



Cryptocurrencies as a Risk Management Tool – Legal and Economic Perspectives

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Received: December 22, 2023

Revised: April 13, 2024

Accepted: April 15, 2024

Published: May 28, 2024

Keywords:

Cryptocurrencies;
Crypto assets;
Fiat money;
Electronic money;
Capital market



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Abstract: *The development of law is faced with many challenges, including the creation and testing of new information and communication technologies. At the same time, the law must quickly react with a set of legitimate means of regulation to guarantee legal certainty in relations. Cryptocurrencies are a manifestation product of rapidly developing technology entering civil turnover at an increasingly rapid pace. The paper aims to examine the various legal aspects of cryptocurrencies in the EU and to reveal the relationship between the stock market, investors' decisions, and cryptocurrency. It clarifies the concept of cryptocurrency, comparing it to the millennia-old fiat money. In addition, the research traces the cryptocurrencies and their status as essential legal assets in the EU market. To test the relationship between the capital market, the investors' behavior, and cryptocurrency, we apply the regression model, correlation analysis, and Granger Causality Test. The explored variables include the Crypto Index (CRIX), the Sentix sentiment index, and the capital market index. We prove that the cryptocurrency market influences the stock market, which may be explained by the fact that the investors in the crypto markets are better informed than those in the traditional financial markets.*

1. INTRODUCTION

The international turnover is developing in the digital environment. It has created the need for an adequate legal and economic response to the new technological assets. The growth of new trends in legal and economic sciences are inextricably linked. Their compatibility and interaction guarantee the protection of the rights and legitimate interests of individuals as part of society. This convergence is one of the main tasks that underlie every legal system. Law and economy face a new challenge – crypto assets. They are also known as cryptocurrencies or digital assets and are a form of digital or virtual currency that uses cryptography for security. Unlike traditional currencies issued by governments and central banks, crypto assets operate on decentralized networks based on blockchain technology. The development of digital trade (European Commission, 2021) and commodity exchange makes the market increasingly dynamic, and so do the capital markets. There is a need to transfer to innovative and faster methods of exchange. Thus, money as a particular form of generic obligation for the transfer of fungible things is shifting from electronic money to cryptocurrencies in the current digital era. Fulfilling monetary obligations requires greater flexibility and speed to adapt to the pace at which the exchange of goods circulates. Cryptocurrencies are the response to the intensity of trade exchange. They are a complex of developed technologies, rapidity, and efficiency in transaction execution. These currencies are created based on cryptographic technology, dating back to the 19th century, for transmitting coded messages between various military agencies and national leaders (Chen, 2021, pp. 4-6). This technology later evolves into blockchain technology (Narayanan, 2016, pp. 1-336). Its main goal is to use

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algorithms, codes, and symbols to preserve certain information from unwanted subjects. Blockchain, also known as a chain of blocks, represents a database (a recorded sequence of information) that is not subject to manipulation, accessible to a specific set of subjects. The three main characteristics of blockchain are decentralization, transparency, and immutability.

Cryptocurrency began to be discussed for the first time in the 1980s. However, it was only in the early 1990s that cryptographic protocols and software were developed to allow the creation of a truly decentralized digital currency. The emergence of cryptocurrencies is likened to the discovery of the automobile by Henry Ford and is presented as something safer than the vault at Fort Knox (United States government, 2023). Bitcoin, Ethereum, and even Dogecoin are just part of the different types of currencies that are entirely based on blockchain technology. Questions arise as to whether they are carriers of a financial revolution, a striving for a more democratized society, or simply a breakthrough in technologies. Even some researchers consider different speculative scenarios of potential systemic risk in the traditional financial system (European Systemic Risk Board, 2023, pp. 51-57). All the above justifies the need to explore crypto assets' essence and significance for the law and economy. The convergence of legal aspects, the digital economy, and risk management in the context of crypto assets involves navigating a complex landscape. Considerations for each of these elements include clarification of their nature based on a comparison with fiat money and their legal framework defined by EU legislation. Navigating the legal aspects of crypto assets (Crumbley et al., 2023, p. 2) in the digital economy requires a multi-faceted approach that includes compliance with regulations, risk assessment, and adapting to technological advancements. The research paper also attempts to test the relationship between the capital market, the investors 'behavior, and cryptocurrency, applying the regression model, correlation analysis, and Granger Causality Test'. Nowadays investors are willing to risk in the volatile and often unpredictable cryptocurrency markets, so it is important to carefully assess their legal aspects and function as a risk management tool.

Nguyen (2022) found evidence of volatility spillovers from the stock market to Bitcoin prices. These effects are existing during periods of high uncertainty. The correlation between both markets is increasing during periods of turmoil and the COVID-19 pandemic.

2. COMPARATIVE ANALYSIS OF CRYPTOCURRENCIES WITH FIAT CURRENCIES AND EXTRACTION OF THEIR NATURE

The definition and clarification of the concept of crypto assets are in direct relation to their place and significance in global monetary affairs and their connection with fiat money. In literature, the concept of money (Kitamura, 2022) is considered in both a broad and narrow view. From a broad perspective, monetary symbols are regarded as internal payment instruments. In a narrow one, these are the legal tender of a country. This includes banknotes and coins in circulation as payment and exchange instruments. In summary, on one hand, money is encountered as a means of economic exchange. From a legal perspective, money (banknotes and coins) is movable, indivisible, consumable, and fungible property. The term 'currency' (Online Britannica Dictionary, n.d.) denotes both foreign currencies and the monetary unit and system of a given country. With the development of technologies and because of their implementation, the term 'electronic money' begins to be discussed.

Electronic money is a monetary value stored electronically, including in magnetic form, representing a claim on the issuer, issued upon receipt of funds to make payment transactions,

and accepted by a natural or legal person other than the electronic money issuer. This definition fully corresponds to the definition in Article 2, point 2 of Directive 2009/110/EC (*Directive 2009/110/EC on the taking up, pursuit, and prudential supervision of the business of electronic money institutions and for the purpose of amending Directives 2005/60/EC and 2006/*, pp. 7-8). Electronic money is divided into two main groups depending on the mechanisms for their issuance, control, and supervision – centralized and decentralized. Centralized electronic money represents fiat currency in digital form. Their issuance, circulation, and withdrawal are managed and controlled by the respective central bank (a centralized financial institution). Decentralized electronic money is known as “digital money,” encompassing all monetary assets in digital form under the control of specific economic entities other than a sovereign authority. This category includes virtual currencies, which are digital expressions of value available solely in electronic form, used both as an instrument of exchange and a store of value. Virtual currencies possess all the functions of money except for the status of legal tender.

Centralized virtual currencies are issued and maintained by specific organizations or groups of people united by a common goal or interest. Examples of such virtual currencies are the so-called ‘simulated currencies’ (game currencies) created for purchasing goods or services within a specific simulated system owned by a particular commercial company or non-governmental organization. Many online computer games also use virtual currencies solely for the purposes of the respective game. They are created and managed by the companies that developed the given game and are applicable only within the virtual environment of the game. A specific example of a centralized virtual currency is E-gold, founded in 1996. E-gold is a digitally traded currency backed by gold, tradable for national currencies, with issuance and currency trading managed by the Gold & Silver Reserve company.

Decentralized virtual currencies, also known as crypto assets, are any form of electronic money created using cryptographic technology that regulates their creation and ensures the legitimacy of transactions conducted using these currencies. Cryptographic technology is the essence of decentralized virtual currencies. Cryptocurrencies have no administrative body exercising centralized control. Payments in cryptocurrencies are made using cryptographic public and private keys, enabling the transfer of funds between legal and physical entities. Security, integrity, and balance in the cryptographic registry are ensured by a network of interconnected, equal participants (peer-to-peer) who manage and protect the integrity of the network, receiving specific rewards in return.

In summary, it can be concluded that all cryptocurrencies are a type of virtual currency. However, the reverse statement is not true – not all virtual currencies are cryptocurrencies, as there are also so-called digital tokens. Digital tokens (crypto tokens) represent a type of crypto asset or rights with specific uses and purposes, applied and located only within their own blockchain. They are used in initial coin offerings (ICOs) for investment purposes, storing value, making purchases of goods and services, and acquiring rights to purchase specific existing digital assets. Crypto assets encompass the concept of both cryptocurrencies and digital tokens. They are defined as cryptographically secured digital representations of value or contractual rights using ‘distributed ledger technology’ that can be transferred, stored, or traded electronically. Also, cryptocurrency can be defined as an unregulated and decentralized virtual currency created using cryptographic blockchain technology, controlled and used by members of a specific virtual community. It is essential to generalize that cryptocurrency is not identical; on the contrary, it differs from fiat money, i.e., national currencies that have physical carriers (banknotes

and coins). It also differs from centralized electronic money, which represents a digital mechanism for transferring value measured in national currency. It can be concluded that fiat money and cryptocurrencies differ only in the absence of state sanctions. (Noneva-Zlatkova, 2023). So, the following definition of cryptocurrency should be made a digital representation of value that is not issued or guaranteed by a central bank or public authority, is not necessarily linked to a legally established currency, and does not have the legal status of currency or money but is accepted by natural or legal persons as a means of exchange and can be transferred, stored, and traded electronically.

3. NEW LEGAL ASPECTS OF CRYPTO ASSETS IN THE REGULATION (EU) 2023/1114 (Regulation (EU) 2023/1114 on Markets in Crypto-Assets)

During the last years regulatory environment in the different EU countries has been dynamic. Cryptocurrencies and digital assets are subject to various regulations that differ by jurisdiction on the EU level. Understanding and complying with local, national, and international regulations is crucial. Regulatory frameworks may cover issues such as taxation, anti-money laundering (AML), and customer due diligence (CDD), but the focus of this paper is only the Regulation (EU) 2023/1114. Legal challenges may arise in defining the legal status of smart contracts (Gietzmann & Grossetti, 2021) and enforcing them in traditional legal systems. Legal frameworks need to adapt to innovations, addressing issues such as contract enforcement, liability, and dispute resolution. So does the tokenization of assets, where real-world assets are represented by digital tokens on a blockchain, raises legal questions regarding ownership, transferability, and regulatory compliance. On the other hand, crypto assets are known for their price volatility. So, educating stakeholders, including businesses, investors, and users, about the legal aspects of crypto assets is essential. This includes awareness of regulatory requirements, rights and responsibilities, and potential legal risks. All mentioned factors need to be underlain in the legal framework of cryptoassets.

The new regulation outlines the regulatory framework for crypto assets within the EU. Here are summarized some of the key elements envisaged by the Regulation. The regulation includes the crypto assets that do not qualify as financial instruments, deposits, or structured deposits according to EU legislation in the field of financial services, requirements for issuers of crypto assets, requirements for providers of crypto assets, regulation of crypto assets that will be offered publicly or admitted to trading on a trading platform in the EU, prohibitions, and requirements to prevent market abuse.

The legal definition of a crypto asset in the EU law is: “*Digital representation of value or rights that can be transferred and stored electronically through distributed ledger technology or similar technology.*” It also presents definitions of new categories of crypto assets such as tokens, asset-backed tokens, tokens for electronic money (stablecoins), and tokens for goods or services. The proposed regulatory framework in the Regulation on Crypto-Assets Markets includes various levels of regulation determined based on the risks associated with different types of crypto-assets. These types encompass regular crypto assets, tokens secured by assets, and tokens for electronic money.

Regarding regular crypto assets that are not tokens secured by assets or tokens for electronic money, various obligations are envisaged. Firstly, these crypto assets can be traded on crypto asset platforms without the issuer holding a prior license. Instead, the issuer must be a legal entity and prepare a whitepaper specifying the parameters of the crypto asset. This document is

sent in advance to the competent authority in the respective member state and must be publicly published. The whitepaper obliges the issuer to take responsibility in case of inaccurate or misleading information and to provide compensation to investors.

Additionally, a procedure for updating the whitepaper in case of changes in the characteristics of the crypto asset is outlined. For crypto assets not traded on platforms, the right of withdrawal from the purchase is provided as an additional guarantee. The issuer must provide honest and professional information, avoid conflicts of interest, and adhere to restrictions on preferential treatment not explicitly defined in the whitepaper. However, these rules do not apply to crypto assets provided for free or as a reward for maintaining distributed ledgers or validating transactions. Furthermore, the regulation does not apply to unique crypto assets that cannot be replaced, as well as those offered only to qualified investors or with a total value of 1,000,000 euros over a 12-month period in which they are publicly offered. It is crucial to note that providing crypto assets against personal data is not considered free, under European legislation on personal data protection.

The regime is significantly more restrictive for tokens secured by assets – i.e., crypto assets whose value is tied to multiple fiat currencies, or one, as well as more commodities, other cryptocurrencies, or combinations of assets. Issuing such tokens requires the issuer to obtain a license. The obligations imposed on the issuer in these cases are more stringent – the whitepaper must include information about its management, the asset reserve securing the tokens, mechanisms for deriving the value of these tokens from the reserve assets, or other liquidity assurance mechanisms, etc. The whitepaper and its changes in these cases must be approved by the competent authorities. Additionally, issuers of tokens secured by assets are required to provide information to token holders at least monthly and establish a procedure for addressing their complaints. Furthermore, detailed rules for ongoing management, capital requirements, and maintaining an asset reserve are outlined for issuers of such tokens.

The Regulation on Crypto Asset Markets introduces separate regulations for another type of crypto asset – electronic money tokens, intended as an instrument of exchange and linked to the value of a fiat currency, representing legal tender. Issuing such tokens also requires a license, and in this case, certain rules for electronic money institutions apply. The issuer is obligated to provide a specific value to the token holder upon request. While a whitepaper is still a vital element of the regulatory requirements, it does not need prior approval from competent authorities in these cases. Additional obligations are specified for tokens secured by assets and electronic money tokens due to their widespread use, making them significant according to the project's definition. The Regulation on Crypto Asset Markets also includes specific rules for entities providing services related to crypto assets, which must be legal entities established in the EU and hold a corresponding license. These providers are subject to requirements regarding fairness, impartiality, professionalism, maintaining a specified capital or insurance, organizational requirements for their activities, including governing body members, individuals holding over 20% of capital or voting rights, and staff, protection of client crypto assets, complaint resolution procedures, and prevention of conflicts of interest. Specific rules are outlined for certain types of services, such as custody, management, exchange for other assets, operating a trading platform, and consultancy. Moreover, all entities are obligated not to engage in actions that may be considered market abuse. Explicit requirements for disclosing internal information that may influence investor decisions are introduced, alongside a prohibition on abusing such information. Actions that could lead to market manipulation, including fictitious transactions, media communications, etc., are also prohibited.

In conclusion, in the regulatory framework, there is a lack of legal issues regarding the approach to decentralized networks that operate without adhering to predefined rules. The regulation focuses on regulating legal entities that issue crypto assets or provide related services, but there is no mechanism for applying the rules to a network of individual entities simply using protocols for handling crypto assets. The regulation emphasizes the need for clear identification of the beneficiary of providing crypto assets or related services, but in many cases, this may pose a significant challenge. In general, decentralized networks and autonomous organizations that may form within these networks pose a serious challenge to the legal domain, particularly due to the large number of participants who often are not united by common interests. As a result, applying measures to all participants is challenging, and the Regulation of Crypto-Asset Markets, at least for the moment, does not offer solutions in this direction.

The results of the research of [Mužić and Gržeta \(2022\)](#) will help investors to develop a more in-depth understanding of the impact of macroeconomic announcements on Bitcoin's prices compared to those of traditional assets and to build successful strategies in a more mature digital assets ecosystem. Their findings suggest that Bitcoin's high risk is an asset class, and it should be regulated in a way that protects the end investor, who is not necessarily a professional investor, but wants to be part of this new and exciting investment opportunity. [Qian et al. \(2021\)](#) prove that the CRIX can serve as a hedge asset against the world stock market. The high (low) level of EPU has a significantly positive (negative) effect on the optimal hedge ratio of CRIX, which increases significantly during the COVID-19 period.

4. METHODOLOGY

Cryptocurrencies are establishing themselves as an investment asset and are often named the New Gold ([Walther et al., 2018](#)). According to [Haq et al. \(2021\)](#), they differ from traditional financial assets due to: (i) a lack of association with higher regulatory authorities or a decentralized nature, (ii) infinitely divisible, (iii) not collateralized (backed by the economy, asset, or firm) but securitized by an algorithm. However, some interesting features of cryptocurrencies are the lower cost of a transaction, direct peer-to-peer or one-to-one transactions, and independence from the involvement of the government of the state. The literature about cryptocurrency and its relationship with capital markets is gaining more research interest. The current study contributes to this context by exploring the connection between these two types of markets and the influence of investors' behavior. A panel data approach is applied, and the explored variables are Crypto Index (CRIX), Sentix Sentiment Index (SSI), German stock market index (DAX), French stock market index (CAC 40), Bulgarian capital market index (SOFIX), Romanian stock market index (BET), Turkish stock market index (BIST 100). The uniqueness of the crypto market is described by [Trimborn and Härdle \(2018\)](#) by applying the CRIX index. The CRIX index is applied because it permits treating cryptocurrencies as a united pool ([Imtiaz, 2021](#)).

The explored period in the current research is July 31, 2014, to October 20, 2023. The conclusions of [Imran and Shoaib \(2021\)](#) reveal that during the COVID-19 period, all hedge ratios were found to be higher, implying higher hedging costs during the COVID-19 period compared to the pre-COVID-19 period. Their research offers valuable insights to fund managers, investors, and policymakers regarding diversification opportunities, hedging, optimal asset allocation, and risk management. Based on their results, the explored period is divided into three sub-periods: pre-COVID-19 pandemic, COVID-19 pandemic, and post-pandemic conditions. The aim is to estimate if the relationship is influenced by high levels of uncertainty. It is important to check if cryptocurrencies

may be included in investors' portfolios as instruments for diversification and hedging risk during periods of turmoil (Ganchev & Paskaleva, 2024). We divide the stock market indexes into two groups: developed and emerging markets - according to the market capitalization:

Table 1. Explored countries are divided into two panels

Developed markets (DM)	Market capitalization	Emerging markets (EM)	Market capitalization
Germany (DAX)	1.882 505 USD bn	Turkey	374.852 USD bn
France (CAC 40)	3.473.340 USD bn	Romania	58.738 USD bn
		Bulgaria	16 886.84 USD bn

Source: Own classification

The data of the explored variables is available from Royalton-Crix (n.d.), Sentix (n.d.), and Yahoo (n.d.). The data is with daily frequency.

The rates of change of the explored data series are calculated as their logged first differences. We apply the Argument Dickey-Fuller test to estimate stationarity. We prove that all variables are stationary in the form $dlog(x)$ i.e., variables were integrated of order 1.

To reveal the correlation between the explored markets we apply correlation analysis.

$$\hat{\rho}(X, Y) = \frac{\hat{\sigma}(X, Y)}{(\hat{\sigma}(X, X) \hat{\sigma}(Y, Y))^{1/2}} \quad (1)$$

To test the direction of the relationship between capital markets and the crypto market, the Granger Causality Test is applied. We aim to reveal the direction of information transmission before applying regression analysis. Granger Causality test allows us to estimate if one variable can predict the fluctuations of another or to show if the interdependence is bidirectional.

For the aims of the regression analysis, the Ordinary Least Squared Model is applied. It has the following form:

$$\text{Return of CRIX}_t = \alpha + \beta_1 \cdot \text{Return of Stock market indices}_t + \beta_2 \cdot \text{Return of Sentix}_t + \varepsilon_t \quad (2)$$

To conduct calculation the dummy variable takes two values – (0) for the pre-COVID-19 pandemic and post-pandemic periods and (1) for the COVID-19 pandemic period.

5. RESULTS AND DISCUSSIONS

Akhtaruzzaman et al. (2021) find lower dynamic conditional correlations between Bitcoin and industry portfolios and bond indexes, allowing investment in Bitcoin to hedge the risk against industry portfolios and bonds. The most effective hedge in a Bitcoin/industry (bond) portfolio is to short-term Utilities sector. Results are robust to the use of US industry portfolios and a cryptocurrency index instead of global industry portfolios and Bitcoin, respectively. Our results can help investors make informed decisions about risk management and portfolio analysis. Most theories claim that correlation is essential if the investor aims to diversify his portfolio. If the diversification strategy is successful, the investing risk will decrease, and we will be sure that it will not doom if the price of a single variable decreases rapidly. The correlation matrix helps us to visualize which assets are appropriate for combining as trading pairs. If the correlation coefficient is strong and positive, it means very risky, and on the other side if the correlation is strong and

negative the investment is meaningless because the decrease in one variable will be compensated with an increase in another. If we choose assets that are law-correlated it is possible to have a profitable and well-managed portfolio. The estimated positive correlation coefficients mean that both markets move in the same direction. However, during a period of high uncertainty, the stock markets of developed economies (France and Germany) and crypto markets are negatively correlated with a coefficient equal to (-0,831765). Based on the results in Table 2 we observe an increasing correlation between the explored markets during the COVID-19 pandemic – a period which is characterized by increasing investors’ fear. These results correspond to the understanding that during turmoil investors can consider cryptocurrencies as risky assets because they are not reliable instruments for portfolio diversification. It may be considered that the increased correlation during the COVID-19 pandemic, raises the probability of spillovers of investors’ sentiment and proves that both markets are interconnected which proves the results of [Lingling et al. \(2021\)](#). These results confirm the findings of [Chen and Hafner \(2019\)](#) who prove that volatility increases as the sentiment index decreases, which is analogous to the commonly called leverage effect.

Table 2. Estimated correlation coefficients between the explored sub-periods.

	Pre-COVID- 19 pandemic period	COVID-19 pandemic	Post pandemic period
Estimated correlation coefficient between developed stock markets and CRIX	0,534151	-0831765 ↑	0,628105 ↓
Estimated correlation coefficient between emerging stock markets and CRIX	0,010348	0,214501 ↑	0,345808 ↓

Source: Own calculations

The results from the applied Granger Causality Test are exposed in Table 3. We observe that during the COVID-19 pandemic, the CRIX index influences the returns of the stock market indices of both explored groups of countries. This causality also reveals some evidence that cryptocurrencies can play the role of stock market predictors. We must mention that CRIX Granger caused the indices of developed capital markets during the pre-COVID-19 pandemic and post-pandemic period, so we may conclude that its influence is permanently independent of shocks and turmoil. What is interesting is the fact that during the coronavirus pandemic stock markets of France and Germany are in a casual relationship with the crypto market.

Table 3. Granger Causality Test for establishing the relationship between the returns of stock market indices of the explored panels and the CRIX index.

Null hypothesis	F-Statistic	p-value	Decision
Pre-COVID- 19 pandemic period			
DM does not Granger Cause CRIX	0.50712	0.8420	Do not reject
CRIX does not Granger Cause DM *	2.51713	0.0052	Reject
EM does not Granger Cause CRIX	0.58421	0.2575	Do not reject
CRIX does not Granger Cause EM	0.03915	0.5842	Do not reject
COVID-19 pandemic			
DM does not Granger Cause CRIX*	3.05215	0.0251	Reject
CRIX does not Granger Cause DM *	2.05145	0.0158	Reject
EM does not Granger Cause CRIX*	2.81862	0.0369	Reject
CRIX does not Granger Cause EM	1.56921	0.1528	Do not reject

Post pandemic period			
DM does not Granger Cause CRIX	0.05183	0.4815	Do not reject
CRIX does not Granger Cause DM *	2.48510	0.0008	Reject
EM does not Granger Cause CRIX	1.08482	0.7851	Do not reject
CRIX does not Granger Cause EM	0.78524	0.5942	Do not reject

Source: Own calculations

The results of the applied linear regression, estimated by the OLS model are presented in Tables 4 and 5. The Sentix Sentiment Indices shows investors' market expectations. It represents their emotions which corresponds to fear or greed. Negative values of the indices represent a price recovery, whereas the investors' optimism is usually a warning signal of an upcoming price decrease. This is the reason why the expected sign of their influence is negative because Sentix must be interpreted oppositely. We observe that for both developed and emerging markets the influence on the crypto market is negative, this means that decreasing values of Sentix lead to an increase in the prices of the crypto market. For the panel data containing developed markets, the positive sign of the stock market indices not only increases the value of CRIX but also affects the influence of investor expectations in the model. From the results in Table 4, capital markets of developed economies have a positive impact on the crypto market, especially the CRIX index, but their specificity of influence is neutralized by the impact of the investors' expectations. These conclusions support the results of López-Cabarcos et al. (2021) which suggest that Bitcoin investors are more "technological", and therefore pay more attention to the information that comes from media and the investors' sentiment. In periods where stock markets have high volatility, Bitcoin can be used as a safe haven, but when stock markets are stable, Bitcoin becomes attractive to speculative investors.

Table 4. Results from OLS Regression for Developed Countries with Dependent Variable-CRIX

Variable	Coefficients	St. Error	T - statistic	p-value
C	3.015820	0.845972	4.281546	0.0001
DM	0.511004	0.241562	2.018752	0.0008
Sentix	-0.281546	0.184625	-2.584102	0.0015
R- squared	0.782564			
Adj.Rsquared:	0.684952			

Source: Own calculations

Table 5 reveals the results from OLS for emerging markets. Stock market indices of Bulgaria, Romania, and Turkey (EM) are not statistically significant. This indicates that this variable does not have a significant impact on the dynamics of the crypto market during the explored period. The fluctuations of CRIX are determined by the investors' expectations.

Table 5. Results from OLS Regression for Emerging Countries with Dependent Variable-CRIX

Variable	Coefficients	St. Error	T - statistic	p-value
C	4.158202	0.980515	3.815081	0.0001
EM	0.125812	0.015027	1.815402	0.8152
Sentix	-0.108015	0.184502	-2.805216	0.0005
R- squared	0.512805			
Adj.Rsquared:	0.481542			

Source: Own calculations

Based on the results in Tables 4 and 5, we can conclude that for developed economies, capital markets can predict crypto market dynamics. The Sentix index has a weaker negative impact on CRIX for Bulgaria, Romania, and Turkey compared to the same interaction for developed countries. The difference may be explained by the fact that more capital markets correspond to more optimistic investors who operate on both: capital and crypto markets.

6. CONCLUSION

Cryptocurrency is a form of virtual currency that is unregulated and decentralized, developed through cryptographic blockchain technology. It is managed and utilized by members within a specific virtual community. It is crucial to emphasize that cryptocurrencies are not uniform; instead, they distinguish themselves from fiat money, which refers to national currencies with physical forms such as banknotes and coins. Even though they hide many risks for individual investors, so the legislative framework is crucial. Individuals and businesses involved in the digital economy need to manage market risks associated with price fluctuations. The decentralized nature of blockchain networks doesn't make them immune to security threats. Risks include hacking, fraud, and vulnerabilities in smart contracts. Implementing robust cybersecurity measures is essential. Non-compliance with regulatory requirements can lead to legal consequences. Effective risk management involves staying informed about evolving regulations and adapting business practices accordingly. The global nature of the digital economy and crypto assets means that legal and regulatory considerations often extend beyond national borders. International coordination and compliance are crucial. So do, educating stakeholders, including businesses, investors, and users, about the legal aspects of crypto assets is essential. This includes awareness of regulatory requirements, rights and responsibilities, and potential legal risks. All mentioned factors need to be underlain in the legal framework of crypto assets, but unfortunately, most of them are not included in the new EU Regulation 2023/1114 framework. By the applied methodology, it is proved that during turmoil investors can consider cryptocurrencies as unreliable instruments for portfolio diversification. It may be considered that the increased correlation during the COVID-19 pandemic, raises the probability of spillovers of investors' greed and fear and proves that capital and crypto markets are interconnected. We prove that the cryptocurrency market influences the stock market, which may be explained by the fact that the investors in the crypto markets are better informed than those in the traditional financial markets. Investors' sentiment has effects on the crypto markets for developed and emerging economies but their influence is neutralized by the increasing significance of stock markets for developed economies – France and Germany.

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