

THE IMPACT OF BLOCKCHAIN TECHNOLOGY ON CAPITAL MARKETS DEVELOPMENT

IMPACTUL TEHNOLOGIEI BLOCKCHAIN ASUPRA DEZVOLTĂRII PIEȚELOR DE CAPITAL

MAGALEAS Borislav, student, Specialitatea: FB

Academia de Studii Economice din Moldova

Republica Moldova, Chișinău, str. Bănulescu-Bodoni 61, www.ase.md

e-mail autor: bmagaleas@gmail.com

Rezumat: Fiecare eră economică este determinată de o inovație importantă care duce la creșterea a eficienței a capacității de producție și a coordonării. Tehnologia blockchain este o inovație care are potențial de a schimba considerabil arhitectura piețelor de capital, după cum se prevede că o astfel de tehnologie poate avea un impact uriaș asupra modului în care instituțiile financiare interacționează între ele, precum și asupra modului în care tranzacțiile financiare sunt procesate și decontate. În această lucrare, pe baza unor astfel de metode de cercetare, cum ar fi metode științifice generale de cunoaștere, analiză logică, metodă documentară etc., cu scopul determinării impactului tehnologiei blockchain asupra dezvoltării piețelor de capital, au fost analizate consecințele posibile a utilizării blockchain-ului în sfera menționată.

Cuvinte cheie: tehnologia blockchain, dezvoltarea pieței de capital

JEL CLASSIFICATION: D53, G23, O16, O33

1. INTRODUCTION:

Information technologies are gradually changing literally all aspects of the human activity. The blockchain, sometimes referred to as Distributed Ledger Technology (DLT), can in the future significantly alter the financial sector of the economy and capital markets in particular.

One of the IMF's experts states that meaning of the blockchain technology in finance and in particular in the capital market is the reflection of value as a combination of stored energy and intelligence, none of it human. Financial system founded on the blockchain is not based on the interconnections between intermediaries (brokers, custodians, etc.), but on the internal algorithms of this technology, which require large amounts of electrical energy for their execution. Researchers from the Princeton University are not so categorical and consider that DLT can effectively keep track of transfer of ownership, but proper enforcement of possession rights is beyond the capacity of this technology. A team of highly respected French economists calls for greater caution in the forcing implementation of the blockchain technology in the capital markets, because under certain circumstances "proof of work" aspect may not be implemented properly. Their research demonstrated that DLT requires some improvements.

COVID-19 pandemic accelerates the digitalization processes in the global economy so that it is extremely important to deeply understand the possibility of efficient integration of the blockchain technology in the capital markets infrastructure. This paper is aimed to identify the possible way of use of the blockchain technology in the capital markets and its advantages and disadvantages.

2. PROPOSED RESEARCH METHODS:

Presented in this article investigation was implemented based on such research methods as: general-scientific methods of cognition, logical analysis, documentary method, analogy and grouping data method, graphical method, method of synthesis.

3. RESEARCH OF EMPIRICAL ASPECTS:

The results of implemented analysis of the impact of blockchain technology on capital markets development demonstrate, that there are different benefits of blockchain for capital market participants:

- for issuers, blockchain provides significant benefits by enabling easier, cheaper, and faster access to capital through programmable digital assets and securities;

- for fund managers, blockchain enables the peer-to-peer trading of any asset on a verifiable ledger. Also funds benefit from faster and more transparent settlement and clearing which reduces default risk or systemic risk. Funds reduce costs from increased operational efficiencies like the simplification of fund servicing, accounting and administration. Fees paid to third parties for services such as fund accounting and administration and even custody can be reduced through automated fund services. Undoubtedly there will be numerous new types of financial products and instruments created using blockchain technology which will create novel asset classes for capital allocation.

- for investors, blockchain technology significantly reduces the barrier to issue new financial products. The enhanced ability to more exactly match investor desire for return, time horizon, and appetite for risk with custom digital instruments may profoundly impact the relationship between investor and issuer, creating a direct bond between capital seekers and investors. Additionally, the transparent and distributed blockchain ledger will enable more robust insights into asset quality with the potential to enhance the due diligence process.

- for exchanges, blockchain has the potential to improve the business operations across a number of their functions. The blockchain's transparent ledger can aid exchanges with data verification, access rights, and in the best case provide more robust warning systems for trading activity. The digitization of assets allows for new financial products and instruments for derivatives with enhanced asset servicing capabilities (geo-fencing, whitelists, time-locks, etc).

- for clearing and settlement, smart contracts can be programmed to match payments to transfers through off-chain cash payments, cryptocurrencies, or stablecoins. For settlement, they can match a variety of models that take into account risk tolerance and liquidity needs of the market that include atomic settlement, deferred settlement, and deferred net settlement.

- Government agencies and regulatory organizations can benefit from a blockchain's distributed ledger, which is transparent and verifiable at all moments of the day. As multiple institutions use the same blockchain network to track their holdings and asset lifecycle events, regulators will be able to devote more time to analysis and risk prediction.

Usage of the distributed ledger technology in the transaction processes on the other-the-counter market of financial derivatives can be considered as a good example of blockchain's integration in the capital market's infrastructure.

Axon, a New York-based capital markets technology firm that specializes in the blockchain infrastructure, tested the efficiency of the management of equity swap transactions and related to them post-trade procedures via distributed ledger technology along with its clients, which include such important financial companies as Goldman Sachs, Citigroup, and JP Morgan in the year 2017. Another fintech company headquartered in New York City, R3, created a blockchain platform for execution of OTC derivative contracts that was tested by the Mizuho Financial, Nomura and several other Japanese banks in June 2017.

The examination of the changes that distributed ledger technology make in the OTC derivative trading will allow us to understand why important financial companies decided to take some risks and implement a relatively new technology. It should be also mentioned that all the technological improvements that can be made by using innovative technology must be adjusted to the practical aspects of the day-to-day functioning of the capital markets and the other-the-counter derivative market in particular. All the financial technologies must comply with the legal requirements and logic of economics. Technology, legal and economic aspects of the blockchain's implementation in the capital markets must be viewed as a single system.

Using a blockchain reduces the number of operations in order to execute the transaction and that is the most important it almost eliminates the intermediaries in the trading. Decrease of the number of intermediaries reduces the transaction costs of the parties involved in trade on the capital market as commissions charged by financial intermediators significantly reduce the traders' profits. Another major advantage of the DLT in the capital markets is the increase of transparency of the executed

transactions because all of them must be verified by all nodes (participants) on the capital markets before it is executed (figure 1).

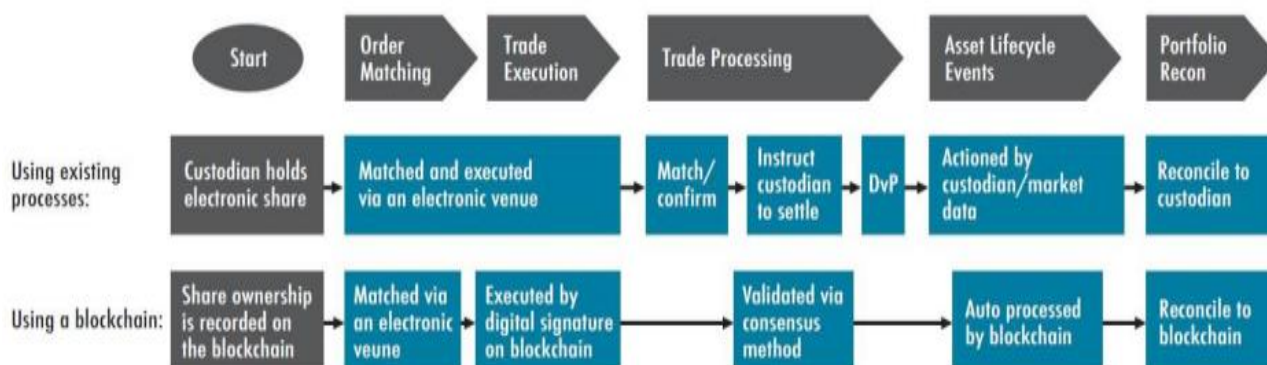


Figure 1: Comparison between existing and blockchain trade lifecycle processes

Source: <https://www.numerix.com/blog/blockchain-derivatives-market>

One of the key features of the blockchain technology, “smart contracts”, which represents a self-executing protocol that enforces a previously agreed arrangement such as an automatic refund under certain conditions or the automatic payment of an agreed commission after a sale, can potentially increase the speed and accuracy of the transactions on the capital market.

However, distributed ledger technology is not a panacea for all problems of the capital market. Non reversibility of transactions recorded in the blockchain can turn from being an advantage as it reduces the possibility of fraud in the time of the transaction’s execution into an disadvantage in case if incorrect data was provided because of an inadvertent error. It is impossible to edit the historical information in the blockchain database so that the only way to correct the transaction is to pass another entry of the opposing type. Blockchain technology’s possibility to deal with high transaction volumes is another important issue. The example of Bitcoin cryptocurrency, whose transactions are performed using the DLT, demonstrates that current development of the blockchain technology allows high processing speed of only those transactions that have limited volume. Thus, implementation of the blockchain technology on the mass scale on the capital markets can be questioned. The privacy aspect of the blockchain databases is very important for big financial corporations, which do not want to provide open access to the information about their transactions to the public. DLT supposes that all participants in the network have the record of all executed transactions so there is literally no confidentiality in this case.

CONCLUSION

Blockchain technology will definitely change the capital markets in the near future. The fact that big financial companies pay particular attention to the new blockchain solutions for the capital markets indicates distributed ledger technology has proved operational benefits for the capital market participants. However, this technology must be improved and legislative base has to be adjusted to the use of it in order to totally implement the DLT into the capital markets. Countries with relatively small capital market, such as the Republic of Moldova, can introduce blockchain technology in this part of the financial system in a short period of time and, consequently, become more developed.

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Coordonator științific: BILOOCAIA Svetlana, dr., conf. univ.
Academia de Studii Economice din Moldova
Republica Moldova, Chișinău, str. Bănulescu-Bodoni 61, www.ase.md
e-mail: bilooaia.svetlana@ase.md