Cryptocurrencies from a behavioural finance perspective

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Abstract. In today’s world, cryptocurrencies are no longer a technological miracle for a small group of programmers. They have become a very common investment instrument that attracts the attention of both traditional investors (funds and traders) and those who are not interested in classical markets and investing in general. This is especially true for bitcoin. The purpose of the study was to investigate the influence of behavioural psychology in making investment decisions in cryptocurrency markets. The research methods included analysing historical data on cryptocurrency prices, as well as observing investors’ reactions to important events and news related to cryptocurrencies. In addition, behavioural analysis methods were used to understand and predict investors’ reactions to various incentives and situations in the cryptocurrency markets. The results of the article describe the main provisions of behavioural finance, which are necessary for an overview of the cryptocurrency market. The impact of the main topics of behavioural finance research is also considered. It should be noted that in the absence of a large amount of data, the study of the cryptocurrency market and the behaviour of participants is mainly a hypothetical assessment, and the empirical aspects of the study are copied from the behavioural finance of the classical market. Considering the cryptocurrency market from the point of view of behavioural finance, the main points of view of different parties were considered: both supporters of cryptocurrency and those who consider this phenomenon to be an economic bubble in a technological wrapper. The information reflecting the main biases of behavioural finance, which relate to both classical markets and cryptocurrency markets, is systematised. The study of cryptocurrencies from the point of view of behavioural finance reflects the practical value in understanding the impact of behavioural factors on price dynamics and investment decisions in cryptocurrency markets.

Keywords: bitcoin; virtual currency; payment system; information economy; behavioural factors

INTRODUCTION
Cryptocurrencies are a cheap, convenient and technologically advanced way of conducting settlement transactions on a global scale and are a promising form of investment. Given the current development of cryptocurrencies in the world (2023), the focus is on blockchain technology and the bitcoin cryptocurrency, which is also the most expensive cryptocurrency available. In addition, the interest of the economically active population in financial innovations in the information economy is growing. After the global financial crisis of 2008, it directly affected the stability of the financial system, especially the banking industry, and people’s trust in the country’s traditional

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Having studied the influence of behavioural psychology in finance, materials from Internet sources, periodicals, and European scientists on cryptocurrency behaviour, the theoretical and methodological basis for the study of behavioural finance is the key to building a pricing model for the cryptocurrency market. Most researchers believe that behavioural finance is the study of the influence of human psychology and other social factors on financial decision-making, as well as the psychological phenomena that accompany this process. The study was based on the analysis of cryptocurrency exchange rate statistics for 2013-2023 (CoinMarketCap, 2023). In order to solve the tasks set, the study uses general scientific and specific research methods. In particular, a literature review was applied: analysis of scientific articles, books, dissertations and other sources covering the theories and concepts of behavioural finance in the context of cryptocurrencies. The descriptive-analytical method was used to summarise and systematise the results obtained on the impact of behavioural factors on price dynamics and investment decisions in cryptocurrency markets. The method of statistical analysis was used to interpret the behaviour of players in the cryptocurrency market. SWOT-analysis is used to reveal the economic nature of cryptocurrency and the peculiarities of its circulation as an innovative means of payment. Systematic methods, such as classification and categorisation, were used to identify the main behavioural partners in the cryptocurrency market. Logical generalisation was applied to ensure the logical sequence of the material. Dialectical methods, such as induction and deduction, were used to draw general conclusions from specific facts and vice versa. The method of analysis and synthesis was used to present an adequate picture of the movement of processes in the context of general events. The graphical method was used to present the results of the study in a visual way.

**RESULTS AND DISCUSSION**

Behavioural finance should not be contrasted with modern corporate and public finance, let alone personal or household finance. This concept of finance is only a complement to the general theory of finance, although it is extremely important. Psychological phenomena have a significant impact on financial activities, as financial decision-making is often accompanied by risk and uncertainty. Therefore, the creation of a theoretical framework for the influence of human psychology and other social factors on financial decision-making is one of the most pressing tasks of modern economic science, especially financial research. There are many scientifically formalised effects of behavioural finance, paradoxes and other patterns, but, according to many scholars, the main task of building the theory of behavioural finance into a single and systematic doctrine remains unresolved (Nikiforov & Marich, 2022).

Behavioural finance is the study of the influence of psychology on the behaviour of investors or financial analysts. It studies various psychological influences on decision-making and the impact of these effects on markets. Behavioural finance, in particular, is based on the fact that investors are not always rational, have limits to their self-control, and are influenced by their own biases (Ilyashenko, 2017). A comparison of behavioural finance with traditional financial theory is presented in Table 1.

**MATERIALS AND METHODS**

The theoretical and methodological basis for the study of cryptocurrency markets is the scientific work of Ukrainian and European scientists on cryptocurrency behavioural finance, materials from Internet sources, periodicals, educational materials and scientific works of authors who have studied the influence of behavioural psychology in making investment decisions in cryptocurrency markets. The study was based on the analysis of cryptocurrency exchange rate statistics for 2013-2023 (CoinMarketCap, 2023). In order to solve the tasks set, the study uses general scientific and specific research methods. In particular, a literature review was applied: analysis of scientific articles, books, dissertations and other sources covering the theories and concepts of behavioural finance in the context of cryptocurrencies. The descriptive-analytical method was used to summarise and systematise the results obtained on the impact of behavioural factors on price dynamics and investment decisions in cryptocurrency markets. The method of statistical analysis was used to interpret the behaviour of players in the cryptocurrency markets. SWOT-analysis is used to reveal the economic nature of cryptocurrency and the peculiarities of its circulation as an innovative means of payment. Systematic methods, such as classification and categorisation, were used to identify the main behavioural partners in the cryptocurrency market. Logical generalisation was applied to ensure the logical sequence of the material. Dialectical methods, such as induction and deduction, were used to draw general conclusions from specific facts and vice versa. The method of analysis and synthesis was used to present an adequate picture of the movement of processes in the context of general events. The graphical method was used to present the results of the study in a visual way.

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Table 1. Comparison of behavioural finance with traditional financial theory

<table>
<thead>
<tr>
<th>Traditional financial theory</th>
<th>Theoretical hypotheses of behavioural finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The market as a whole, especially investors, is rational. That is, they act in their own interests and make the best decisions.</td>
<td>1. Investors are perceived as &quot;normal&quot; rather than &quot;rational&quot;. It is the irrationality of human behaviour that is taken into account.</td>
</tr>
<tr>
<td>2. Investors are most interested in maximising utility. That is, all their decisions depend on the ultimate, most profitable outcome for them. This factor determines that the market itself, as a set of all participants, is always regulated to maximise utility.</td>
<td>2. Their self-control is effectively limited. Their decisions are influenced by emotions, moods and personal attitudes to risk.</td>
</tr>
<tr>
<td>3. Investors’ self-control is absolute. Their decisions are not influenced by emotions, moods and personal attitudes to risk.</td>
<td>3. Investors are influenced by their own biases.</td>
</tr>
<tr>
<td>4. Investors’ decisions are not influenced by bias. Investors are not subject to cognitive errors.</td>
<td>4. Investors’ cognitive errors can lead to poor decisions.</td>
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Source: developed by the authors on the basis of M. Baker & J. Wurgler (2015); D. Kahneman (2019)

Thus, the main achievement in behavioural finance is the realisation that in finance, as in all other areas of activity, people make decisions and act under the influence of stereotypes, preconceived ideas, illusions of perception, errors in information analysis, and ordinary emotions. In 2023, humanity is at the centre of an economic phenomenon. Thousands of dollars are paid by people for what is essentially a reward for actions in computer games. Cryptocurrencies have no physical embodiment, are sometimes used in very dubious ways, are hardly regulated, and basically only exist if enough computers can confirm their existence. At this point, it can be assumed that this is the largest economic bubble in history, and it may have just begun to spread. Concerned about the hysteria of mass greed and corruption among young people, governments have been forced to deny the value of cryptocurrencies or restrict trading in them (Ballis & Verousis, 2022).

Elements of traditional finance and economics are partially present in the cryptocurrency phenomenon, but only the set of elements present in it makes cryptocurrency a unique phenomenon. Thus, it is more correct to consider this phenomenon from the perspective of behavioural finance. One of the aims of this paper is to add a behavioural dimension to the current discussion on cryptocurrencies and to raise awareness of the impact of behaviour on financial markets. This should be seen in the context of the fact that behavioural science is a

Table 2. SWOT-analysis of cryptocurrency circulation

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tbody>
<tr>
<td>* anonymity and protection of users' personal data;</td>
<td>* used as a means of payment in the illicit goods market;</td>
</tr>
<tr>
<td>* decentralised issuance;</td>
<td>* technical complexity of use;</td>
</tr>
<tr>
<td>* making payments without intermediaries;</td>
<td>* lack of material form;</td>
</tr>
<tr>
<td>* high transaction speed (compared to fiat money);</td>
<td>* inability to cancel transactions;</td>
</tr>
<tr>
<td>* low maintenance costs;</td>
<td>* narrow scale of distribution in the consumer sphere;</td>
</tr>
<tr>
<td>* lack of centralised management;</td>
<td>* high dependence on the information environment and consumer trust.</td>
</tr>
<tr>
<td>* resistance to inflation;</td>
<td>* high level of security.</td>
</tr>
<tr>
<td>* high level of security.</td>
<td></td>
</tr>
</tbody>
</table>

Features | Threats |
<table>
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<tbody>
<tr>
<td>* a convenient means of payment for international online trade;</td>
<td>* high risks of volatility;</td>
</tr>
<tr>
<td>* creating competition for the traditional payment system;</td>
<td>* unstable income;</td>
</tr>
<tr>
<td>* high investment potential;</td>
<td>* legal and regulatory framework of national governments;</td>
</tr>
<tr>
<td>* growing number of consumers in the world.</td>
<td>* changes in consumer tastes;</td>
</tr>
</tbody>
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Source: developed by the authors on the basis of O. Perchuk et al. (2020)
A relatively new approach to the study of financial markets, and there is little empirical evidence to accurately measure the impact of specific behavioural factors on cryptocurrency markets (Fig. 1).

![Figure 1. Classification of behavioural factors](source)

**Source**: developed by the authors on the basis of M. Lipych (2014); B. Liu et al. (2016)

According to those involved in the study of behavioural sciences, it is difficult to avoid being fascinated by the phenomenon of cryptocurrencies, which is marked by their high attractiveness for analysis and research. After all, it is one of the major developments that has taken place since behavioural research began to be studied in the context of financial analysis. For those studying behavioural finance, this is comparable to what happened after physicists at the Large Hadron Collider discovered new atomic particles. The cryptocurrency market is the most behaviourally driven of all markets (Hirshleifer et al., 2016). Characteristic features of the cryptocurrency market in behavioural finance:

- Fear of loss;
- Fear of herd mentality;
- Envy;
- Speculation (Liivamägi, 2016).

In addition, investors are basically putting their faith in a completely new concept. Regardless of the final outcome, the cryptocurrency market phenomenon will provide the most interesting information and data on the emotional and psychological mechanisms that drive people’s financial decision-making (Adil et al., 2022). It is widely believed that the cryptocurrency market is completely irrational. From the perspective of classical finance, this is true, but irrationality is an inherent part of financial decision-making, and this view has led to the classical market crises of 1987, 2000 and 2008 being seen as inexplicable, when they are not. Human behaviour violates the principle of rational utility in many cases, and trying to empirically argue against it is counterproductive. From the perspective of classical finance, people do not behave as they should, and anyone who contradicts this is trying to impose reality on an abstract model.

Cryptocurrency reached its highest value in 2021, valued at almost USD 3 trillion. As talk of an economic downturn began, cryptocurrency values began to fall (Parveen et al., 2023). During the biggest drop, the two largest digital currencies lost almost three quarters of their value. As of January 2023, the cryptocurrency market was valued at almost USD 993 billion (Abdeldayem & Aldulaimi, 2023). When evaluating a cryptocurrency from the perspective of traditional finance, its price is zero, and the market value appears abnormal. From the viewpoint of behavioural finance, one can analyse potential pricing as a global currency, the hypothetical value of a gold substitute, cryptography as a value security, and blockchain as a tool for internationalising the economy (Bernheim et al., 2019).

Talks of a looming recession make the public anxious and abandon riskier assets such as stocks and cryptocurrencies. Consumer confidence starts to drop with thoughts of a recession. Cryptocurrencies are based on consumer demand, and due to the higher cost, people may not have the money to invest in cryptocurrencies. It is unclear whether the value of cryptocurrencies can fall during a recession because digital assets have not survived it for a long period. However, researchers C.-H. Chang & S.-J. Lin (2015) believe that cryptocurrencies will fight the fear of recession like other riskier investments.

In general, it can be said that to fully assess any market, it is also necessary to look at the behaviour of participants and their influence on each other. In today’s markets, let alone historical markets, even professional analysts are rarely able to do this effectively. Market analysis, whether fundamental, economic or technical, is often too limited for a number of reasons. Contextual limitations, vested interests, and various biases prevent analysis from being fully adequate. And last but not least, insufficient attention to behavioural finance, the emotional and psychological sphere of human activity, makes this analysis incomplete (Nikiforov & Marich, 2022).
The founders of Bitcoin are not taking this lightly or looking at it in isolation. They have clearly defined goals aimed at addressing the problem of overpriced fiat currencies, distrust of financial institutions, high transaction costs, and the impracticality of using gold as a store of value. I. Makarchuk & O. Perchuk (2020) note that all of this concerns different target audiences and adds an important social component to the cryptocurrency market. Nevertheless, there have been many populist statements about the future of cryptocurrencies around the world. They have expressed high levels of distrust and frustration with the actions and policies of governments and mainstream financial institutions (Grosshans & Zeisberger, 2018).

For many who buy bitcoin and other cryptocurrencies, it is not so much an investment as a political donation. From their point of view, these investments show that they support the basic terms of the plan. By design (and as a direct nod to central banks), bitcoin is also positioned as a possible alternative to gold. Due to the inherent advantages of this argument from a practical point of view (ease of storage, limited supply, etc.) and good technical appeal to younger generations, bitcoin is experiencing a speculative boom (Kaustia et al., 2016). This introduces a group of people looking for easy and quick money into the market. Since 2009, bitcoin has been a rather interesting experiment, which even in 2023 is not taken seriously by many, except for the benefits of the underlying blockchain technology. However, the tipping point was reached in June 2017, when prices broke out of a long, slow, multi-year uptrend and became parabolic. After the sharp drop in the bitcoin price in 2017 and the great hype, the cryptocurrency market has become more stable and is gradually developing (CoinMarketCap, 2023). The absence of uncontrolled behaviour of participants makes the cryptocurrency market more interesting from the point of view of behavioural finance.

According to T. Zheliuk & O. Brechko (2016), cryptocurrency is a stable and universal instrument of global financial payments, and at the same time a financial instrument with high capitalisation and a competitive form of international capital flows. However, such a statement does not fully reflect the essence of the concept under study and does not take into account its main features, which were revealed in the above study. V. Soslovsyki & I. Kosovskyi (2016), on the other hand, consider cryptocurrency as a means of payment that does not have a material form, but exists in the form of software code using cryptographic security methods, the issue and accounting of which is often decentralised and known to the participants in the settlement. Although this opinion of the authors is supported by the above, the essence of this issue should be interpreted through the prism of the concept of “digital currency”.

When looking at crypto markets through the lens of behavioural finance, they will appear not only as a new concept with unique characteristics, but also with different appeal to different people. There are also cognitive errors that affect investment decisions, especially heuristic simplifications that usually reduce decisions to one or more reasons. It is possible to isolate these underlying factors and define market segments around them. Although this is an oversimplification of the market, it is very useful for establishing at a high level the key psychological variables, as discussed in N. Shamanska & O. Shamanska (2015). People buy cryptocurrencies not only because of the properties of fiat currencies. For example, some people buy smartphones because they are the latest generation of phones, while others are interested in using a smartphone as an audio player or a camera. The third group is interested in quick access to data storage, and the fourth group is interested in constant and fast access to the Internet. Although there are some simplifications in these examples, smartphones have become incredibly popular precisely because they meet the different needs of different groups, and cryptocurrencies have similar properties.

Thus, behavioural finance is a more realistic assessment of how financial decisions are made than classical financial theory, as it is impossible, or rather wrong, to consider human activity while dismissing behavioural psychology.

CONCLUSIONS

The study found that cryptocurrencies are a historically significant phenomenon in the areas of finance, politics and society that may evolve before the start of a new global payment system. The cryptocurrency market is distinguished by the fact that its dynamics are largely determined by human behaviour, making it the most manageable of all markets. Regardless of the final outcome, the cryptocurrency market phenomenon provides information and data on the emotional and psychological mechanisms that influence people’s financial decision-making. From the point of view of classic financial people do not always act in accordance with theoretical models, and those who deny this will try to impose reality on abstract models.

The article analysed the cryptocurrency market from the perspective of behavioural finance, which allowed to consider the possible price of a global currency, the hypothetical value of a gold substitute, cryptography as a means of ensuring value security, and blockchain as a tool for internationalising the economy. It also analysed cognitive errors that affect investment decisions, identifying the main factors and market segments around them. In summary, behavioural finance is a more realistic assessment of how financial decisions are made than classical financial theory, as it is difficult, or rather wrong, to consider human activity while ignoring behavioural psychology.

This study has shown that the cryptocurrency market opens up wide opportunities for studying the impact of social media and mass media on investment decisions. This can serve as a prospect for further research, as observing market dynamics and investors’ reactions to news and events reflects important aspects of group psychology and collective behaviour. The integration of social media analysis, emotional and psychological factors into cryptocurrency market research allows to better understand and
predict price movements and investment trends. This approach opens up new opportunities for the development of not only financial but also social and psychological science, creating innovative risk management strategies in financial markets.

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Анотація. В сучасному світі криптовалюти перестали бути технологічним дивом для невеликої групи програмістів. Вони стали дуже поширеним інвестиційним інструментом, який привертає увагу як традиційних інвесторів (фонди та трейдери), так і тих, хто не цікавиться класичними ринками та інвестуванням загалом. Особливо це стосується біткоїна. Метою роботи було дослідження впливу поведінкової психології при прийнятті інвестиційних рішень на ринках криптовалют. Методи дослідження включали аналіз історичних даних цін криптовалют, а також спостереження за реакцією інвесторів на важливі події та новини, пов’язані з криптовалютами. Крім того, були використані методи аналізу поведінки для розуміння та прогнозування реакції інвесторів на різноманітні стимули та ситуації на ринках криптовалют. У результаті статті описано основні положення поведінкових фінансів, які є потрібними для огляду ринку криптовалют. Також розглянуто вплив основних тем дослідження поведінкових фінансів. Слід зазначити, що за відсутності великої кількості даних, дослідження ринку криптовалют і поведінки учасників є переважно гіпотетичною оцінкою, а емпіричні моменти дослідження скопійовані з поведінкових фінансів класичного ринку. Розглядаючи криптовалютний ринок з точки зору поведінкових фінансів, було розглянуто основні точки зору різних сторін: як прихильників криптовалют, так і тих, хто вважає це явище економічною бульбашкою у технологічній обгортці. Систематизовано інформацію, що відображає основні упередження поведінкових фінансів, які стосуються як класичних ринків, так і ринків криптовалют. Дослідження криптовалют з точки зору поведінкових фінансів відображає практичну цінність у розумінні впливу поведінкових чинників на цінову динаміку та інвестиційні рішення на ринках криптовалют.

Ключові слова: біткойн; віртуальна валюта; платіжна система; інформаційна економіка; поведінкові чинники