Risks and Opportunities in the Cryptocurrency Market

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Abstract

The financial industry is subject to a new technological age through the evolution of the cryptocurrencies, people exploring a continuous rise of interest in investing on alternative basis mechanisms. This paper aims to give an overview of the blockchain technology and its potential, with its applicability on the cryptocurrency market. We illustrate the main challenges that the cryptocurrencis must overcome in order to achieve the customers' approval, which is strongly related to trust and cybersecurity issues. A comparative analysis of the two major cryptocurrencies emphasizes the risks and the opportunities offered by the cryptocurrency market, but also the main threats that must be addressed. Moreover, the consequences of the cryptocurrencies development for both national and international financial systems are evaluated, leading to the idea of a freedom-associated concept, where the lack of a third-party financial authority requires a significant change of perceptions and has the premises to fundamentally transform the traditional payment methods.

Key words: blockchain, cryptocurrency market, trust, cybersecurity
J.E.L. classification: G11, G15, E42

1. Introduction in the blockchain technology

The blockchain structure is based on a set of transactions stored in a publicly viewable database, where every block is linked to the previous one ("the parent block") and is generated by a cryptographic hash algorithm. The sequence of hashes has the function to link the blocks into the chain and ensures the blockchain security, as a block cannot be modified or altered. The existing nodes always have a local copy of the entirely blockchain, including "the genesis block", which is represented by the first block from the blockchain. A new block is added through the mining process, consisting in data validation by solving mathematical problems related to the cryptographic hash algorithms, followed by recording the new transactions on the global ledger.

Blockchain has the potential to transform the economies and to revolutionize the traditional payment methods, but this will be a long-lasting process due to the potential barriers to its development: technological, societal and governmental. First of all, the blockchain technology led to a change of the mindset, which claims a complete understanding of the mechanism and its application to different economic areas. Moreover, there will be a need to create the organizational infrastructure to deal with blockchain from its foundations, the adoption of such technology for the business environment being gradually due to the strategic implications of the blockchain adoption.

On the other hand, the blockchain architecture must be sustained by people, which are the core stakeholder for any organization. In order to reshape the economy, the novelty of the technology requires sustained efforts to a proper understanding of the advantages in terms of costs and value created through the blockchain technology. The users' response to the blockchain technology develops the framework for businesses to manage their own capabilities, suggesting the necessary regulations to be taken in order to facilitate the transition and revealing focused solutions for the identified limitations of the technology.

Blockchain also needs an institutional change and its application on the cryptocurrency market is often related to illegal activities as money laundering (Bryans, 2014) or tax evasion (Slattery, 2014). Even the risks generated by the cryptocurrency market volatility, there is a lack of consensus regarding the necessity of a regulatory framework, form those opinions that claim the complete ban of the cryptocurrency market, to those that argue the lack of interventionism (Swan, 2015) or a flexible regulatory structure (Atzori, 2017).

"With blockchain, we can imagine a world in which contracts are embedded in digital code and stored in transparent, shared databases, where they are protected from deletion, tampering, and revision." (Iansiti and Lakhani, 2017, p. 4) Blockchain has the advantage to significantly reduce the final cost of transactions, the data being publicly distributed and shared between the nodes of the network, while the identity details remain anonymous. There is no third-party intermediary which verify the data; instead, when changes are made to the ledger, it is replicated to the entire network and all the copies are updated. Each party of the network can access the entire database and no one controls the recorded information. The central node functions are replaced by a peer-to-peer transmission mechanism, where the communication is fulfilled through peers.

2. Theoretical background - The fundamentals of the cryptocurrency market

In her book entitled "Blockchain: Blueprint for a New Economy", Melanie Swan (2015) divide the blockchain revolution into three main categories: (i) Blockchain 1.0, related to the currency and the emerging cryptocurrencies on the financial market; (ii) Blockchain 2.0, related to the contracts which are more extensive transactions than the previous category (smart contracts, loans, bonds, stocks, futures); (iii) Blockchain 3.0, which refers to the Blockchain applications across markets, finance and currency (health, science, arts). This paper is focused on the Blockchain 1.0 analysis and Bitcoin as the major leader on the cryptocurrency market. The Bitcoin generation is related to the paper of an anonymous person using the name Satoshi Nakamoto (2008) that described the blockchain mechanism able to create units of currency in a decentralized way and to record the transactions in a public ledger which can be stored on many users' computers. In this system, money is mined in a controlled procedure, depending on the computational power and the Proof-of-Work algorithms.

The cybersecurity solutions offered by the blockchain technology are related to the encrypted data and to the use of the hashing functions in order to prevent the cyber-attacks, which are more sophisticated in the recent years. The cyber criminals are focused on advanced technics of stealing personal identification data or other valuable information, such as intellectual property or financial keys. Cybersecurity helps maintain the data integrity through the blockchain using the encrypted infrastructure and the public-private system of keys, which have a positive role in the authentication and authorization processes, data protection and its confidentiality. The exposure at cyber risks is higher due to the possibility to access data from multiple devices, but the blockchain is based on advanced quantum computing system that is difficult to be broken.

3. Bitcoin

According to the Figure 1, there is a high volatility of BTC/USD compared to the USD/EUR and USD/GBP volatilities, suggesting a particular market which is more exposed to experience bubbles and significant crashes as a result of the immature nature of the market and the contagion effect between Bitcoin and other cryptocurrencies (Ferreira and Pareira, 2019). Despite these figures, the total volume of Bitcoin trading has grown more and more from its conception. In the same time, Bitcoin has also experienced some cyclical trends with a peak of the price in December 2017, followed by a deep downturn across the next year and a new robust recovery to the local maximum level achieved in July 2019. Measuring how much the BTC price has varied in 2019, it can be noticed a dramatically fluctuation scheme with substantially risky consequences.

While the beginning of the year lead to a BTC price of $ 3.689,56 (01.01.2019), the end of the same year revels a high progress to the value of $ 7.251,28 (31.12.2019). These evolutions are in line with the economic principle of demand and supply, being also influenced by other contextual factors such as speculation or the regulatory framework. Speculation has the capacity to overcome

emotional barriers, being also a firm enemy in periods of decline, due to the financial news that can rise the public' enthusiasm or attract a major instability. The novelty of the blockchain technology and the still unpredictable features of the cryptocurrency market lead to a more emotional market rather than rational. In this context, it must be stressed the importance of trust in cryptocurrencies and the cybersecurity issues raised by the new-entered financial instruments in the system.

*Figure no. 1. BTC/USD volatility compared with USD/EUR and USD/GBP volatilities in 2019*

Source: https://www.buybitcoinworldwide.com/volatility-index/

The Bitcoin technology requires trust between peers and across various stakeholders: Governments, users, miners, exchanges and merchants (Sas and Khairuddin, 2015). First of all, there are the regulatory framework characteristics associated with a still young technology, subject that was treated in the previous section. Moreover, there is the supporting role of both miners and exchanges for the BTC usability, influencing the merchants' and the users' trust in such technology. Finally, it is necessary to mention the users' own trust in BTC transactions, their limits towards risks and the merchants' availability to involve in the trading process, exploring the whole set of challenges derived from the trading decision mechanism.

4. Ethereum

Ethereum was launched in 2015 and permanently runs "smart contracts" through a decentralized platform. Ethereum is an open blockchain and the cryptocurrency "ether" (ETH) constitutes a medium of exchange, the second cryptocurrency by popularity after Bitcoin. On the one hand, the Ether evolution suggest a correlation with the Bitcoin volatility, as a contagion effect of the cryptocurrency market. On the other hand, there is also an influence from the Ethereum platform, which periodically has "a hard fork", with direct consequences on the demand. While the Bitcoin has a limited offer to 21 mil. BTC, the Ethereum offer is unlimited on the long run. Another important difference is related to the processing time, which variates from 10 minutes (Bitcoin) to 15 seconds (Ether) and significantly influence the Ether volatility (Figure 2).

Figure no. 2. Ether Volatility in 2019: 30-Day ETH/USD Volatility

Source: https://www.buybitcoinworldwide.com/ethereum-volatility/
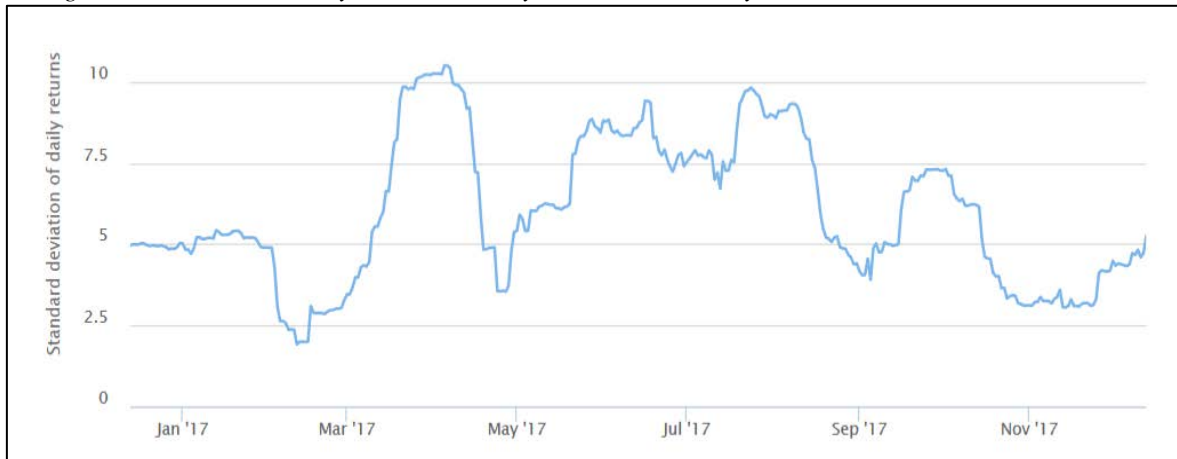
The Ether price was experienced a sharp decrease from its peak (1.107 USD, January 2018) to 132 USD in December 2019, with a market capitalization of USD 14,34 billion. After the bubble on the cryptocurrency market, Bitcoin and Ethereum, the most suitable alternative of the first, entered into a shadow cone due to the speculative basis of their mechanisms. In fact, the cryptocurrencies development is linked to the media interest on the subject, attention that was rapidly replaced in the public view. Without such an advantage, over 2.000 cryptocurrencies remain only speculative tools of the financial markets with high associated risks and extreme volatility levels.

5. Conclusions

The cryptocurrencies have multiple advantages that can be transformed into feasible opportunities, mainly due to the technology features: cybersecurity, cryptography, trust, decentralization and transparency. Blockchain solves the double-spending issue, passing the verifying function of one authority to the entire network. In this context, the premises of the cryptocurrency market are based on the users' mistrust in the traditional financial methods, the peer-to-peer consensus being an efficient alternative for the third-party financial authority. But one of the main threats of the cryptocurrency market is related to its own foundations, reclaiming the public nature of the blockchain which may lead to abuses in the absence of a well-designed regulatory framework.

The use of crypotocurrencies may be associated to the illicit activities as result of the anonymity of the owner and the lack of a third-party intermediary. The governmental involvement is still a controversial topic, arising the challenge of maintain the freedom-associated concept while fighting to the terrorism acts, drugs supply or money laundering. The lack of a financial institution that can provide the necessary information to the police and control the transactions seems to be an acute problem, but also a basic principle of the blockchain technology that cannot be ignored.

Another potential threat is directly linked with the cryptocurrency market volatility and the contagion effect which can expose the entire financial system to a disruptive process, revealing a substantial risk for the global economy. On the other hand, the low cost of transactions represents a valuable argument for a more modern national and international payment system, once the stability problem will be solved. However, in Romania are still few merchants that accept cryptocurrency. There are also several limitations of the cryptocurrency development, from losing the currency due to the hacking incidents to the loss of the identification keys or the bankruptcy of the account manager.

The Initial Coin Offering (ICO) is also considered extremely risky by several institutions or countries, due to the vulnerability of ICOs to illegal transactions, the unregulated framework, the reduced possibility to convert cryptocurrencies to other currencies and the high volatility of the market. The last feature make cryptocurrency unsuitable for value preservation purposes, being

more associated with the speculative actions. The unregulated transaction area rises serious risks for the users, since no authority protects consumers' rights. From another point of view that cannot be neglected, the mining process is an expensive practice for the planet, due to the environmental damage, the Bitcoin energy consumption equating with electricity consumption of many countries.

6. References

- Atzori, M., 2017. Blockchain Technology and Decentralized Governance: Is the State Still Necessary? *Journal of Governance and Regulation*, 6(1), pp. 45-62.
- Bryans, D., 2014. Bitcoin and money laundering: mining for an effective solution. *Indiana Law Journal*, 89(1), pp. 441–472.
- Ferreira, P., Pereira, E., 2019. Contagion Effect in Cryptocurrency Market. *Journal of Risk and Financial Management*, 12, 115.
- Iansiti, M., Lakhani, K.R., 2017. The truth about blockchain, *Harvard Business Review*, 95(1), pp. 1-11.
- Nakamoto, S., 2008. *Bitcoin: a peer-to-peer electronic cash system.* [online] Available at: < https://bitcoin.org/bitcoin.pdf> [Accessed 28 November 2019].
- Sas, C., Khairuddin, I.E., 2015. *Exploring Trust in Bitcoin Technology: A Framework for HCI Research,* DOI: 10.1145/2838739.2838821. [online] Available at: <https://www.researchgate.net/publication/283083044_Exploring_Trust_in_Bitcoin_Technology_A_Framework_for_HCI_Research> [Accessed 28 November 2019].
- Slattery, T., 2014. Taking a bit out of crime: bitcoin and cross-border tax evasion. *Brooklyn J. Int. Law*, 39(2), pp. 829–873.
- Swan, M., 2015. *Blockchain: Blueprint for a New Economy.* O'Reilly Media, Inc.
- https://www.buybitcoinworldwide.com/volatility-index/
- https://www.buybitcoinworldwide.com/ethereum-volatility/