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Inefficiency of Financial Markets and Paths to the Development of a Modern Financial Theory

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Abstract: *The purpose of this work is to examine new avenues for developing financial theory, including the role of ethics and cognitive psychology. This paper explains the Inefficiency of the financial markets and the paths to the development of a modern financial theory. Compliance with Islamic ethics means embarking on a far-reaching reform to transform the dominant financial model and tackle socio-economic objectives; it means pursuing life's broader aspirations, such as cooperation and solidarity. Similarly, investor emotions, such as over-confidence and optimism, affect investor behaviour and are implicated in their investment choices. Exploring these new avenues of finance means deciphering the behaviour of financial market participants, and thus shedding light on the decision-making process of financial investors. The aim is to see how psychological appeals and ethical attitudes have come to occupy an undeniable place in finance. More specifically, the aim is to explain the factors contributing to the emergence of Islamic finance and behavioural finance and to analyse how the limited efficiency of financial markets marks the starting point for these approaches and thus the development of modern finance. By allowing the use of financial capital, this finance makes itself available to the real economy and serves it. Its growth and development will have favourable repercussions on the entire socio-economic system. The key is to focus on projects and investments that are in line with the prerogatives of behavioural finance and ethics. This is a solution to the inefficiency of the financial markets, as it will result in better performance.*

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Introduction

Generally, finance is defined as a service activity, whose function is to guarantee the fluidity of transactions essential to economic activity and to allow the best possible use of the capital available in the economy. This is the reason why it can be considered as the set of activities which organize the financing of economic agents having capital needs by agents having surpluses, organization which is done by banks, brokerage firms and financial institutions.

In an uncertain environment, financial theory has developed within the framework of expected utility theory, based on the axiomatization of individual preferences which has largely dominated the choice process since

its formulation by Von Neumann and Morgenstern (1953). Nevertheless, empirical studies, stemming from cognitive psychology, have shown that individuals are subject to various cognitive limitations (Kahneman and Tversky, 1979). These authors relied on experimental studies and decision heuristics to describe investment choices in the financial field by proposing to introduce psychological factors. The objective is to understand the factors influencing the investment decision-making process.

Several studies indeed testify to a significant rapprochement between psychology and economics (Rabin, 1998). This rapprochement extends to many areas of economic activity, notably finance, which borrows heavily from psychology (Shiller, 2003). This dynamic introduced an alternative paradigm to the dominant financial model throughout the second half of the 20th century. Indeed, the 1960s saw the hegemony of the concept of efficient financial markets, which for a long time occupied a central place in financial theory. Fama (1965) confirms to this effect that in an efficient financial market, investors are supposed to have the cognitive capacity to process all the information available to them to make optimal decisions.

Nevertheless, the efficiency of financial markets began to be the subject of much criticism, especially following the crisis of the 2000s, a process that led to the emergence of behavioral finance. This finance makes it possible to provide answers that explain the discrepancies observed between the actual behavior on the financial markets and that predicted by the neoclassical theory of the efficiency of the financial markets (Charreaux, 2005). It is a discipline that offers a view of introducing psychological factors through behavioral biases that alter the rationality postulated by classical economic theory, meaning that not all investors are rational (Lyutyy et *al.*, 2019).

Moreover, the importance of ethics, as a foundation, makes it possible to unite efforts and converge intentions towards the same objective which promotes justice, well-being, and economic growth. The notion of ethics refers to the idea of rules and principles assimilated to moral values and feelings that aim for the good for all members of society (Chapra, 2009). In this context, so-called ethical investments and investments play a crucial role in the financial field by allowing the stability of the financial markets. In this context, Islamic finance is part of the category of ethical finance. So, it is interesting to know how it was constituted as a discipline and how it can contribute to economic development and social advancement.

The objective, in this work, is to bring elements of reflection which allow us to understand the new ways leading to the development of a modern financial theory. In this perspective, it is a question of examining the reasons that allow us to understand the place of ethics and the behavioral dimension in the transformation of the financial field. Specifically, the aim is to examine the emergence of Islamic finance and behavioral finance, as well as the solutions they offer to stabilize financial markets and promote prosperity and economic growth. The choice of these two varieties of finance lies in the importance they received after the 2008 crisis, and which may revive after the Covid 19 crisis. According to Lyutyy et *al.* (2019), it is necessary to study behavioral finance as an important axis of modern financial theory.

This analysis begins in a first section with the study of the limits of neoclassical financial theory. who advocates market efficiency. In the second section, we present the basic moral principles and the specificity that underpin Islamic finance. In the third section, we explain the emergence of behavioral finance and the role of cognitive psychology in its development, as well as its contribution to modern finance. To complete this analysis, we study in the fourth section the prospects for the development of modern finance considering the place given to ethics and the behavioral dimension in the transformation of the field.

I. Limits of the theory of the efficiency of financial markets

1. Inefficient financial markets

Informational efficiency is a theory describing the influence of information on the prices of financial assets, it means a market situation such that the observed price reflects all available information (Fama, 1965). In this sense, the hypothesis of market efficiency means that all available information is instantly exploited and adequately integrated into the reasoning of individuals, which is why, according to this hypothesis, changes in asset prices must be unpredictable by investors. Thus, on an efficient market, the price of a security constitutes, at any time, a good estimator of its intrinsic value (Fama, 1965, 1998).

The hypothesis of the efficiency of financial markets is based on two basic postulates, namely the rationality of individuals and informational efficiency. It was able to model market equilibrium on two levels: microeconomic (determining the optimum equilibrium of all agents) and macroeconomic (determining market prices given the information available). Informational efficiency contributes to the efficiency of financial markets which implies an economy with investors who react instantaneously and adequately to the occurrence of any new information.

The efficiency of financial markets presupposes prices that are actually practiced on the markets, they reflect without bias the rational expectations of investors. For individuals, it is a question of being able to use the information in an optimal way, in formulating their expectations qualified as rational (Muth, 1961). Generally, the rational expectations hypothesis involves a set of assumptions relating to the cognitive abilities of economic agents and their behavior during economic transactions. These expectations postulate that the rationality of all individuals leads to informational efficiency, which means that individual evaluations reflect economic fundamentals without bias.

Thus, this theory which advocates market efficiency is characterized by the privileged place given to rationality as defined by standard economic theory. However, the neoclassical theory of efficient markets and the supposed rationality of investors are called into question by the hypothesis of inefficient markets. The latter states that individuals make systematic errors in the way they process information and make decisions. The assumption of individuals using all available information is far from realistic. This may explain deviations from the traditional informational efficiency hypothesis (Pernagallo and Torrisi, 2022).

Indeed, studies on the informational efficiency of financial markets have shown that this efficiency is difficult to verify in practice, because it is difficult to determine precisely when new information is disseminated. If markets are inefficient, this implies that better-informed economic agents may gain at the expense of less-informed ones. Moreover, if the pricing mechanism in a market is inefficient, the price of an asset will not reflect its fundamental value, which will complicate any economic analysis (Angelini et *al.*, 2022). To this end, Roetzel (2019) presented a comprehensive inventory of the literature on information overload in several fields between 2004-2017, his work presents the problems of information overload which broadens the understanding of the effects of this overload on the decision-making process.

Information overload shows how too much information could cause financial markets to deviate from the traditional efficiency assumption. It shows that when information tends to infinity, the efficient market hypothesis ceases to be true. It also happens when the use of information is not optimal by investors (Pernagallo and Torrisi, 2022). Decision makers often have scarce information, they are confronted with obvious computational limits and have a limited time to decide; therefore, economic agents adapt to the environment to satisfy their needs and they do not optimize in general (Simon, 1956).

The argument seems obvious in the financial markets, where a massive amount of information is transmitted almost instantaneously. In financial markets more than in other markets, the question of efficiency and the consequences of information overload are closely linked. Information overload provides new insights into possible causes of informational inefficiency (Pernagallo and Torrisi, 2022). This is achieved by highlighting the shortcomings of the concept of market efficiency and also suggesting how these shortcomings can be addressed with the behavioral finance approach (Sharma and Kumar, 2020). This finance refers to the notion of behavioral biases found in financial markets (Kahneman and Tversky, 1979).

Behavioral biases bias the efficiency of markets and call into question the theory of informational efficiency. They constitute empirical evidence that contradicts the notion of efficient financial markets, invalidating the assumption of rationality according to standard economic theory. Consequently, these markets are not efficient, and the calculation based on the model employing the notion of expected utility justifies many behaviors presented as irrational. According to this theory of efficient markets, the fundamental value of an asset is estimated from the probability of its future income: its price is the mathematical expectation of its future payments for a single probability distribution (Orléan, 2005).

However, De Bondt and Thaler (1995) have shown that individuals over-react to information and are far from using the rationality described by neoclassical financial theory which leads to the hypothesis of efficient markets and to informational efficiency. Moreover, Kahneman and Tversky (1979) consider the motivation that guides individuals in their strategic choices, and not only the knowledge they hold of the expected value

of payments. The studies of several authors, such as Simon (Simon, 1955, 1956) or Kahneman and Tversky (1979), have cast serious doubts on the reliability of the assumptions on rationality in economic models and, in coherence with numerous studies on the human brain, favor the hypothesis of bounded rationality (Pernagallo and Torrisi, 2022).

Thus, rational expectations, perfect information, efficient financial markets are strong assumptions that do not hold true in reality (Fagiolo and Roventini, 2012). Consequently, investors are not all rational, their irrational behavior will lead them to deviate from the fundamental value of the asset by committing errors of judgment and appreciation of reality.

2. Crisis of ethical awareness

The techniques of globalization today are based on the fact of using finance in order to make profits, or rather, more profits. This process continues to generate deviations concerning the main mission of finance and the essential functions of the economy, namely production, consumption, income distribution and market equilibrium. The resulting drifts can feed an overvaluation which has no other reason to exist than to make finance run. Thus, for example, fair trade is inserted into a capitalist market approach that calls on a purely economic formal rationality (Le Velly, 2006).

In this respect, the dilution of ethical and committed consumption therefore implies a disappearance of ethical motivation in economic transactions (Ballet and Carimentrand, 2006). Thus, the products have lost their quality, overconsumption has dominated consumer behavior and the poor distribution of wealth has called into question the law of free trade which continues to become more and more absurd and unjust. This process leads to a waste of resources, the consequences of which can only be harmful in the short term as well as in the long term, in addition to social and economic imbalance.

This imbalance, the consequences of which are dramatic, has as its corollary the creation of social precariousness and the uncertainty of prospects. However, the desired economic growth is that which is surely achieved with the help of finance, but also through behavior guided by ethics (Le Velly, 2006). It is a behavior that is that of a social being whose action he leads is an action oriented more towards society and simultaneously obeying financial and economic incentives (Elhalaby et *al.*, 2023). It is a conception of well-being where the individual is not favored to the detriment of society.

At the economic level, unjust bankruptcies are on the increase. However, the latter do not depend on poor management of companies, difficulties related to customers, or even the scarcity of resources necessary to properly carry out productive activities. All that comes out of this sphere are unjust bankruptcies because they are caused by mechanisms resulting from this finance completely disconnected from the real economy and which governs the current economic world. Thus, the management practices of companies are forced to change, in the sense that these companies are forced to a competitive management leading to short-term strategies in search of maximum and immediate profit (Capron, 2003).

In this respect, the mission of ethical finance is to thwart the elements that lead to excesses in the functions of the economy and therefore quite naturally to loss of autonomy, social marginalization, and exclusion. This finance refers to purposes and materializes through practices (Roux, 2012). It is obvious that it must play an important role in the implementation of strategies to correct these excesses and make these strategies feasible through the economic interactions that it allows. This can be seen more explicitly in the fact of avoiding over-indebtedness and financial burdens which have no reason to exist other than to maintain the desires of profiteers. This is so true that the crisis of the 2000s is very much due to finance deviating from ethics.

This is why fidelity to ethical goals imposes a commitment to a profound reform of transformation of the dominant financial model. This approach requires an in-depth study of finance, economics, their instruments and even the interaction that exists between the different spheres of human activity. Since finance is considered an essential component in any economic system that cannot function without it, then applying ethics consists above all in reforming the behavior of individuals operating in the financial field. It is obvious that this is categorically opposed to the simple introduction of new techniques and solutions that replace others.

II. Islamic finance and the role of ethics

1. History of Islamic finance

To improve understanding of this phenomenon of Islamic finance, it is necessary to review the stages that characterize the emergence of this financial system and the elements of its development. Indeed, the appearance of Islamic finance occurred in parallel with the excess liquidity resulting from the development of the oil industry which was accentuated by the two oil shocks marking the history of the 20th century. These shocks reflected the crisis of 1973 and the Iranian revolution of 1979. In addition, some even use the expression "third oil shock" to designate the increase in oil prices in 2008 due to an increase in demand (Joini and Pastré, 2009).

It is worth noting that these years were those of growing demand from the population who no longer wanted to deposit their assets in banks with conventional financial instruments. Moreover, for more than a century, oil has been one of the fundamental engines of global economic growth. The recycling of petrodollars has given rise to abundant excess liquidity that must be invested. The abundant flow resulting from the oil revenue gave rise to the idea of the need to create financial institutions specially adapted for this population. Because of this, the first Islamic bank was established in 1963 in Egypt (Karich, 2002).

Then, we had to wait until the early 1970s to witness the real turning point in Islamic finance. Indeed, the creation of the Islamic Development Bank (IDB) in 1975 marked the real launch of financing in accordance with Islamic law *(Sharia)*. Other Islamic financial institutions emerged during this decade of the 1970s. Thus, it is possible to cite the Dubai Islamic Bank in 1975, the Faysal Islamic Bank in 1977 and the Islamic Bank of Bahrain in 1979 (Roux, 2012).

In the early 1980s, two countries officially introduced Islamic finance practices, namely Iran and Pakistan. Subsequently, other countries joined them such as Saudi Arabia, Egypt, United Arab Emirates, Malaysia, Sudan, Turkey, etc. This type of institution has also emerged in Western countries such as the United States, Great Britain and France (Roux, 2012). According to the latter, in France, its introduction in retail banking is directly linked to the tax measures of August 2010. This interest is directly related to Muslims' access to savings as a source of capital (Farooq, 2022).

Obviously, some of these financial institutions have preferred to settle in international financial centers to benefit from their tax advantages, such as Luxembourg and Switzerland. Following this momentum, Western banks have not hesitated to open branches in the Muslim world where conventional and Islamic deposit and borrowing banking techniques coexist (Roux, 2012).

This remarkable progress that Islamic finance has experienced depends on the following elements:

- The renewed vitality that has marked the Muslim population in general since the 1970s;
- The desire to find a financial system that suits this population and reflects its religious reference;
- The two oil shocks of 1973 and 1979 and the increased availability of abundant liquidity which constitutes an essential source of funds for the population of oil-producing countries;

The opportunity offered by Islamic finance for financial institutions when the conventional banking sector is subject to repressive financial policies in the form of low interest rates and/or credit quotas.

2. Basic principles and foundation of Islamic finance

Financing activities that comply with Sharia, or Islamic law, are referred to as Islamic finance (Zubair, 2023). This finance aims to develop a financial offer in accordance with the rules of the religious law of Islam which apply to the various relationships in the financial field. It is presented as a series of principles and techniques that govern financial transactions, in particular the refusal of interest *(riba)* (Chapra, 2009). This is one more reason to dwell on it by trying to understand why it is less vulnerable than conventional finance.

It is a financial system that is nourished by ethical foundations derived from Islamic law and which originates from the prohibition of interest and usury (Roux, 2012). This system is based on basic principles that govern it such as the sharing of profits and losses and the prohibition of *Gharar* (uncertainty), *Maysir* (gambling), hoarding and illicit economic activities. Moreover, Islamic finance is a rather standardized system that

provides both financial and extra-financial guidelines. The latter aim to share wealth and promote solidarity by converging more towards the purposes of ethical finance (Iqbal and Mirakhor, 2006).

Nevertheless, the relationship between ends and means imposes a fundamental reflection on the meaning of financial activity. The dominant neoliberal economy does not care about cosmetic adjustments and has no trouble integrating them into its logic. Thus, the experiences, techniques and terminology of Islamic finance are studied and integrated into the major international banks (HSBC, Credit Suisse, City Bank, etc.) (Roux, 2012), not because it is an effective alternative, but because the "Islamic" label opens up new markets (Jouini and Pastré, 2009).

These principles are applied at the heart of the classical economic system and represent alternatives. They establish the ethical basis of Islamic finance as business ethics, with an orientation towards integrity, fairness, risk sharing and the well-being of society. Thus, each financial product must comply with this law and bear the certification of *fatwa*. This law falls under *Sharia* which represents a code of moral principles and rules of behavior for Muslims in their private, social, and economic life.

Admittedly, economic agents are supposed to seek to earn surpluses insofar as they have been given talents to bring to fruition (Pradier, 2006). But surpluses should be used not for self-uplift, but for socially responsible goals. It is in this sense that Islamic finance contributes to the promotion of social progress, the alleviation of social inequalities and the improvement of the lives of all beings. This underlines the inseparability between finance and ethics (Sen, 1992). The peculiarities of Islamic finance give it a distinctive quality compared to traditional modes of financing. Islamic finance emerged and derived its strength primarily from the prohibition of interest as monetary transactions remain asset based (Zubair, 2023).

3. Specificity of Islamic finance

Islamic finance helps to develop the real economy (Zubair, 2023). It does not blame the pursuit of profit, but its specificity is that it constitutes a financial system which, while integrating the objectives of profitability and efficiency, respects all the ethical practices of Sharia (Iqbal and Mirakhor, 2006 ; Roux, 2012), whose five essential pillars are:

1. the prohibition of any form of interest, fixed or variable;

2. the prohibition of uncertainty and speculation, for example are prohibited the exchange of goods that the seller is not yet in a condition to deliver;

3. the principle of backing the financing to a tangible asset (asset- banking);

4. the obligation to share profits and losses (3p principle);

5. all operations must relate to assets authorized by sharia , hence the prohibition of all sectors of activity deemed illicit (alcohol, casinos, tobacco, etc.).

From these pillars, it is possible to identify the following elements:

- The gain that results just from lending money is seen as a kind of exploitation of the person in a relatively unfavorable situation vis-à-vis the lender. This gave rise to the prohibition of interest (*rhiba*);
- All speculation around possible future rates is prohibited (as in the case of future contracts). Hence the prohibition of chance (*mayssir*) and speculation (*gharar*);
- To combat speculation, any investment must be based on real capital. This guarantees that the finance is backed by a real and tangible asset (asset backing);
- The investment is based on the sharing of profits and losses (in English "profit and loss sharing (PLS)") between the investor and the beneficiary, hence the principle called in Arabic: "*al- Ghunm bi al- Ghurm*";
- The exclusion of certain sectors because of their reprehensible businesses such as alcohol, tobacco and pornography.

It appears that the Islamic law that governs finance is oriented to create a culture where economic agents spend and redistribute only the funds they really have. It is also against exploitation and gives importance to ethical and social issues, which suggests that this law pursues sustainable development objectives (Jouaber and

Jouini, 2011). According to these authors, when some economists present solutions for sustainable and crisis-resilient finance, they frequently advocate interest-free financing.

For any economic operator, it is a question of having this awareness of seeking to achieve these higher ends and not of being satisfied with making the techniques legal by nourishing the same ambitions of profit and consumerism. In this respect, the *Sharia Board* must reclaim its role of supervising the ethics and not only the validity of the technical solutions proposed by Islamic finance. In other words, it must ensure that the social concern is present and is not limited to seeking legal advice to engage in valid mechanisms and operations that provide more gain and benefit.

Within this framework, investment supervision takes place in two ways. The first is individual in the sense that any person will not invest their funds according to mechanisms or in industries that are not compatible with their ethics. The second is institutional and organizational insofar as banks and Islamic investment funds are composed, in addition to a board of directors and a general assembly, of a supervisory committee (*Sharia Board*) who is in charge of controlling financial transactions and their compatibility with Islamic ethics.

The Islamic financial system has specific services, products and accounting. This has led to the formation of accounting standards which reflect distinctive characteristics by becoming an important mechanism to meet the various requirements of Islamic financial institutions (Elhalaby et *al.*, 2023). These Islamic finance-specific standards cover products, accounting, governance and ethics, and are not limited to regulatory concerns (Farooq, 2022). Thus, it is essential to advance the sector through the full adoption of these standards, which increases investor confidence in Islamic financial institutions and develops the quality of financial information (Elhalaby et al., 2023).

4. Reasons for prohibiting interest

Islamic finance is characterized by its intransigent nature vis-à-vis certain practices of conventional finance. This is how this finance is based on the prohibition of usury (any form of financing based on a predetermined and fixed interest rate). It should be noted that interest and wear are jointly associated under the Arabic name of *Riba* (Roux, 2012).

Indeed, the origin of the prohibition of the interest is that the financial backers apply usurious rates and thus profit from the misery of the poor. Moreover, the main idea which is decisive in the prohibition of interest is that money is not capital, it will become so only after its transformation by work and effort. In this sense, one monetary unit today is worth another tomorrow, in such a way that it is impossible to make a profit on its exchange (Iqbal and Mirakhor, 2006).

Moreover, any exchange of an identical product (gold for gold, wheat for wheat) with an advantage for a person constitutes an operation which involves usury, except regarding the advantages resulting from the exchange of products of a different (gold versus wheat, for example) (Guéranger, 2009). Thus, the exchange in unequal quantities of gold, silver, wheat, dates, … (gold for gold, silver for silver, etc.) is widely interpreted as lending at interest, which constitutes the reason for its ban.

Thus, in terms of the exchange of currency (money for money), any surplus drawn from a transaction not based on real assets and previously owned by the seller is illicit. In concrete terms, this category includes loan contracts and bank loans, whether consumer loans or business loans. Among the explanations put forward, the interest is a fixed remuneration and known ex-ante. And the borrower assumes a majority share of the risk due to the fact that the remuneration that he will have to cede to the financial backer is not a function of the result of the financial asset. This denotes an injustice between the risks suffered by the lender and the debtor (Guéranger, 2009).

Another explanation has been put forward by Iqbal and Mirakhor (2006), the latter mention that money is only potential capital, and it will only really become capital after its association with another resource in order to undertake a productive activity. Money therefore has no intrinsic utility and is only a means of exchange for real and tangible goods. In this respect, Islamic finance can be seen as all the modes of financing that have been adopted to respect risk sharing and guarantee equity. This is only possible by simultaneously prohibiting actual usury and interest in the conventional sense of the term (Roux, 2012).

In short, Islamic finance is not limited to techniques and tools that relate to its practice in real economic life, but it is an applied ethics in the field of finance. This confirms the idea that it constitutes a main pillar in the establishment of an alternative modern finance, and in no case can it confirm the pre-eminence of this liberal market economy. The fundamental reflection and the practical and concrete proposals must converge towards the verification of the higher purposes of ethics. The prohibition of certain means or certain techniques must be understood in the light of this general philosophy of higher ends and ethics.

III. Behavioral finance and the role of cognitive psychology

1. Emergence of behavioral finance

The questioning of informational efficiency calls into question the hypothesis of the efficiency of financial markets, and therefore casts doubt on the cognitive capacities of investors. Indeed, the confrontation of the points of view of finance and cognitive psychology has given rise to the birth of a new financial discipline whose history has already begun since the 1960s (Mangot, 2008). This emphasizes the pivotal role of behavioral sciences in fostering the shift from a strict neoclassical perspective to a more organic perspective of economics and finance (Gomes, 2022).

By encompassing both concepts from the psychological and financial fields, a current that gives importance to psychological factors has been formed to explain the anomalies of financial markets and their instability. This is what differentiates this field from the dominant paradigm which advocates informational efficiency (Barberis and Thaler, 2003; Shiller, 2003). This is behavioral finance, which is now a modern approach to finance (Kliger et *al*., 2014).

Since its birth, this approach has been oriented by acquiring mathematical tools that have revolutionized finance. This is how the field of behavioral finance has known an effervescent development. It is based on two fundamental hypotheses which complement each other and differ from the hypotheses on which the efficiency of the markets is based, namely that investors are not fully rational and that emotions intervene in their investment choice process (Thaler, 2016; Kliger et *al*., 2014).

The rise of this discipline is the result of the progress made by a set of disciplines such as psychology and computer science. The objective is to understand the mechanisms on which human behavior is based, by shedding light on what motivates investors in their decisions. In 1979, Kahneman and Tversky proposed their Prospect Theory, showing several flaws in traditional expected utility theory. For example, the certainty effect indicates the fact that individuals overestimate the results obtained with certainty compared to the merely probable results. Kahneman and Tversky's work was an important step towards a new approach to economics: in a world where agents are not perfectly rational, the extreme assumption of some kind of rationality becomes insufficient (Fagiolo and Roventini, 2012).

Prospect theory has played a key role in understanding the behavior of financial markets (Kahneman and Tversky, 1979). The formalization of the theory of prospects was based on the discrepancies observed between the real behavior of investors and the behavior recommended by the rule of maximization of expected utility. According to this theory, considering the psychology of investors and their emotions has given rise to an alternative model which makes it possible to improve decision-making concerning investment in a risky situation.

Behavioral finance can be seen as the study of the behavior of the individual to explain how to understand their choice of investment. Mangot (2008) states that this discipline seeks to predict the implications of choice related to the psychological decision-making process, something that considers the market context. In this sense, Thaler (1999) indicates that it is simply a solution to financial problems based on an analysis of agent behavior.

The starting point is the work carried out by psychologists and which is taken up by researchers in finance. This work led to the rejection of the hypothesis of perfect rationality of agents in favor of reasoning that accounts for behavioral biases (Kahneman and Tversky, 1979). This gives rise to a new conception of financial markets which attempts to study the influence of emotional factors on decision-making. This conception makes it possible to explain the behavior of financial markets using behavioral models derived from cognitive

psychology. Understanding these patterns requires including reasoning in terms of emotional processes that influence decision-making in a risky environment.

In the same direction, Shiller (2003) indicates that the collaboration between finance and other social sciences, led to a deepening of the knowledge of the financial markets and the motivation of the choices of investment. In this regard, Mangot (2008) believes that this finance accounts for the way in which emotions come to shape the decision-making process of financial investors. According to Shiller (2003), it is important to see how behavioral biases act on their attitudes and generate deviations from what the perfect rationality of individuals recommends. Behavioral finance views a person as an irrational individual (Lyutyy et *al.*, 2019).

The early pioneers of behavioral finance are a small group of finance professors like Markowitz, Robert Schiller, Werner De Bondt, Richard Thaler who were interested in studying investor behaviors. In this respect, Daniel Kahneman and Vernon Smith are considered to be the first defenders of this approach, which has established itself as the alternative paradigm of the dominant neoclassical approach in finance (Shiller, 2003 ; Thaler, 2016). During its first years, this new approach made it possible to obtain several results concerning individual behavior when investing in the financial markets. Behavioral finance theories are based on the irrational behavior of market players. Under conditions of uncertainty and risk, people act under the influence of emotions, misperception of information, illusions and other irrational factors (Lyutyy et *al.*, 2019).

This approach proposes to integrate investors' emotions, such as loss aversion, over-confidence and optimism, through behavioral biases. The implication of these biases means that most investors overreact to information: too optimistic to good news and too pessimistic to bad news, the correction takes place more or less quickly depending on the degree of efficiency of the markets. In this regard, overconfidence is one of the most common behavioral biases in investor behavior (Thaler, 2016 ; De Bondt and Thaler, 1995). These behavioral biases arise when market participants react to new information (Angelini et *al.*, 2022).

It follows that the choices of individuals are not necessarily in agreement with what the hypothesis of perfect rationality predicts. The questioning of this hypothesis was made through the importance given to behavioral biases which are therefore at the base of the emergence of behavioral finance, an emergence which was made by the proposal of a model alternative to market finance. The bounded rationality of financial market actors requires more active research into their behavioral patterns. The behavioral perspective should be an important area of scientific and practical interest. The results are likely to be useful for practitioners and researchers to gain insight into the context of behavioral finance (Lyutyy et *al.*, 2019).

2. Role of behavioral finance

According to commonly known economic discourse, economic responsibility is about maximizing economic value. However, the behaviors of leaders and their strategic decisions are also based on their beliefs and their emotions, which can bias their decisions to direct them contrary to their interests. However, emotions are intended to distract individuals from their own ability to reason independently and rigorously. These factors lead the individual to question their logical and objective reasoning when making decisions (Orléan, 2005).

The main role of behavioral finance is to highlight the existence of behavioral biases affecting the behavior of investors, biases which are the direct causes of the differences between the behavior observed on the financial markets and the rational behavior proposed by the standard financial economy. These behavioral biases explain why individual rationality is limited; they refer to procedural rationality which constitutes an extension of standard rationality (Simon, 1959). It follows that financial markets cannot be efficient since the behavior observed is in contradiction with the neoclassical analysis of market finance.

Even more, the results obtained in cognitive psychology contradict the Homo Economicus hypothesis of neoclassical economic theory and call into question its role in decision-making (Simon, 1959). This behavioral dimension contributes to filling the gap between the theory of financial markets and the effective and real behavior of participants in these markets. This is why the prices that form on the financial markets only very rarely agree with the predictions of the standard models. Thus, behavioral finance has undoubtedly enriched the knowledge of behaviors relating to the decision-making process of investors by referring to the most typical errors in the context of financial markets (Orléan, 2004).

Behavioral finance establishes an effective bridge between neoclassical economic thought and new and revolutionary methods of analysis. Exploring the intricacies of human behavior can often be done by adapting

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the trivial and conventional models of intertemporal utility maximization that economists insistently resort to (Gomes, 2022). This is why this approach could play a key role in enabling more effective market regulation through better deciphering of potential investor behavior.

Behavioral finance is an emerging trend with future potential as the dominant alternative theory of asset pricing (Sharma and Kumar, 2020). Thus, it attempts to show that certain behaviors can create anomalies relating to asset prices, which is likely to lead to market dysfunctions (Orléan, 2004). Stabilizing financial behavior stabilizes financial markets in such a way as to steer behavior in a direction favorable to the general interest. This usually avoids problems that occur in these markets such as financial crises.

Finally, behavioral finance is a new discipline that consists in promoting decision-making. It represents an alternative to the efficiency theory of financial markets and thus sheds light on how to behave successfully in the financial environment. Mangot (2008) considers to this end that the contributions of this discipline make it possible to better understand the recurring errors of participants in the financial asset markets. It offers an alternative analysis that introduces the role of psychological factors in investment decisions, allowing a better explanation of investors' actions. It also reveals the importance of developing theoretical, statistical and econometric models in behavioral finance, in order to better understand financial and economic decision-making (Wong, 2020).

IV. Perspectives of a modern financial theory

1. Purposes and moral principles

Ethical reasoning is about what should or should not be done. Obviously, this applies to the morality of financial activities. When standards and principles are respected, ethics enters the scene of finance, since the latter is a subject, whose ethical precepts have been examined for thousands of years (Sen, 1992). The exploration of the interactions between ethics and the norms of finance cannot be limited to the norms of classical finance which covers a deontological dimension. It is however difficult to summarize the aspects of human life in such a logic (Pradier, 2006). Ethics needs norms to exist in a society, because it is in essence the reflection of an individual questioning concerning practical attitudes.

In any society, the financial sector plays a key role in its economic development (Farooq, 2022). The purpose of finance is to improve living conditions and social well-being. This converges completely with the themes of sustainable development and themes relating to the social and solidarity economy. These areas come together on a global purpose favorable to social well-being and respect for the environment. Similarly, this purpose aims to promote justice in economic relations and trade and to influence financial behavior (Sen, 1992).

Indeed, the has finance aims to improve economic conditions and therefore human conditions. But that depends on social justice and equity in economic relations and trade. These objectives dovetail well with those of socially responsible investing as it has developed in recent years. This investment materializes in the form of sustainable development, especially in its economic and social pillars. Concretely, there are on the one hand truly committed consumers and on the other hand more mimetic consumers (Ballet and Carimentrand, 2006). This is why waste and unnecessary consumption are unacceptable in this development.

However, it is obvious that economic growth is a goal sought by any economic system. And the ultimate goal of economic agents is always the satisfaction of human desires which economically translates into the maximization of a utility function, an approach which assumes that people make optimal use of resources and information (Pernagallo and Torrisi, 2022). However, this is not always to the benefit of man insofar as it may have unfortunate consequences on the nature and resources of the earth, which adversely affects man and the economic and social conditions in short, medium, and long term.

Since all economic mechanisms are based on finance, it is appropriate for the latter to push this growth along a path of justice and equity, to achieve the balance of resources and social justice. Moreover, financial transactions must have a link with the real economy in the sense that they cannot produce anything by themselves (Ben Jedidia Daoud, 2013). Thus, to achieve development and stimulate economic growth, modern finance should not be limited to technical solutions and practical mechanisms. Indeed, the capital mobilized by these solutions and mechanisms can be invested through other techniques that may be more effective in

achieving gains and providing material utility. It is therefore appropriate for these mechanisms to be nourished by an ethic that ensures that gain and profit are not the only motivations of economic operators. In France, the introduction of ethical finance dates back to 1983 with the creation of the first fund (Roux, 2012).

Generally, respect for ethics remains difficult to assess, however it is possible that this assessment relates to the methods of taking into account the criteria relating to the respect of social and environmental objectives. While avoiding the forbidden is mentally fundamental, Islam encompasses much more than the inadmissible. Limiting itself to avoiding the forbidden "*haram*" has considerably handicapped the field, which is why efforts must be made to synergistically address socio-economic challenges (Farooq, 2022).

Thus, it is up to public and private players, such as financial centers and rating agencies, to assess compliance with these objectives and their alignment (Gendron and Bourque, 2003). This would make it possible to jointly develop approaches that aim to encourage more ethical, responsible, and transparent practices. This is why the social side, and the philosophy of the purposes must accompany the application of the technical solutions proposed by Islamic finance.

2. Sustainable development and the role of finance

Sustainability is defined as ensuring that the needs of future generations are met without compromising those of present generations. This sustainability must also be considered as a moral and religious question. Indeed, sustainability is firmly rooted in Islam, and man is the responsible guardian of nature. Therefore, man must respect, care for and preserve the environment. A key feature of the Islamic approach to environmental preservation is to highlight the values of rationalizing consumption through moderation, moderation in all actions (Bsoul et *al*., 2022).

Finance can be seen as a field at the service of human beings, with the aim of social harmony and the protection of the family and the environment (Jouaber and Jouini, 2011). It is about respecting the social and environmental dimensions, this brings finance closer to the objectives of sustainable development (Forget, 2009). Taking these considerations into account, modern finance, with its varieties, can experience significant development. This is why it should be introduced alongside traditional financial activities, giving particular importance to its role in market stability, sustainable development and overcoming crises.

Currently, in economic thinking, there are few areas that escape a structured analysis based on the themes of sustainable development. It is now at the center of many reflections on the role of finance in economic and social development. Already there is consistency between traditional Islamic rules and modern goals of environmental sustainability (Bsoul et *al*., 2022). Consequently, it is therefore important to establish an extension of the concept of sustainable development in order to integrate it into a broader reflection on the dignity of man and his autonomy to be a subject in the economic field (Gendron and Bourque, 2003). It is also about preserving natural resources and the environment for future generations.

Generally, the purpose of ethics is to improve human conditions, establish social equity and prevent injustice in different economic relationships. This is also the origin of the prohibition of interest and its replacement by a system of profit and risk sharing which is at the base of Islamic ethics. The religious imperative is to examine impulses that often include overconsumption driven by greed and desires. The focus is on raising awareness so that environmental sustainability becomes an essential guiding principle (Bsoul et *al*., 2022). Consequently, it is a sustainable development in its economic and social pillars where the environmental pillar is not absent either.

To this end, the study of the efficiency of green finance markets, conventional stock indices and crude oil reveals that green finance markets show relative efficiency compared to equity and oil markets. gross (Zhuang and Wei, 2022). In their study, levels of informational inefficiency are ranked by several measures of degree of multifractality. But the aggregate empirical results revealed that the uptrends and downtrends of green finance market indices involve considerable asymmetry, and they are far from efficient, no matter how small or large fluctuations (Zhuang and Wei, 2022).

This is why the social and environmental consequences of economic activity raise more than ever the question of purposes and values (Pradier, 2006). Thus, ethics in general, and Islamic ethics in a specific way, do not consider companies only as economic and financial resources that create wealth, but also resources for the development of human dignity. and the quality of well-being. There is obviously an unavoidable need to

introduce into the conduct of activities and the attitudes of the actors of the best practices guaranteeing social and solidarity practices that are beneficial for the whole of society.

Similarly, this modern finance will be against exploitation and likely to enhance human capital, which suggests that it can constitute a sustainable system. The latter can act as a catalyst for financing by appealing to the public for savings, as evidenced by the success of socially responsible investment (Jouaber and Jouini, 2011). However, the resurgence of this finance cannot rely solely on faith for its success as it competes with its conventional interest-based counterpart (Zubair, 2023).

Thus, the rise of these varieties of modern finance can be driven by social actors who strive to reinvent collective action (Gendron and Bourque, 2003). This finance, with the principles on which it is based, is a key element in the promotion of the various themes of economic, social, and environmental development. In fact, this aims to safeguard the well-being and dignity of all humans who must have their material and moral conditions to be able to meet basic needs but without excessive expenditure or over-consumption.

3. Modern finance and the prospect of an alternative economy

The global financial crisis of 2008 stimulated a debate questioning the development models of conventional finance (Jouini and Pastré, 2009). The fundamental reflection and the concrete proposals must converge towards the verification of the aims of a fairer and more united alternative economy. The prohibition of certain mechanisms or techniques must be understood in the light of this perspective. It is for the community and the economic operators in general to be aware of this and to seek to achieve these ends and not to be satisfied with making profitable the financial solutions which nourish the same ambitions of gain (Jouaber and Jouini, 2011).

According to Islamic principles, business transactions can never be separated from the moral goals of society. Unlike conventional financial institutions that seek only to make huge profits, Islamic banks should take care of the needs of society as one of their major objectives and should favor products that can help them in this direction.

At the same time, it is not a question of advocating an economic activity that turns its back on efficiency and returns, but rather of associating ethical awareness with economic action. Moreover, rapid growth has posed problems for Islamic banks, product designs are imitative and novelties are rare (Zubair, 2023). Similarly, it is a question of questioning the purposes and priorities so that morality is respected in the various economic interactions. This is how ethics plays a capital role for finance to be at the service of the economy, and for the economy to be at the service of man (Sen, 1992).

More particularly, the problem is summarized in the fact that it is not enough that a bank has the Islamic qualifier to achieve the essential objective of its realization. It still has to be part of a vast movement whose avowed and realized aims are the concretization of a social dynamic and a financial commitment oriented towards justice, equity in economic relations and the support of the most destitute. This is how the interest of a system associating a plurality of actors who articulate the public economy, the private economy and the social and solidarity economy appears (Capron, 2003).

Indeed, the term Islamic compliance has a broader meaning than Sharia *compliance*. Conformity to Islam is about addressing socio-economic goals. Running away from prohibitions and avoiding what is proscribed is an important part of the Islamic religion's way of life. But this represents only a tiny aspect of faith in front of the pursuit of larger aspirations of life like the issue of cooperation which is a neglected area and which cannot be reduced or limited to *takāful* or Islamic assurance only (Farooq, 2022).

The creation of a real submissive modern finance to a morality and respecting these aims requires in-depth reflection on the means and the strategy to be adopted in the long term. There is therefore no question of seeking profit for profit's sake or accumulating gains and profits. We must now think differently and act in accordance with an awareness of an alternative economy based on modern finance pursuing ethical goals. The goal is to achieve human-centered development for sustainable and shared prosperity (Farooq, 2022). Obviously, the crises of the 21st century could stimulate this interest.

It is obvious that the social dimension promoted by this finance seems to converge with the themes of sustainable development, since the achievement of economic and social development is one of the main objectives of this finance thus defined. This conception of finance should lead to the creation of more viable

projects that necessarily break with the classic model. This refers to a governance that does not legitimize all financial practices and subjects the behavior of agents to different financial standards (Sen, 1992). Thus, currently, the actors have an idea of what could be the modalities necessary for the creation of a very real economic and social dynamic (Iqbal and Mirakhor, 2006).

It is in this context that interest in Islamic finance and behavioral finance may increase. Behavioral finance is an emerging trend with future potential as an alternative theory (Sharma and Kumar, 2020). These authors conducted a more in-depth discussion of emerging trends in behavioral finance, highlighting gaps and how these can be filled for it to be accepted as an alternative approach.

Behavioral biases are born following the interaction between psychological factors and the investment situation, they can increase the risk of the investment which can go so far as to call into question its profitability, or rather its durability (Thaler, 1999). These psychological factors can explain several phenomena, including speculative bubbles and crises. This is why it is natural to remedy this by striving to debias the decision-making process of investors (Kliger et *al*., 2014).

Because of these psychological factors, individuals do not consistently follow the rules of standard rationality of maximizing expected utility. They commit errors of appreciation and judgment of reality. This is how behavioral finance has formed a financial current which therefore strives to work on the irrationality of financial investors by naming these errors cognitive biases (Albouy, 2009). Its development has been favored by two essential factors, namely the anomalies accumulated in the financial literature and the empirical results supported by numerous works of cognitive psychology.

It is a question of turning to projects and investments that are in accordance with the prerogatives of behavioral finance and the ethics of modern finance. It may be to show that ethics, or taking psychological factors into account, is the solution because performance will be better. But the question is not to compare oneself to liberalism, but to free oneself from it. This is only possible through in-depth reflection on the methods and purposes by proposing an alternative that is based on an ethical conception of modern finance that frees itself from the dominant paradigm. In this sense, ethical coordination can only be a transitory form of coordination that must necessarily lead to market coordination.

These new ways of finance have the obligation to allow the development of economic growth. Their growth and development have favorable repercussions on the entire socio-economic system (Orléan, 2005). By allowing the use of financial capital, this finance makes itself available to the real economy and serves it. Applying an ethics to finance consists in reforming the behavior of individuals operating in the financial field. However, the scope of effective regulation is often considerably limited by problems of enforcement, and this is where an ethics of behavior could intervene (Sen, 1992).

Conclusion

Finance sees itself as an essential component of any economic system that cannot function without it. The standard current of finance is known through its famous hypotheses, namely market efficiency and the financial asset valuation model (Fama, 1965). The results of neoclassical finance are obtained from the hypothesis of perfect rationality and the maximization of preferences indicated by classical economic theory (Orléan, 2005).

Given the irrationality of individual behavior, traditional models analyzing financial markets can no longer claim to provide effective forecasting. Certain non-rational behaviors can be the source of anomalies which are the consequence of biases due to phenomena relating to the psychological characteristics of participants in the financial markets. Consequently, on the stock exchanges, their attitudes can cause dysfunctions in the valuation of assets and therefore in the functioning of these markets.

Today, the behavioral dimension provides practitioners with knowledge that has practical applications in relation to investing in financial markets. It calls for a change in practices regarding the modes of operation that must be practiced effectively in these markets. The objective is to become aware of the existence of unanticipated risks, and it is therefore necessary to minimize the impact of behavioral biases on the choice of investment to deal with market instability.

In addition, this finance can also promote the various themes of sustainable development. The latter aims to promote the well-being and dignity of all humans who must have materially correct and morally sufficient conditions to be able to meet their needs while avoiding excessive consumption. The principles of this finance establish a business ethic with an orientation towards risk sharing, integrity, fairness, and social progress.

In short, the purpose of this finance is to improve the conditions of man, to establish social equity and to prevent injustice in economic life. In the reality of the current context, it is a question of proposing a series of financial reforms and techniques at the heart of the classical economic system. Today, that means it's much more of an option since you must achieve the same goals but with a different design. Subsequently, it is a question of achieving the same results in terms of economic efficiency and profitability, but avoiding practices that accelerate the harmful effects of the process of globalization in terms of social distortions, depletion of resources and pollution.

Author Contributions

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