

## The influence of psychology on investment decision-making

### L'influence de la psychologie sur la prise de décision d'investissement

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<b>Disclosure Statement :</b>	Authors are not aware of any findings that might be perceived as affecting the objectivity of this study
<b>Conflict of Interest :</b>	The authors report no conflicts of interest.
<b>Cite this article :</b>	MIHRAJ, Z., & ALAOUI MDAGHRI, A. (2022). The influence of psychology on investment decision-making. International Journal of Accounting, Finance, Auditing, Management and Economics, 3(4-2), 425-436. <a href="https://doi.org/10.5281/zenodo.6990644">https://doi.org/10.5281/zenodo.6990644</a>
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Received: June 15, 2022

Published online : August 14, 2022

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### Abstract:

Classical or standard finance has shown certain limitations, particularly in explaining and predicting stock market dysfunction. Behavioral finance offers a complimentary perspective to the analysis of this dysfunction by integrating the psychology of the investor. It brings together several fields such as psychology, even sociology or anthropology and tries to integrate it with economics. It has shown the existence of many behavioral factors that often follow the decision-making of decision makers or investors. Thus, behavioral finance combines psychological, behavioral and cognitive theories with economics and finance in order to understand the irrationality of investors in their decision-making.

According to classical financial theory (Tobin 1958, Markowitz 1959 and Alexander 1961), humans are most often rational and logical in maximizing their wealth and making decisions. It has been attested by several researchers and scientists that human beings are capable of making complex analyses and decisions based on the conclusions they draw, but this puts them under many constraints that sometimes lead them to make shortcuts and rely on their intuition. Otherwise, the human being is not a machine that analyzes and gives a verdict according to a previously studied program. Researchers in economics and finance (Daniel Kahneman and Amos Tversky Who Won the Nobel Prize in Economics with Their Prospect Theory in 2002) have concluded that factors such as mood and psychology influence decision-making. Added to this are the discrepancies between reality and perception, between a past event and one's memory of it.

Thus, the purpose of this article is to provide a literature review covering as many aspects as possible, including biases and heuristics. Then, we will focus on the contribution of behavioral finance and the impact of emotions on decision-making.

**Keywords:** behavioral finance, decision-making, emotions, information processing, moods

**JEL Classification:** G4 – G40 – G41

**Paper type:** Theoretical Research

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### Résumé

La finance classique ou standard a montré certaines limites, notamment pour l'explication et la prédiction des dysfonctionnements boursiers. La finance comportementale offre une perspective complémentaire à l'analyse de ce dysfonctionnement en intégrant la psychologie de l'investisseur. Elle regroupe plusieurs domaines comme la psychologie, voire de la sociologie ou l'anthropologie et essaye de l'intégrer à l'économie. Elle a montré l'existence de nombreux facteurs comportementaux qui suivent souvent la prise de décision chez les décideurs ou les investisseurs. Donc la finance comportementale associe les théories psychologiques, comportementales et cognitives à l'économie et la finance afin de comprendre l'irrationalité des investisseurs lors de leurs prises de décisions.

Selon la théorie financière classique (Tobin 1958, Markowitz 1959 et Alexander 1961), les hommes sont le plus souvent, rationnels et logiques dans la maximisation de leur richesse et la prise de décision. Il a été attesté par plusieurs chercheurs et scientifiques que l'être humain est capable de faire des analyses complexes et de prendre des décisions suite aux conclusions qu'il en tire, ceci le met en confrontation à de nombreuses contraintes qui l'amènent parfois à faire des raccourcis, et à se baser sur son intuition. Autrement, l'être humain n'est pas une machine qui analyse et donne un verdict selon un programme étudié au préalable. Les chercheurs en économie et en finance (Daniel Kahneman et Amos Tversky qui ont obtenu le prix Nobel d'économie avec sa théorie des perspectives en 2002) ont conclu que certains facteurs comme l'humeur et la psychologie influencent la prise de décisions. On ajoute à cela les écarts entre la réalité et la perception de celle-ci, entre un événement passé et le souvenir qu'il en a.

Ainsi, l'objet de cet article est de fournir une revue de littérature couvrant le plus de volets possibles, comprend les biais et les heuristiques. Ensuite, on va mettre l'accent sur l'apport de la finance comportementale et l'impact des émotions sur la prise de décision.

**Mots clés :** finance comportementale, prise de décision, émotions, traitement d'information, humeurs

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## 1. Introduction

For half a century, financial analysis has been built on the hypothesis of individual rationality and market efficiency. This has allowed knowledge about the valuation of financial assets to advance considerably. For about five decades, the theory of efficiency has been unable to explain certain anomalies and inefficiencies that are not due to changes in fundamentals, but rather to the behavior of market participants. This theory has shown its limitations, as it has been observed that there are anomalies at both the individual and aggregate levels. The anomalies that were observed at the individual level concern investors' portfolios that are under or poorly diversified and have a largely excessive level of turnover. At the aggregate level, the level of volatility and volume of shares inexplicably exceeded predictions, and their evolution implied that past prices did not predict future prices.

These anomalies, among others, prompted some researchers in the 1970s to take up behavioral finance. The latter has ceased to be marginalized and has integrated into its ranks researchers such as Daniel Kahneman, who was awarded the Nobel Prize in Economics in 2002 thanks to his theory of perspectives developed with Amos Tversky. This theory is not only the cornerstone of behavioral finance of investing in risky assets but also a means by which individuals can make quick, relevant and satisfying decisions. The principle of behavioral finance is the application of psychology to try to explain the phenomena observed in the market. It is based on 2 main assumptions either we have investors are not completely rational and their decisions are affected by their moods, emotions and beliefs, which invalidates the foundations of classical finance or investors are completely rational and arbitrary

This article will deal with a part of our thesis "the psychology of the investor facing startups". This said, the general objective will be to demonstrate that behind the decisions taken by investors, there are indeed psychological impulses, which may well be an important element in the development of startups in Morocco. Thus, we will transpose psychology to finance in order to understand certain phenomena that have been identified.

The objective of this paper is to provide a literature review covering as many aspects as possible, including biases and heuristics. Then, we will focus on the contribution of behavioral finance and the impact of emotions on decision-making.

## 2. Conceptual framework

### 2.1. Introduction to behavioral finance

Behavioral finance is a component of the new "behavioral economics" which consists of applying psychology to finance. This theory was officially recognized in 2002 with the award of the Nobel Prize in Economics for its two founders, Daniel Kahneman and Amos Tversky. Their study focused on the behavior of investors when making decisions.

As opposed to the basic theory of efficient markets, this new theory will try to highlight situations of market irrationality and will try to explain the causes by the psychology of investors. In other words, it will link the shortcomings of human behavior and their effects on markets in order to use them in making investment decisions.

According to classical financial theory, financial markets lead to the most economically efficient equilibrium as if they obeyed purely rational rules. Behavioral

finance takes a completely different approach. It considers that investors are not always rational and that their feelings are subject to systematic errors of judgment (called 'cognitive biases') or emotional factors such as fear or overconfidence, which interfere with their decision-making.

## **2.2. Definitions**

Several definitions of behavioral finance exist and there is a considerable link between them: THALER (1993) defines behavioral finance as a simple "openness of mind," in order to find a solution to an empirical (financial) problem, it is necessary to determine the state or situation in which certain agents, belonging to the economy, act in a less important way than the set of rational agents. Also, OLSEN (1998) argues that behavioral finance does not aim to define rational behavior or label decisions, but seeks to understand and predict the systematic and financial implications of the market and psychological decision-making process. Or MANGOT (2004) argues that behavioral finance, born out of the confrontation of psychological and financial perspectives, seeks to shed light on what motivates investors' decisions; it accounts for how emotions interfere with their decisions.

## **2.3. Role of Behavioral Finance**

Behavioral psychology opens the way to a better understanding of financial decisions. It highlights cognitive biases in order to identify the processes inherent in decision-making in the particular world of financial markets and thus attempts to correct them. It also allows one to take advantage of the behavioral biases of other stakeholders. It is useful for investors who wish to anticipate market movements. It is useful for professionals who wish to improve the reception of their financial products or for companies who wish to integrate behavioral psychology analysis into their financial decisions.

Behavioral finance has uncovered the existence of many biased behaviors that often follow the same patterns among fund carriers and investors. They therefore present systematic characteristics that research in finance must try to take into account. The contributions of behavioral finance bring challenges and perspectives. They are not limited to the academic world; they must also enable regulators and financial advisors to better serve the interests of investors. It is in fact a question of better understanding their weak points in order to avoid the pitfalls that their intuitions, their heuristics, their emotions or their excesses of confidence can represent.

## **3. Theories of behavioral finance**

### **3.1. Prospect theory:**

In the early 1980s, two economists Daniel Kahneman and Amos Tversky developed the prospect theory. They consider that people make decisions according to the way the situation has been presented to them and not only according to potential outcomes and probabilities which are rational. It all depends on the framework in which people make decisions, on how a situation is presented.

This theory is characterized by the S-curve. The individual considers income above the reference point "0", the function is concave, i.e., he considers it as a gain and which offers him a positive but marginally decreasing utility. Whereas for income

below the reference point, the function is convex, i.e., the losses still decrease the welfare but less and less.

### **3.2. The noise trader approach:**

This theory considers that there are some ignorant investors called "noise traders" who build their decision irrationally on the basis of noise in the market, i.e., they rely on false signals. In the face of the mass of movements made by these irrational investors, the presence of informed investors is not enough to guarantee the stability of the market and the return of the price of its fundamental value.

The consequence of this observation is that the opinion of ignorant investors must be taken into account. This model helps to explain the observed deviations of stock prices from their fundamental value.

Investors who invest in popular or noisy models are worse off than they would be if their expectations were rational (if welfare is calculated relative to the correct distribution of returns). They don't need to lose money on average, as the simplest logic would suggest. We bet that even if they get higher average returns, it's because they put up with more than they think. But even if they get richer over time, it is only because they underestimate the risk and they are lucky. If investors had perfect foresight and rationality, they would know that noise trading always hurts them.

## **4. Behavioral biases:**

### **4.1. Cognitive bias**

Any decision-making process necessarily includes an information processing stage. This stage is usually complicated, which is why it is often difficult to make a decision. In fact, in the market, the abundance of information and its many sources can create misinformation or background noise. In addition, the presence of cognitive biases (Kahneman et al. 1979), also known as information biases, can prevent individuals from using information correctly. Thus, biased decisions can be explained by one of the information biases. The first type of information bias is called the backward bias, whereby once the information is perceived by the investor, the investor tends to believe that he or she knew it all along (Kahneman et al. 1979). The second type is called the confirmation bias.

According to this bias, the agent tends to consider only information that supports his reasoning and judgments, and therefore ignores information that invalidates them. Thus cognitive shortcuts allow the individual to make a judgment and a decision, it directs the person's judgment in a predictable direction, this shortcut analysis appeared in the 1970s it was conducted by psychologists who sought to understand everyday decisions and how the individual processes the information available to him.

### **4.2. The Representativeness Bias**

This bias refers to the tendency, it is a theory which was developed by Ross, it is a question of generalizing what is initially only particular and of making a judgment. It is a judgment by stereotype, the individual uses particular and specific cases to establish general laws, so the events observed at time "t" are more characteristic.

We found two variants false consensus and Analogical and heuristic availability reasoning. For the first variant, Greene and Housse 1977 have shown that there is a false-consensus effect which causes individuals to overestimate the representativeness

of what concerns them. It leads to a bias in the individual estimation of the consensus of the financial community. However, for the second variant, this theory shows that individuals use simple elements that are easily accessible to attention and memory to achieve their objectives, and that decision-making is easily biased by this immediately available information.

#### **4.3. The momentum Bias**

The investor considers that what has happened in the recent past can be repeated in the near future with a high probability. This can distort the information and thus bias his decision-making.

In terms of anticipation, psychologists have noted that if the market has risen over the last six months, the investor becomes optimistic and if the market has fallen over the last six months, the investor would be pessimistic, i.e., they believe that the market will continue to move.

#### **4.4. The hot hand theory**

In total contradiction with their perception of the risk associated with natural phenomena, individuals generally consider that performances are positively correlated in the short term, i.e., that they would be followed by a series of failures or successes, taking the example of basketball players, and say that they have a hot hand and that at this precise moment, the probability of making a basket is higher than their previous success rate.

This belief explains why investors are motivated to invest in funds that have outperformed in the short term. Unfortunately, this performance does not represent reliable information on the manager's skills since the manager must be evaluated over the long term.

#### **4.5. Conservatism and confirmation bias**

Among the mass of information available on the market, the individual favors certain information which necessarily leads him to overestimate certain information among others.

This bias shows that opinions, whether positive or negative, are difficult to change and prevent one from modifying one's strategy in a timely manner; it can lead the investor to take positions contrary to the information available.

#### **4.6. Availability Bias**

This bias shows the capacity of individuals to evaluate the probability of occurrence of an event according to the ease of identifying a situation similar to the current one. It is therefore more likely that individuals currently overestimate the probability of a terrorist attack occurring, whereas they will necessarily underestimate the probability associated with a less publicized event. In the current financial context, which remains turbulent after the financial crisis of 2008 and the sovereign debt crisis of 2011, the availability bias leads to a higher probability of a terrorist attack.

The availability bias leads investors to overestimate the probability of a future crisis.

#### **4.7. Familiarity bias**

This bias leads the individual to invest in securities that are familiar to him. Several economic researchers have shown that when faced with securities with the same probability of gain, investors prefer the one they know best.

This preference for familiar stocks encourages investors to buy stocks that are labeled as local, regional or national depending on the geographic location of the preferred stock. This bias leads investors to under-diversify their portfolios.

#### **4.8. The Disposition Bias**

Initially characterized by Shefrin and Statman (1984), this bias explains the inclination of investors to sell "winning" stocks too quickly and to hold on to "losing" stocks longer, in order to cushion the loss. In other words, this bias allows the investor to realize capital gains too quickly and drag out their losses.

Disposition bias is one of the most studied behavioral biases in the literature. It has been demonstrated at an aggregate level in a given market or for a group of investors, before being confirmed at the individual level. Exposure to disposition bias is notably a function of the financial skills and experience of the investor.

### **5. Importance of Emotions in Financial Decisions**

This dedication to the scientific study of emotions dates back to Darwin with his book "the expression of the emotions in man and animals" published in 1872. Darwin described emotions as an ancestral biological reflex essential to the survival of any species.

There are also Izard and Plutchnik who propose an evolutionary vision, they consider that human emotion, whatever its environment and beliefs, would come to be felt, expressed and recognized in other individuals whatever the situation. Following numerous cross-cultural studies on facial expressions, Ekman was able to identify six basic emotions used by all individuals, these emotions are joy, sadness, anger, fear, surprise and disgust.

Generally, the decisions made by the individual are the result of his state of mind and his emotions. Depending on the situation, emotions can guide judgments or define them completely, and it can be said that emotions drive decisions.

In financial theory, it is said that individuals make rational decisions in a market that is fully balanced, and since these are financial decisions and not sentimental ones, emotions are absent. This view neglects the fundamental element in decision-making because very often emotions allow good decisions to be made quickly and thus minimize the risk of getting lost in the small details.

According to a study by Damasio (1994), it was found that emotions strengthen the individual's ability to make rational choices; they also allow one to transcend the details and prioritize the information received and to focus on the decision to be made.

#### **5.1. Affective Reasoning**

Following non-substantive reasoning, emotions play an important role in decision-making. They are able to make decisions and judgments on the basis of mental images to which they associate positive or negative feelings. This rapid reasoning is also called "affective heuristics".



In financial decision-making, the affective heuristic implies that stocks of companies that have a positive image are more likely to be purchased than those of negatively perceived companies. This positive sentiment provides the investor with insurance against risk and increases the expected return. It plays an important role in the valuation of the assets of young companies wishing to go public.

### 5.2. Investors' Emotions

Numerous studies show that several biases stemming from emotions impact the decision-making process in humans. Especially since mastering the emotional side is not a certainty. The perception of risk and the attitude towards its realization depend on the current temperament of the investor concerned. If the investor is in a good mood, he is rather optimistic. Otherwise, his bad temperament would lead him to be pessimistic and critical (Wright et al. 1992).

This is a verifiable fact. If this is the case, what can the investor do then? A first reaction may be to try to control their emotions. Self-control, or emotional control, is a complicated attitude to achieve. Aware of the obviousness of this postulate, the agent tends to favor a short-term time horizon for relatively average returns, rather than investing in the long term for higher levels of gain (Baumeister et al. 1998). This is contrary to the basic logic of stock market investing. Moreover, the investor chooses the strategy that would give him the least regret in case of a loss (Loomes et al. 1982). The desire to avoid this regret may lead him to act disproportionately (Barber et al. 2001). Furthermore, faced with the risk inherent in the investment, the agent experiences a certain fear of the unknown. He may therefore make unreasonable or even paradoxical decisions (Ellsberg 1961).

Thus, the investor's emotions depend on his successes or failures and those of his environment. To each emotion, he associates a reflex response that allows him to react quickly to the situation in which he finds himself with the implicit objective of preserving himself and improving his situation.

### 5.3. Moods and Investment Decisions

There are other general emotional states that influence financial decision-making. Mood plays a role in investment decision-making. A positive mood is generally associated with better outcomes, as it allows the individual to better organize and assimilate the information they have and deal with the problem. A good mood gives the individual an air of optimism about the future. It can change expectations of return and risk, and encourages taking longer and riskier positions in the market.

According to a study by Wright and Bower (1992), they found that individuals in a bad mood are twice as likely to experience a problem as individuals in a good mood. Several psychologists have associated moodiness with natural elements that may cause it:

- **The sunshine effect:** according to a study by Hirshleifer and Shmway (2003), they associated good weather with a good mood, so if a good mood leads to optimism, and optimism in the investor translates into a strong temptation to buy, then sunny days should be distinguished by higher returns.
- **The moon effect:** the moon also influences the mood of the individual regardless of personality. According to a study by Dichev and Janes (2003), the moon was found to have an impact on stock markets without influencing

volatility or trading volume or changes in interest rates. These results argue for investor mood cycles affecting decision-making.

- **The weekend effect:** it was observed that the weekend effect on the markets should be linked to the increased pessimism that affects investors on Mondays, and it was noted that there are significant differences in average returns depending on the day of the week, with higher returns from Wednesday to Friday and much lower or even negative returns at the beginning of the week.
- **The holiday effect:** just like the weekend effect holidays put investors in a good mood and thus drive market returns upwards.

#### 5.4. Optimism and overconfidence

Optimism can have a perverse effect on investment decisions if it fuels unrealistic expectations or ignores downside risks. Investors predict that what is good for them will happen, their fate will be influenced by their actions and this gives them the impression that they are in control. Overconfidence leads investors to believe that they understand the market and are able to anticipate its short-term fluctuations even in complicated situations.

The optimism bias leads agents to favor a favorable scenario in a gloomy outcome. Following the analysis of the questionnaire elaborated by Benartzi, Kahneman and Thaler (1999), the study showed that shareholders spend much more time thinking about the potential gain than about the loss, which makes them better able to predict the rise of the stock market than bondholders.

According to a study by Shiller in 1987 "29% of investors said they thought on the day of the crash they knew how high the market would go" according to these investors their opinion is based on their intuition rather than on objective evidence. This state of mind invites the individual not to use all available information but to rely on a few personal signals to take a position.

## 6. Loss Aversion, Regret and Status Quo

Nowadays, the dominant economic thinking is based on the principle of rationality. The latter considers that the human being is an economic agent who acts rationally according to the information available to make his decision following the theory of rational choice developed by Gary Becker.

However, it has been found that the individual often makes decisions that have no rationality, and that he acts on impulse, which leads him to sink and refuse to admit his mistake in case of loss, his ego does not let him recognize his decision as bad. He cannot accept it in his mental structure. He will therefore resist the reality principle.

For any individual, losses are considered abnormal, when the individual plans a constant improvement of his well-being, he can hardly see himself losing his financial wealth or seeing it decrease from one period to another. It must be said that self-esteem does not go well with losses. The latter imposes a painful reconsideration that individuals avoid.

When losses have already been incurred, they require people to take risks in order to try to return to equilibrium, and when losses have been incurred in the past, they encourage people to flee the markets so as not to relive the situation.

## **7. Mental accounting:**

Mental accounting is a central concept in behavioral finance, it shows that individuals are not able to see the problem as a whole and tend to segment it by topic for example if it is a financial problem: rent, electricity, clothing expenses, etc. These segments are called mental accounts. The same treatment is applied to the purchase/sale of securities where each acquisition or sale will be the subject of a specific mental account.

There are two variations of mental accounts reference point and mental account. For the first variant, it allows individuals to determine whether they are winners or losers, i.e., it allows them to establish a floor. Thus, if an individual buys a security at  $x$  dh, this price automatically becomes the "reference price" of the mental account. Thus, if the reference price is higher than the market price, the mental account will be evaluated in a loss situation and in a gain situation in the opposite case.

For the last variant, this idea is the basis for the notion of myopic risk aversion (Benartzi & Thaler, 1995). The study shows that the faster and more volatile the frequency of portfolio valuations, the greater the risk aversion. In an academic article, Shlomo Benartzi & Richard Thaler (1995) link this phenomenon to the equity risk premium on the basis of annual periodicity.

The concept of mental accounting helps to understand why it is difficult for an investor to understand his wealth.

## **8. Conclusion**

Behavioral finance helps to determine the extent to which psychology influences investor behavior. In this sense, it is opposed to classical financial theory.

This concept is in fact from the observation that the decisions which are taken in the financial markets by the various acts are rational and the most effective for them. Investors never put their emotions into play when making decisions. Finance is the perfect example

Behavioral finance shows us that part of the decision we make on the market is directly linked to our experience and our feelings. This theory thus demonstrates that markets have a memory since the actors and their decisions are partly conditioned by these biases. Behavioral finance therefore aims to understand or even explain abnormal situations in the markets. In this article, we are interested in the four psychological biases that constitute emotional biases; and mental anchoring and mental accounting that are cognitive biases.

## References

- (1) Aktas, N. (2004). La «finance comportementale»: un état des lieux. Reflets et perspectives de la vie économique, 43(2), 19-33.
- (2) C. Wetzler (2008 -2009). « La finance comportementale : d'une meilleure compréhension a une nouvelle régulation des marchés financiers ». Article
- (3) Coulon, Y. (2015). Guide pratique de la finance comportementale: Pour l'investisseur individuel et le conseiller financier. Gualino éditeur.
- (4) Eber, N. (2020). La psychologie économique et financière: Comment la psychologie impacte nos décisions. De Boeck Supérieur.
- (5) <http://www.broker-forex.fr/theorie-des-perspectives-finance-comportementale.php>
- (6) Lebraty, J. F., & Pastorelli-Nègre, I. (2004). Biais cognitifs: quel statut dans la prise de décision assistée?. *Systèmes d'information et management*, 9(3), 87-116.
- (7) M. Mangot (2004). « 50 petites expériences en psychologie de l'épargnant et de l'investisseur », édition Dunod
- (8) M. Mangot (2008). « Psychologie de l'investisseur et des marchés financiers », édition Dunod
- (9) M. Mazalto (2011). « La finance comportementale : une recherche empirique sur la théorie des perspectives », édition Broché
- (10) M. Mazalto (2011). La finance comportementale : une recherche empirique sur la théorie des perspectives. Edition Broché
- (11) Olsen, R. A. (1996). Implications of herding behavior for earnings estimation, risk assessment, and stock returns. *Financial Analysts Journal*, 52(4), 37-41.
- (12) Qafas, A., & El Bijri, N. (2020). Les biais cognitifs et émotionnels chez l'investisseur marocain. *Revue Française d'Economie et de Gestion*, 1(5).
- (13) R. Winne ; C. Hondt (Mars 2017). « La finance comportementale : enjeux et perspectives ». Article
- (14) Shefrin, H. (2010). Behavioralizing finance. Now Publishers Inc. 4 (1-2), pp. 1-184.
- (15) Sifouh, N., Oubal, K., & Bayoud, S. (2018). Etude Empirique De L'effet Du Comportement D'excès De Confiance Sur La Volatilité Du Marche Boursier Marocain. *European Scientific Journal*, 14(31), 82-99.
- (16) Spieser, P « Information économique et marchés financiers », Edition Economica 2000.
- (17) Thaler, R. H. (1999). The end of behavioral finance. *Financial Analysts Journal*, 55(6), 12-17.
- (18) Y. Coulon (2015). « Guide pratique de la finance comportementale : pour l'investisseur individuel et le conseiller financier », édition Broché