

Volodymyr Kovalenko

Candidate of Science in Public Administration,

Associate Professor at the Department of Fundamental and Special Disciplines,
Novovolynsk Educative and Research Institute of Economics and Management of
West Ukrainian National University
ORCID: <https://orcid.org/0009-0006-9797-0100>**Коваленко Володимир Миколайович**Нововолинський навчально-науковий інститут економіки та менеджменту
Західноукраїнського національного університету**THE IMPORTANCE OF NATIONAL DIGITAL
CURRENCY IN STRENGTHENING THE STABILITY
OF THE FINANCIAL ECOSYSTEM****ЗНАЧЕННЯ НАЦІОНАЛЬНОЇ ЦИФРОВОЇ ВАЛЮТИ
У ПОСИЛЕННІ СТІЙКОСТІ ФІНАНСОВОЇ ЕКОСИСТЕМИ**

Summary. This article discusses the importance of a national digital currency as a means of strengthening Ukraine's financial stability amid profound economic, technological, and institutional changes. Based on an evaluation of the current Ukrainian payment market landscape, the key prerequisites and constraints for introducing an electronic hryvnia have been identified. The article demonstrates that while there is a high level of consumer digitalisation, this is coupled with structural risks, particularly market concentration, inadequate instant payment infrastructure, and heightened vulnerability to technological threats. The article argues that introducing a national digital currency could have a positive, comprehensive effect. It demonstrates that digital currency could become a fundamental element of a renewed financial ecosystem, ensuring the long-term stability and efficiency of the national economy.

Keywords: digital currencies, financial ecosystem, financial institutions, financial security, fintech innovations, sustainability, payment infrastructure.

Анотація. У статті досліджується значення національної цифрової валюти як інструмента зміцнення фінансової стійкості України в умовах глибоких економічних, технологічних та інституційних трансформацій, зумовлених як глобальними трендами цифровізації, так і воєнними викликами. Обґрунтовується актуальність запровадження цифрової гривні та визначаються ключові проблеми, які можуть бути частково розв'язані завдяки використанню цифрової форми фіатних грошей, зокрема: висока залежність від приватних платіжних мереж, недостатня прозорість грошових потоків, обмежений доступ окремих груп населення до фінансових сервісів, чутливість до кібератак та інформаційних загроз. У роботі систематизовано підходи до визначення ролі CBDC у підвищенні ефективності монетарної політики, оптимізації функціонування платіжної інфраструктури та формуванні довіри до державних фінансових інститутів. Представлено грунтовний огляд вітчизняних і міжнародних досліджень щодо впливу цифрових валют на фінансові ринки, поведінку економічних агентів, структуру банківського сектора та рівень фінансової інклузії. Особливу увагу приділено аналізу моделей впровадження цифрової валюти у різних країнах світу – Китаї, Швеції, Європі, Багамських Островах – що дозволило виокремити спільні тенденції та специфічні особливості, релевантні для формування української моделі CBDC. На основі оцінювання поточного стану українського платіжного ринку визначено ключові передумови та обмеження для запуску е-гривні. Показано, що високий рівень цифровізації споживачів поєднується із структурними ризиками, зокрема концентрацією ринку, недостатністю інфраструктури миттєвих платежів та підвищеною вразливістю до технологічних загроз. У статті аргументовано, що впровадження національної цифрової валюти може забезпечити комплексний позитивний ефект: посилити стійкість платіжної системи, створити нові канали для фінансової інклузії, забезпечити гнучкішу реалізацію монетарної політики, підвищити прозорість та контрольованість грошового обігу, а також мінімізувати залежність від зовнішніх платіжних інфраструктур. Отримані результати формують науково-практичні орієнтири для розроблення оптимальної моделі цифрової гривні, враховуючи технологічні, регуляторні та інституційні передумови України, а також особливості воєнного та поствоєнного розвитку. Стаття підкреслює, що цифрова валюта може стати фундаментальним елементом оновленої

фінансової екосистеми, здатної забезпечити стійкість та ефективність національної економіки в довгостроковій перспективі.

Ключові слова: цифрові валюти, фінансова екосистема, фінансові інститути, фінансова безпека, фінтех-інновації, стійкість, платіжна інфраструктура.

Problem statement. The rapid digitization of financial services, the transformation of payment infrastructure, and the emergence of new forms of money are significantly changing the mechanisms of financial systems around the world. In this context, the concept of a national digital currency (Central Bank Digital Currency, CBDC) is gaining increasing attention. It is seen as a tool for enhancing the stability of the financial ecosystem, ensuring the effectiveness of monetary policy, and strengthening the economic sovereignty of the state [2]. For Ukraine, which is undergoing a period of profound transformation and is forced to withstand external and internal shocks, the issue of creating and introducing a digital hryvnia is particularly relevant.

The financial challenges caused by the war have exacerbated problems that have been accumulating for years: high dependence of the economy on cash payments, limited transparency of payment flows, insufficient inclusion of the population in formal financial services, and vulnerability to cyberattacks and information threats. In addition, the growth of shadow circulation, increased risks for commercial banks, declining confidence in traditional financial instruments, and changes in consumer behavior under the influence of military uncertainty create a need to modernize the tools that would ensure the stability and transparency of money circulation.

A national digital currency could potentially become a key element of a new financial architecture, capable of increasing the effectiveness of monetary policy, strengthening the stability of the payment infrastructure, ensuring the speed of settlements, and reducing the risks associated with the banking intermediary model. At the same time, the introduction of CBDC is accompanied by significant challenges—technological, regulatory, legal, and socio-behavioral. The impact of digital currency on the banking system, the structure of financial flows, the volume of cash circulation, as well as the potential risks of data concentration and cybersecurity remain uncertain [3].

Thus, a complex scientific problem arises—to determine how a national digital currency can contribute to strengthening Ukraine's financial stability, which CBDC implementation mechanisms are most acceptable for Ukrainian conditions, and what institutional prerequisites need to be established to minimize risks and maximize the positive impact of this instrument on the financial ecosystem. This study is dedicated to solving these problems.

Analysis of recent research and publications. In contemporary scientific discourse, the issue of introducing and operating a national digital currency is considered mainly in a fragmented manner, and

aspects of its impact on the formation of public trust and the stability of financial systems remain insufficiently developed. The research of individual authors—O. Dzyublyuk [4], S. Melani [14], N. Popper [12]—is devoted to the general characteristics of virtual currencies and the evolution of monetary systems, focusing primarily on changes in the nature of money and the transformation of trust mechanisms. Their works emphasize that modern money, after the abandonment of the gold standard, is purely fiduciary in nature, and its functioning is largely based on the ability of the state and monetary institutions to ensure macrofinancial stability. In this context, the central bank acts as a key guarantor of trust, and digital forms of money are seen as a new tool for maintaining its stability.

The research of C. Borio, M. Dreman, M. Rustam Irani, R. Ayer, and R. Ralph Meisenzel highlights the fundamental aspects of the impact of central bank digital currencies (CBDCs) on monetary policy and the systemic characteristics of the financial sector. The authors analyze the potential of digital currency to modernize payment infrastructure, expand financial inclusion, and reduce transaction costs, which are critical elements in improving the resilience of the financial ecosystem.

The studies by T. Adrian, H.S. Shin [8] and T. Mancini-Griffoli et al. [11] focus on the risks of large-scale CBDC implementation. The researchers emphasize possible structural shifts in the banking sector, including the redistribution of liquidity, changes in the role of deposit institutions, and the potential weakening of the credit channel. At the same time, they argue that these risks can be neutralized through the application of balanced regulatory mechanisms and a technologically sound design of the digital currency.

The relationship between digital currencies and the development of e-commerce is discussed in detail in the works of D. Rodima-Taylor and W.W. Grimes [13]. The researchers emphasize that digital forms of money can significantly increase the efficiency of international payments, especially in the field of B2B and B2C interactions, by simplifying settlements and increasing the transparency of cash flows. These aspects are important in view of the integration of the economy into global supply chains and the requirements for improving the stability of the financial infrastructure.

Additional research has been conducted by A. Tapscott, D. Tapscott [15], C. Catalini, J.S. Gans, J. Barrdear, and M. Kumhof [10], who view digital currencies as a catalyst for technological innovation. Their research argues that combining digital currency

with blockchain technologies, smart contracts, and automated payment mechanisms can significantly change the structure of the financial ecosystem, increasing its flexibility and adaptability in times of crisis.

A separate area of literature concerns research by domestic scientists who analyze potential scenarios for the introduction of CBDC in Ukraine. The works of O. Oliinyk and K. Kaplyar [7] consider options for the transformation of cash payments, deposit instruments, and bank reserves under the influence of digital currency. The authors emphasize that the design of CBDC—its level of accessibility, storage restrictions, and reward policy—will determine the extent of its impact on financial stability and the behavior of economic agents. The research by V. Kozuk [6] complements this analysis by focusing on issues of cyber security, technological stability of infrastructure, and risks of financial security breaches in case of insufficient security of digital services.

Thus, a review of scientific sources shows that although the issue of digital currencies is being increasingly discussed in the global scientific community, aspects of their impact on financial stability, regulatory approaches to implementation, and features of national CBDC models, particularly in Ukraine, remain a relevant and promising area for further research.

The purpose of this article is to provide scientific justification for the role of national digital currency in strengthening the stability of Ukraine's financial ecosystem by identifying key mechanisms of its impact on the payment infrastructure, monetary policy, financial inclusion, and the security of money circulation, as well as to evaluate international experience in implementing CBDC from the perspective of its adaptation to Ukrainian conditions in the context of military and post-war transformations.

Summary of the main research material. The digitization of financial processes and the rapid development of fintech innovations are fundamentally changing the functioning of national financial systems, creating new requirements for the stability of payment infrastructure, monetary regulation, and the security of money circulation [3]. In response to these challenges, central banks are increasingly exploring the possibility of introducing digital currencies as a modern form of fiat money capable of enhancing the reliability and efficiency of the financial ecosystem. Based on a summary of the theoretical positions of international institutions, it has been established that a national digital currency is considered a digital analogue of cash, which at the same time retains the status of a direct obligation of the central bank, ensures high speed of movement of funds, transparency of transactions, and the ability to adapt to different models of payment system functioning. The diversity of approaches to developing models of

central bank digital currencies is determined not only by the characteristics of national financial markets, but also by the level of infrastructure development, the scale of the digital economy, and monetary policy priorities.

An analysis of the global digital currency landscape shows that interest in this instrument is growing in most jurisdictions. Leading economies view digital currency as a way to modernize payment mechanisms, reduce operating costs, enhance cyber resilience, and promote competition among payment providers [9]. At the same time, countries with less developed financial systems prioritize its potential to increase access to financial services, reduce the cost of cross-border payments, and ensure the accountability of financial transactions. Global practice shows that there are several groups of countries: from leaders who are already testing or have partially implemented digital currency, to those who are in the early stages of conceptual development. This differentiation is due to the varying technical and economic readiness of markets, as well as the varying depth of penetration of digital financial services.

In the context of global transformations of financial systems, an important source of scientific generalization is the analysis of international practices in the introduction of central bank digital currencies, which demonstrate different models of impact on payment infrastructure, monetary policy, and overall financial stability. The experience of individual countries shows that the scale, objectives, and technical characteristics of CBDCs vary significantly depending on economic conditions, the level of digitalization, and the strategic objectives of financial policy. It is precisely the comparison of global approaches that makes it possible to outline possible trajectories for the introduction of a national digital currency in Ukraine and to assess its potential for strengthening the stability of the financial ecosystem in the context of military and post-war challenges. The summarized results of the analysis of international experience are presented in Table 1.

A review of international experience in introducing central bank digital currencies shows that different countries are at different stages of readiness to transition to a digital form of national money, but their strategic motives have common features. First and foremost, this is the desire to strengthen control over the payment infrastructure, reduce dependence on private operators, and ensure the continuity of payments in crisis conditions.

China's experience shows that digital currency can be an effective tool for scaling domestic payments, especially in the context of the active development of mobile financial services. At the same time, extensive testing of e-CNY has demonstrated the importance of combining technological innovation with a high level of public trust in state institutions. Building such trust

Table 1 – International experience in implementing central bank digital currencies (CBDCs)

Country/region	Implementation model	Main objectives	Key results
China (e-CNY)	Retail digital currency	Improving the efficiency of domestic payments, reducing the role of private payment giants	Rapid scaling; high level of consumer testing; need to build trust
Sweden (e-krona)	Hybrid CBDCs model	Ensuring payment accessibility amid declining cash circulation	Increasing resistance to monopolization of private payment networks
Bahamas (Sand Dollar)	Full-fledged retail CBDCs	Accessibility of financial services in remote regions	Improved access to payments for the population; positive experience of scaling up
Eurozone (Digital Euro project)	Two-level model	Strengthening strategic autonomy of payments, reducing dependence on global payment systems	Focus on protecting the confidentiality and sustainability of the banking sector

Source: systematized by the author according to [7, 12, 14]

is also critical for Ukraine, as it will determine the speed of digital currency integration into everyday payment transactions.

The Swedish e-krona project highlights another important trend: digital currency can compensate for the decline in cash usage and strengthen the stability of the financial system amid the growing role of private payment platforms. The model being developed by the Riksbank focuses on maintaining competition in the payment sector and preventing monopolisation, which is particularly relevant for European economies with a high level of digitalisation.

The European Central Bank's research on the digital euro shows a strategic focus on ensuring the autonomy of the payment infrastructure from global private technology players and increasing the level of cyber security. Importantly, the European approach envisages a two-tier model of function sharing between the central bank and financial intermediaries, which makes it possible to avoid crowding out commercial banks and maintain their role in lending to the economy.

The Bahamas' projects highlight the importance of contextualising CBDCs to the needs of a particular economic system. For small island states, digital currency is primarily a tool for financial accessibility, while for highly developed countries, it is a tool for preventive stabilisation in the event of increased competition from private digital assets or international payment platforms.

Overall, the analysis in Table 1 shows that the introduction of a national digital currency could be a significant factor in improving the stability of Ukraine's financial ecosystem. International practices confirm that the effectiveness of CBDC depends on a combination of technological security, transparent access architecture, developed infrastructure, and the ability of state institutions to ensure trust and predictability of monetary policy. Given the challenges of war and post-war, these aspects are key to ensuring uninterrupted payments, strengthening

financial stability, and reducing systemic risks in future periods of economic transformation.

An in-depth analysis of the payment environment in Ukraine has identified key parameters that determine the feasibility of developing and implementing the e-hryvnia. The national payment segment is characterised by a high level of digital activity among the population, widespread use of cashless instruments, and rapid growth in transactions using digital wallets and tokenised cards. Contactless payments have become the dominant service format, confirming consumers' readiness for new digital forms of money. At the same time, the structure of the payment market remains fairly concentrated: most card transactions are carried out by a limited number of banks, which increases the risks of functional dependence and infrastructure vulnerability. Another significant challenge is the lack of a nationwide system of instant interbank payments in 24/7 mode, which hinders the development of fast transactions and complicates harmonisation with modern international standards.

The National Bank of Ukraine is gradually establishing the regulatory and institutional conditions for launching its own digital currency. The regulator's strategic documents identify the need to modernise the payment infrastructure, strengthen financial inclusion, improve the regulation of digital asset transactions, and ensure monetary sovereignty amid the rapid spread of private electronic payment methods. Research, pilot projects, and consultations with international organisations are laying the groundwork for assessing the optimal model for the e-hryvnia, taking into account macro-financial risks, cybersecurity requirements, and the impact on the banking system [1].

A comparison of the potential advantages of digital currency with the current characteristics of the Ukrainian financial system has shown that its introduction could have a number of key effects. First, digital currency can increase the stability of the

payment infrastructure, as it provides an alternative channel for settlements even in the event of technological failures in private payment networks. Second, the e-hryvnia will promote competition by reducing operating costs and creating a level playing field for all market participants in terms of access to innovative payment services. Third, digital currency can be a tool for deepening financial inclusion, as it provides access to basic payment functions even to users without bank accounts. Fourth, its introduction could enhance the effectiveness of monetary policy by providing the central bank with additional opportunities to control money circulation and respond quickly to crises. The potential contribution of a national digital currency to strengthening the stability of the financial ecosystem is shown in Table 2.

A comprehensive summary of the research results shows that the central bank's digital currency has the potential to become an important element in strengthening the stability of the national financial ecosystem, increasing the reliability of payment mechanisms, ensuring the development of innovative financial services, and promoting Ukraine's integration into the modern global financial space. The results obtained provide a methodological and analytical basis for further substantiating the model for introducing the e-hryvnia, its technological parameters, and assessing its impact on the banking sector and the financial stability of the state.

Conclusions. The study proves that a national digital currency can become one of the key instruments for modernising Ukraine's financial

architecture and strengthening its resilience in the face of structural transformations and external shocks. A review of international experience in implementing CBDCs shows that the digital form of fiat money can significantly improve the efficiency of the payment infrastructure, minimise dependence on private payment operators, promote financial inclusion and strengthen the cyber resilience of the financial system.

An analysis of the current state of Ukraine's payment environment has revealed high digital activity among users, widespread use of non-cash instruments, and, at the same time, increased market concentration and structural constraints that exacerbate the vulnerability of the financial system in times of crisis. In this context, the digital hryvnia could provide an alternative, more resilient channel for payments, increase competition, promote the integration of the population into the formal financial sector, and lay the groundwork for more effective monetary transmission.

The introduction of CBDC requires comprehensive preparation: modernisation of the payment infrastructure, development of reliable cyber security mechanisms, development of balanced regulatory approaches, adaptation of banking sector operating models, and active communication with the public to increase trust. At the same time, the strategic effect of introducing digital currency lies not only in the technical transformation of payment systems, but also in strengthening financial stability, enhancing monetary sovereignty, and ensuring the long-term ability of the economy to withstand crises during wartime and post-war periods.

Table 2 – The potential contribution of a national digital currency to strengthening the resilience of the financial ecosystem

The impact of digital currency	Content of influence	Expected outcome for financial stability
Payment infrastructure	Introduction of alternative payment channels; reduction of dependence on private payment networks	Improving the reliability of payment transactions and resilience in crisis situations
Financial inclusion	Providing access to digital payments for the population and businesses without the need to open bank accounts	Expanding financial service coverage, reducing the level of 'unbanked' groups
Competition in the payments market	Reducing operating costs in the payment sector; stimulating innovation among financial service providers	Improved service quality, reduced monopolisation, increased market efficiency
Monetary policy	Improving the ability to control cash flow; introducing innovative regulatory tools	Strengthening the effectiveness of the monetary policy transmission mechanism
Cybersecurity and technological resilience	Use of secure digital protocols, reduction of risks of technological failures	Improving the cyber resilience of the financial system and transaction security
International payments	Simplification of cross-border transactions; reduction of costs for international transfers	Integration into global financial networks, acceleration of foreign economic settlements

Source: systematized by the author according to [1, 3, 5, 6–7]

References:

1. Wald B. (2021). Tsyfrova valiuta tsentralnogo banku: shcho tse take, chomu vsi pro tse hovoriat ta yak pratsiuie e-hryvnia [Central bank digital currency: what it is, why everyone is talking about it, and how the e-hryvnia works]. *Ukrainian capital*. Available at: <https://ucap.io/czyfrova-valyuta-czentalnogo-banku-shho-cze-take-chomu-vsi-pro-cze-govoryat-ta-yak-praczyuvatyme-e-gryvnya/> (in Ukrainian)
2. Davydenko N. M., Kushnir O. O., Davydenko M.A. (2025). Rozvytok suchasnykh platizhnykh system v Ukrayini [Development of modern payment systems in Ukraine]. *Scientific and industrial journal 'Business Navigator'*, Vol. 3(80), pp. 196–200. DOI: <https://doi.org/10.32782/business-navigator.80-34> (in Ukrainian)
3. Davydenko N. M., Klyuchka O. V. (2025). Rol blokcheinu v optymizatsii biznes – protsesiv tsyfrovoi ekonomiky [The role of blockchain in optimising business processes in the digital economy]. *Scientific Bulletin of the International Humanitarian University. Series: "Economics and Management"*, Vol. 63, pp. 28–32. (in Ukrainian)
4. Dzyublyuk O. (2016). Sotsialno-ekonomichni zasady suspilnoi doviry do bankivskoho sektoru [Socio-economic foundations of public trust in the banking sector]. *Bulletin of Ternopil National Economic University*, Vol. 2, pp. 54–69. (in Ukrainian)
5. Kaplyar K. V. (2023). Rol tekhnolohichnykh i upravlynskykh innovatsii v rozvytku CBDC [The role of technological and managerial innovations in the development of CBDC]. *Academic visions*, Vol. 22. Available at: <https://academy-vision.org/index.php/av/article/view/490> (in Ukrainian)
6. Kozuk V. (2024). Monetarnyi suverenitet: didzhyalizatsiia ta trylema CBDC [Monetary sovereignty: digitalisation and the CBDC trilemma]. *European Economy Journal*, Vol. 23 (1), pp. 4–32. Available at: <https://jeej.wunu.edu.ua/index.php/ukjee/article/view/1727> (in Ukrainian)
7. Oliynyk O. O. (2024). Tsyfrovi valiuty tsentralnykh bankiv (CBDC) i yevropeiskyi valiutnyi landshaft: vyklyky, mozhlyvosti ta perspektivy rehuliuvannia [Central bank digital currencies (CBDCs) and the European currency landscape: challenges, opportunities and prospects for regulation]. *Kyiv Economic Journal*, Vol. 4, pp. 177–187. DOI: <https://doi.org/10.32782/2786-765X/2024-4-25> (in Ukrainian)
8. Adrian T., Shin H.S. (2010). The changing nature of financial intermediation and the financial crisis of 2007–2009. *Annual Review of Economics*, Vol. 2, Is. 1, pp. 603–618.
9. Barrdear J., Kumhof M. (2022). The macroeconomics of central bank digital currencies. *Journal of Economic Dynamics and Control*, Vol. 142, Art. 104148.
10. Catalini C., Gans J. S. (2020). Some simple economics of the blockchain. *Communications of the ACM*, Vol. 63, Is. 7, pp. 80–90.
11. Mancini-Griffoli T., Peria M.S.M., Agur I., Ari A., Kiff J., Popescu A., Rochon C. (2018). Casting light on central bank digital currency. *IMF Staff Discussion Notes*, Vol. 18/08, pp. 1.
12. Popper N. (2015). Digital Gold: Bitcoin and the Inside Story of the Misfits and Millionaires Trying to Reinvent Money. New York City: HarperCollins Publishers (in English)
13. Rodima-Taylor D., Grimes W.W. (2017). Cryptocurrencies and digital payment rails in networked global governance: perspectives on inclusion and innovation. In: *Bitcoin and Beyond*. Routledge, is. 1, pp. 109–132.
14. Swan Melanie. (2015). Blockchain: Blueprint for a New Economy. O'Reilly Media, Inc, USA.
15. Tapscott D., Tapscott A. (2017). How blockchain will change organizations. *MIT Sloan Management Review*, Vol. 58, Is. 2, p. 10.

Список використаних джерел:

1. Вальд Б. Цифрова валюта центрального банку: що це таке, чому всі про це говорять та як працює е-гривня. *Український капітал*. 2021. URL: <https://ucap.io/czyfrova-valyuta-czentalnogo-banku-shho-cze-take-chomu-vsi-pro-cze-govoryat-ta-yak-praczyuvatyme-e-gryvnya/> (дата звернення: 17.11.2025).
2. Давиденко Н.М., Кушнір О.О., Давиденко М.А. Розвиток сучасних платіжних систем в Україні. *Науково-виробничий журнал «Бізнес-навігатор»*. 2025. №3(80). С. 196 – 200. DOI: <https://doi.org/10.32782/business-navigator.80-34>
3. Давиденко Н.М., Ключка О.В. Роль блокчейну в оптимізації бізнес – процесів цифрової економіки. *Науковий вісник Міжнародного гуманітарного університету. Серія: «Економіка і менеджмент»*. 2025. № 63. С. 28–32.
4. Дзюблюк О. Соціально-економічні засади суспільної довіри до банківського сектору. *Вісник Тернопільського національного економічного університету*. 2016. № 2. С. 54–69.
5. Капляр К. В. Роль технологічних і управлінських інновацій в розвитку CBDC. *Академічні візії*. 2023. № 22. URL: <https://academy-vision.org/index.php/av/article/view/490> (дата звернення: 03.12.2025).
6. Козюк В. Монетарний суверенітет: діджиталізація та трилема CBDC. *Журнал європейської економіки*. 2024. № 23 (1). С. 4–32. URL: <https://jeej.wunu.edu.ua/index.php/ukjee/article/view/1727> (дата звернення 02.12.2025).
7. Олійник О. О. Цифрові валюти центральних банків (CBDC) і європейський валютний ландшафт: виклики, можливості та перспективи регулювання. *Київський економічний науковий журнал*. 2024. № 4. С. 177–187. DOI: <https://doi.org/10.32782/2786-765X/2024-4-25>
8. Adrian T., Shin H.S. The changing nature of financial intermediation and the financial crisis of 2007–2009. *Annual Review of Economics*. 2010. Vol. 2, No. 1. Pp. 603–618.
9. Barrdear J., & Kumhof M. (2022). The macroeconomics of central bank digital currencies. *Journal of Economic Dynamics and Control*. Vol. 142. Art. 104148.

10. Catalini C., Gans J. S. Some simple economics of the blockchain. *Communications of the ACM*. 2020. Vol. 63, №. 7. P. 80–90.
11. Mancini-Griffoli T., Peria M.S.M., Agur I., Ari A., Kiff J., Popescu A., Rochon C. Casting light on central bank digital currency. *IMF Staff Discussion Notes*, 2018. № 18/08. p. 1.
12. Popper N. Digital Gold: Bitcoin and the Inside Story of the Misfits and Millionaires Trying to Reinvent Money / Nathaniel Popper. New York City: HarperCollins Publishers, 2015. 416 p.
13. Rodima-Taylor D., Grimes W.W. (2017). Cryptocurrencies and digital payment rails in networked global governance: perspectives on inclusion and innovation. In: *Bitcoin and Beyond. Routledge*, is. 1, pp. 109–132.
14. Swan Melanie. Blockchain: Blueprint for a New Economy / Melanie Swan. – O'Reilly Media, Inc, USA, 2015. 152 p.
15. Tapscott D., Tapscott A. How blockchain will change organizations. *MIT Sloan Management Review*. 2017. Vol. 58. №. 2. p. 10.

Стаття надійшла до редакції 11.12.2025