it will lower the prices of fixed-rate bonds already issued and therefore cause a transfer of capital to bonds because the equity market will be less attractive.

Conversely, if there is a fall in interest rates, this will increase the value of the stock price. Since this will make it possible to reduce the financial costs of indebted companies and to others to negotiate more than competitive rates by borrowing for future investments. In a manner generally accepted in the field of financial analysis of the evolution of stock market prices, analysts should have a general idea about the state of the informational efficiency of the market, and also control of information flows (financial information shared by companies, by specialists, or by the political or monetary authorities, etc. likely to have an influence on the price of the securities.

So the form of informational efficiency of a financial market is a good indicator of its sensitivity to any information (historical, public or private). Hence, the determination of this form will allow analysts and financial managers to effectively reduce.

1.6 Critics of Traditional Finance Theory

The traditional finance theory is criticized for a number of reasons which are mentioned by many opponents of the hypothesis. Efficient Market Hypothesis assumes that all investors perceive all available information in precisely the same manner as if they were acting as one calculator. Moreover, according to EMH no single investor is ever able to attain higher profits than another with the same number of invested funds: their equal possession of information means they can only achieve identical returns.

Traditional finance is based in particular on the hypothesis of efficient markets, which is what specifically questions behavioral finance. In EMH theory, the price of financial assets reflects all the available public information. This is a perfect world; price is the perfect indicator of value. The past does not broadcast any sign of the future; we speak of "random walk", which means that the price of an asset is random in the short term if we consider the absence of relevant information or anticipation of results.

From a theoretical perspective of an efficient market, the volatility of asset prices should evolve within reasonable margins, which has been questioned by (Gervais & Odean, 2001), which highlight that stock prices are characterized by more excessive volatility predicted by the efficiency hypothesis. (Gervais & Odean, 2001) announce that the volatility of prices relatively to fundamentals is very high. The results of this study are consistent with the research made by (Shiller, 1980), one of the first authors to identify the existence of excessive volatility in the financial markets. He compared price and fundamental volatility. The study's purpose was to compare the evolution of the prices observed on the market with the optimal prices determined separately, which can be determined on the basis of the dividends collected which is unfortunately different from the stock's calculated fundamental value.

Even though EMH is the pillar of the traditional finance but in spite of that many questions are there which the traditional finance cannot answer and hence an alternative to the traditional finance emerged known as the behavioral finance.

2 Behavioral finance:

Pioneering work on questioning the markets efficiency is those of KAHNEMAN and TVERSKY (1979) which are the basis of behavioral finance. This new stream of research aims to highlight the real behaviors (which are not always rational) of individuals when faced with risky choices as opposed to the rationality hypothesis, which assumes that individuals seek to maximize the expected utility of their wealth. Researchers in this new stream of

research, including Shiller, believe that the theory of market efficiency, based on the rationality of investors, is unfounded. For them, real behaviors, subject to cognitive and non-rational biases, would explain how in many situations observed on the markets appear inefficiencies.

Behavioral finance is a respectively new field that aims to join behavioral and cognitive psychological theory with conventional economics and finance to provide explanations for why people make suboptimal financial decisions. Economists have been considering financial behaviors for centuries, but behavioral economics formally began when Pioneers, Daniel Kahneman and Amos Tversky, published a 1979 paper on prospect theory and the way individuals approach economic risk. (Nofsinger, 2017) commented on behavioral finance that ***it studies how people actually behave in a financial setting. Specifically, it is the study of how psychology affects financial decisions, corporations, and the financial markets.***

Behavioral finance is interested in studying the impact of psychology on decisions financial information from investors, markets and organizations. The main question is: what people do and how they do it? Research methods are mostly (but not exclusively) inductive. Behavioral researchers collect facts about individual behavior (based on experiences, surveys, field studies, etc.) and the organize themselves into a number of highlights. The psychology of decision-making can be explored in various ways. For a quarter of a century, efforts were focused on cognition. For example, the heuristics and bias literature initiated by Tversky and Kahneman (1974) and Kahneman and Tversky (1979). Their main interest was on issues such as how do people think? How do they decide? The current study continues to build on the cognitive research.

Behavioral finance is the study of the influence of psychology on the behavior of financial practitioners and the subsequent effect on markets. The science deals with theories and experiments focused on what happens when investors make decisions based on hunches or emotions. Kahneman and Tversky in their work in 1979 developed the prospect theory and the heuristic theory as two main theories that essentially form the behavioral finance s theoretical framework.

2.1 Prospect theory:

Behavioral finance is one of the newer upcoming areas in finance which has received a major impetuous over the last two decades. It is a field that seeks to combine behavioral and cognitive psychological theory with conventional economics and finance to provide explanations for why people make irrational financial decisions. Behavioral finance, unlike traditional finance, assumes that there are limits to arbitrage and that all humans are not rational. (Ricciardi & Simon, 2000) define behavioral finance as « Behavioral finance attempts to explain and increase understanding of the reasoning patterns of investors, including the emotional processes involved and the degree to which they influence the decision-making process. Essentially, behavioral finance attempts to explain the what, why and how of finance and investment, from a human perspective ».

An important concept was introduced by Kahneman and Tversky in 1979. They have developed the Prospect theory. It has played a major role in explaining the behavior of the markets actors when they did not follow Markowitz's expected utility assumptions. This theory also shows how individuals maximize their gains as a function of a point of benchmarks often subjectively defined. Indeed, it can be biased by different factors such as aspirations, expectations, social comparisons or even social norms of each investor. In addition, individuals are risk averse when it comes to gains but will be more inclined to take it when they are in a loss situation. This theory also shows us that agents do not always make their decisions rationally and are influenced by presenting the various choices to which they

are entitled. It therefore depends on a framework of reference and the way in which the various proposals are presented to the time to make a decision.

Unlike utility theory, the decision-making process in Prospect theory is divided into two phases: the editing phase and the evaluation phase. The editing phase often results in simplification of prospects. (Kahneman & Tversky, 1979) refer to several biased editing techniques like Combination, Segregation, Coding etc. which people tend to use during the editing phase. These editing techniques can result in inferring wrong conclusions in the second phase. In the second stage, the probabilities of prospects are replaced by decision weights and these decision weights in general are not necessarily equal to their respective probabilities.

The main contributions of the prospect theory developed by Kahneman and Tversky are therefore as follows:

a) Individuals seek to maximize their profits by referring to a standard. They are therefore more receptive to variations in their total wealth rather than to a certain degree of wealth.

b) They will be more inclined to take risks if they are in a loss situation (as when one wants to “recover” at the casino for example) than if they are in a winning position. This therefore indicates an aversion to risk in the event of a profit.

c) The frame of reference used to make their choices is too narrow. They should make their decisions within a larger framework. This is not without consequences for the financial markets; here are some implications that this can have:

- If a security has not performed well over a period, investors will be more attentive to the announcement of future news concerning this title, especially if these are bad. Considering this security as unsafe, they will assess its fundamental value using a higher discount rate of future cash flows. If, on the contrary, this title has performed well, agents will be less attentive to future announcements, even if they are bad. This title is being seen as safer, they will discount its future cash flows at a lower rate. Investors are strongly influenced by the history of stock even when its future is uncertain.
- The work of Kahneman and Tversky shows that individuals will be more willing to take risks if they have just accumulated many successive profits. This is called the house money effect. They will also buy new securities more easily and take on more risk, with potential losses being offset by gains already made.
- The formulation of the information also influences the decision of the agents. Agents maximize their utility relative to a standard. This therefore violates the invariance axiom of utility theory according to which, however, a problem is presented, the agent's decision will always be the same.

Prospect theory deals with the idea that people do not always behave rationally. This theory holds that there are persistent biases motivated by psychological factors that influence people's choices under conditions of uncertainty. Prospect theory considers preferences as a function of “decision weights,” and it assumes that these weights do not always match with probabilities. They tend to evaluate prospects or possible outcomes in terms of gains and losses relative to some reference point rather than the final states of wealth.”

To illustrate, consider an investment selection between

- Option 1: A sure profit (gain) of \$ 5,000
- Option 2: An 80% possibility of gaining \$7,000, with a 20% chance of receiving nothing (\$ 0)

Question: Which option would give you the best chance to maximize your profits?

Most people (investors) select the first option, which is essentially being a “sure gain or bet.” Two theorists of prospect theory, Daniel Kahneman and Amos Tversky (1979), found that most people become risk averse when confronted with the expectation of a financial gain.

Therefore, investors choose Option 1 which is a sure gain of \$5,000. Essentially, this appears to be the rational choice if you believe there is a high probability of loss. However, this is in fact the less attractive selection. If investors selected Option 2, their overall performance on a cumulative basis would be a superior choice because there is a greater payoff of \$5,600. On an investment (portfolio) approach, the result would be calculated by: $(\$7,000 \times 80\%) + (0 + 20\%) = \$5,600$.

2.2 The Main Biases and Heuristics of Behavioral Finance

Heuristics describe the principles and methods that allow agents to carry easily and spontaneously make reasonable judgments or assessments. It is a process of judgment, without any deliberate method of analysis or constraint of quantification or treatment, this concept is crucial in behavioral finance, because it allows us to understand how operators deviate from rationality. All of these findings have led researchers to reject the hypothesis of the rationality of agents and that of the efficiency of the financial market.

Behavioral finance will attempt to explain anomalies through the study of human behavior. Since it is during decision-making that is sometimes complex, that individuals often take mental shortcuts rather than engage in very long investigations and analytical treatments. We are particularly interested in the following different heuristics:

➤ **Familiarity bias:**

When a person prefers one option over another, a “familiarity bias” arises because it is more familiar to them. After conducting various questionnaires, TVERSKY showed that between two best offering the same probability of success, individuals will choose the one they know the best. The author also proves that even if the probability of success is low, some people will always bet more familiar

➤ **Anchoring:**

« *In many situations, people make estimates by starting from an initial value that is adjusted to yield the final answer* » (Thaler, 1970).

It is a cognitive process that leads individuals to make a numerical estimate based on an outer number (anchor). When the “anchor” is relevant, the process is not a bias. It becomes so when the reference is unrelated to the estimate to be made. Similarly, a classic behavior linked to anchoring is, for an investor, to consider the purchase price of a security as the reference for making a purchase decision or for sale, without taking into account any relevant information.

➤ **Representativeness bias:**

It explains a particular behavior of an investor who refers to a signal which seems relevant to them to base their judgment, even though, from the point of view of probabilities, this signal has little (or even no) content informative. Kahneman and Tversky illustrate this mechanism with the game of roulette. Players condition the future color (black or red) to the past series of colors that came out. Thus, if red has come out often before, they will believe that black is more likely to come up in the next round and will bet on black. However, from a probabilistic point of view, the occurrence of red or black in the next round is independent of past rounds and is identical to the two colors (excluding cheating, it goes without saying).

➤ **Emotional bias**

If emotions can be useful in the decision-making process by simplifying it, they also limit investors' ability to analyze reasonably and effectively. Generally speaking, investors experience different emotional states (pride, joy, anxiety, anger, euphoria, fear ...) and it is the

mood that leads to predetermined actions. Prejudices emotions are also linked to beliefs; they are the subject of many studies and can influence investor judgments.

➤ **The Availability Heuristic**

It leads agents to estimate the probability of occurrence of a particular event from the frequency of another event of a class larger than that of the event considered but which can easily be known. The agents will establish the frequencies of samples that are not necessarily representative. This psychological routine creates a bias in the estimation of the probability of occurrence of an event. Tversky and Kahneman provide the following illustration. When an individual witness a car accident or a car fire, he tends to overestimate the probability that such an accident will occur to him. They illustrate this bias by the fact that individual investors would be quicker to buy back previously held securities if their price has increased since their sale.

➤ **Mental Accounting**

Mental accounting is a heuristic defined by Richard Thaler during the 80s, as a set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities". It is therefore considered as a grouping of activities, decisions, prices, in "mental accounts" specific to each category according to their origin, characteristics, values, etc. Thus, according to Thaler (1985), consumers derive two types of utility from purchase: acquisition utility and transaction utility. The first concept is a measurement of the value of the good obtained relative to its price and is therefore to be compared with the concept of "consumer surplus". The second corresponds to the difference between the amount paid and the reference price which is the price the consumer expected to pay for the product. A famous Thaler experiment carried out as part of the transaction utility study concludes that individuals are prepared to pay 75% more for their beer in a hotel than in a grocery store because the reference price is higher there. In terms of utility, experience shows that the individual increases their well-being much more by making a good deal compared to the reference price than by the actual holding said of his new purchase.

On the other hand, this behavior is contrary to the notion of rationality which would lead to a single price for the same product. In the financial markets, this bias will lead, for example, an investor to refuse to acquire a stock that could have been bought at a lower price in the past, even if they are convinced that the price of this stock will increase in the future. Conversely, an investor could refuse to sell a stock below the purchase price, even if they are convinced that the price of this share will decrease further in the future. Also in financial markets, transactional utility as a benchmark can lead to irrational choices in the sense of the classical theory by focusing the decision on negotiation even securities to the detriment of optimal portfolio construction.

2.3 Contributions and Limits of Behavioral Finance

Behavioral finance makes it possible to propose more realistic hypotheses to understand financial behavior. Each behavioral trait explains a phenomenon observed in the market, this was previously associated with the classical paradigm which unfortunately could not give a proper explanation which calls into question the effectiveness and rejection of the substantial model of rationality which constitutes a real revolution, making finance one of the most fruitful areas. Indeed, in search of an explanation of the anomaly we observe the opportunity for researchers to take an interest in cognitive and social sciences, while renewing the factors that influence human decision-making.

One of the most outstanding critics of the scientific community of behavioral finance is the conservation of the individualism assumption so it focuses on one and only decision-maker, emphasizing that the majority of behaviorist authors propose model microeconomics and the

inability to provide a general model (Fama, 1998) which meets the efficiency criticisms, when the author remarked that the empirical results invalidate the efficiency argument, he pointed out that the protesters were also unable to provide a general model to explain course ineffectiveness. Therefore, he emphasizes the real limits of behavioral finance methods. Its inductive and realistic nature led to discover factors that explain financial behavior without the capacity proposed a model that generally encompasses the impact of all these factors in price formation. The absence of such a theory makes it possible to call into question the scientific contestation of the model of behavioral finance.

3 Conclusion:

In traditional finance, there is the assumption that the investor and the market are rational. They gather or receive all the information they need and their decisions are based on that data. Therefore traditional finance simply states that investors don't make financial decisions on emotions. In behavioral finance, psychology has a role in how people make financial decisions or investments. Behavioral finance explains that people are irrational and our own emotions and bias have a role to play when making investment decisions.

Traditional finance assumes that an investor is a rational person who can process all unbiased information. While behavioral finance draws from real-world experience stating that an investor has biases, it is irrational, and his emotions do play a role in the kinds of investments undertaken. Behavioral finance models often rely on a concept of individual investors who are prone to judgment and decision-making errors. This article has provided a brief introduction of behavioral finance which encompasses research that drops the traditional assumptions of the efficient market theory with rational investors.

In this paper, we have discussed some of the foundational papers which have led to the development of behavioral finance. While much of the traditional finance literature is based on the assumption of the validity of the efficient market theory, it fails when tested empirically. Kahneman & Tversky proposed an alternative to theory for decision-making under risk and called it Prospect Theory. Many researchers have argued that the inability of empirical tests to reject EMH does not provide evidence in favor of the hypothesis. Researchers have different opinions on this issue. While the proponents of the Efficient Market Hypothesis believe that markets are efficient, the proponents of behavioral finance believe that markets are inefficient.

Behavioral finance, the purpose of which is to study the actual behavior of investors at the level of the financial markets, has its basis in social psychology and cognition and related disciplines. These disciplines attempt to identify and explain the discrepancies between how we should draw conclusions from the information available, to best ensure its validity or infallibility, and the implementation practice of this information. Studies on biases and errors in the treatment of information inform us about any flaws in our conception of reality and, in this sense, they inform us about our limited rationality or from a categorical point of view about our irrationality. The contribution of behavioral finance to a better understanding of the actual functioning of financial markets is important. However, when it comes to developing a theoretical construction, supporters of behavioral finance consider that at any time a significant fraction of stock market investors are sufficiently rational individuals so that the weak form of efficient market theory adequately accounts for their behavior.

Since behavioral finance is a relatively new field, much of his research has focused on identifying anomalies. Now it is time to shift the focus of research in designing an overlaying principle which can explain multiple anomalies at a time. Lack of an alternative overlaying principle is also an important reason why people are reluctant to reject the Efficient Market Hypothesis. Therefore we conclude that experience helps in reducing the biases a lay person exhibits. However, it would be helpful to know whether Prospect Theory itself exhibits

anomalies, or it can serve as a useful counterpoint to traditional finance. It would be interesting to see how these results will hold up if we carry out similar experiments on senior level management personnel of companies who actually affect the investment decisions. We leave this as an area of further research.

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