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Convergence of DeFi and Traditional Banking: Potential, Limitations and Transformation Scenarios

T.N. Zverkova
Orenburg State University, Orenburg, Russian Federation

ABSTRACT

The article explores one of the main trends in modern financial transformation, namely the impact of decentralized finance (DeFi) on the banking sector. The author goes beyond conventional discussions about banks' responses to DeFi and proposes a different vision for their role and function in the digital economy and Web 3.0. **The aim of the study** is to identify and analyze changes brought about by the rise of DeFi, as well as to propose possible strategies for banks to adopt in light of technological advancements. Unlike traditional approaches that focus on the conflict between banks and DeFi platforms, this work emphasizes the analysis of future models of financial intermediation. Concepts such as "5.0 banks", "metabanks", and autonomous digital ecosystems are explored, where banking functions are implemented in a more programmable manner. **The research methods** include a comparative analysis of the structural and functional differences between the traditional banking system and decentralized finance (DeFi), an analytical review of recent scientific publications, and an assessment of potential future developments for banks in the face of decentralized technology. Based on this research, we **found** that banks remain an important part of the financial system, despite increasing pressure from decentralized finance. However, banks must adapt to technological change in order to maintain their relevance. We identified three possible paths for the future of banking: the integration of DeFi features into existing banking products, the creation of hybrid models that combine DeFi and traditional banking, and the transition to fully autonomous algorithmic systems powered by smart contracts and artificial intelligence. While all three scenarios are possible, we believe that the hybrid model that combines DeFi innovation with customer protection and regulation is the most likely to succeed in the long term. **The novelty of this work** lies in its conceptual approach to how banks can adapt to decentralized technologies and forecast their future evolution within the context of Web3. **Its practical significance** lies in the potential for using these findings to develop digital transformation strategies for banks.

Keywords: decentralized finance; DeFi; banks; CeDeFi; blockchain; smart contracts; digital assets; financial intermediation; innovation

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INTRODUCTION

In recent years, decentralized finance (DeFi) has significantly transformed the foundations of financial intermediation. Traditional banks, which have long dominated the market, are facing declining interest in their products, increased competition from DeFi, and the need to rethink their business models.

Some clients are transferring financial activity to platforms that offer programmable conditions, transparent revenue generation, and minimal intermediary costs. This has led to a need for banks to explore ways to use decentralized technologies in order to remain sustainable.

The purpose of this study is to identify changes in the banking system caused by DeFi and to consider how banks can adapt to the emerging technological landscape. The study will analyze the risks and opportunities presented by the new digital environment and propose scenarios for banks to navigate these changes.

DeFi is treated ambiguously in scientific publications, which is due to their fundamental difference from banking systems. A number of studies show that DeFi undermines the traditional financial intermediation mechanism by allowing users to conduct transactions directly without the involvement of banks. This effect has been confirmed by empirical studies by J. Jagtiani et al. [1] and S. Mahmud et al. [2]. According to the conclusions of M.L. Zelenkevich and I.I. Krasnova [3], this leads to lower commission costs and faster operations.

The approach to market self-organization allows us to consider DeFi as a decentralization tool close to the ideas of democratizing finance. C. Harvey et al. [4] show that smart contracts provide transparency and automated fulfillment of obligations, reducing the risk of default by intermediaries. D. Zetzsche et al. [5] consider DeFi as the evolution of financial institutions towards distributed services.

From a technological point of view, smart contracts in DeFi provide automation and lower operating costs. S. Werner et al. [6] show that decentralized operations have increased transparency due to the fixation of transactions in the blockchain. At the same time, F. Schär [7] points out the continuing vulnerabilities of smart contracts related to code errors and attacks. D.A. Fomin [8] additionally notes the legal uncertainty and lack of uniform standards for their audit.

Despite technological and legal constraints, DeFi is showing steady growth, which indicates their economic importance. According to the Bank of Russia, the total value of blocked assets in DeFi protocols increased from $1 billion to $77 billion from January 2019 to 2022, and according to alternative estimates, exceeded $200 billion.[1] The user base of decentralized platforms has increased to 4 million unique addresses as of 2022. S. Werner et al. [6] estimate TVL at about $150 billion by April 2022, and A. Webb [9] records an excess of $100 billion in 2023. With the variability of calculation methods and market conditions, the trend remains obvious — users are actively transferring funds to DeFi protocols.

DeFi regulation remains one of the most difficult challenges, as legislative approaches vary from jurisdiction to jurisdiction. As noted by M.A. Abramova et al., "as interest in decentralized finance services grows, which make it possible to obtain independent financial services and, accordingly, as the level of financial inclusion of the population increases, the attention and requirements of financial regulators, primarily the monetary regulator and the state, to services and institutions of decentralized finance begin to grow" [10, p. 89]. In the USA and the European Union, according to S. Kaur et al. [11] and O.B. Skripnik [12], hybrid approaches involving relaxed requirements for individual DeFi protocols are discussed. In this capacity, CeDeFi models are considered that combine decentralized solutions with centralized supervision and user identification procedures.

An analysis of scientific sources shows that DeFi is emerging as an innovative phenomenon

[1] Decentralized finance. Report. The Bank of Russia. 2022 URL: https://www.cbr.ru/Content/Document/File/141992/report_07112022.pdf?utm_source=chatgpt.com (accessed on 02.03.2025).

combining technological solutions, the transformation of financial relations and legal uncertainty. Their impact on the banking system is already evident in the revision of approaches to attracting resources. R. R. Guddasarov and M. G. Zhigas [13] note that investors consider DeFi as part of the future financial infrastructure, primarily in the context of the expansion of tokenization of real assets.

The literature review shows the multifaceted nature of DeFi, which highlights both the advantages of reducing intermediary costs, increasing profitability and simplifying cross-border operations, as well as the limitations associated with cyber risks, legal gaps and insufficient user protection. The discussions mainly focus on the ability of DeFi to replace or complement traditional banking. Although most authors acknowledge the incompleteness of these systems, their rapid development and the expansion of the user base point to the increasing role of decentralized solutions in global money flows.

METHODOLOGY

A comparative analysis of banking and DeFi serves as the methodological basis for this study. The characteristics of both systems, such as their intermediary roles and asset transactions, are compared in order to identify where DeFi has potential advantages over banks and where banks still have advantages.

The comparative analysis is based on open materials, including research papers on DeFi and opinions on the future of financial intermediaries. However, no primary data was collected or statistically processed in a large-scale empirical way.[2] Instead, the approach focuses on studying and generalizing available (public) sources that reflect the dynamics of DeFi development.

Therefore, the methodology involves a comparative analysis of DeFi and banking in terms of understanding and interpreting the implications of how banks may adapt to the increasing popularity of decentralized platforms.

ECONOMIC THEORIES EXPLAINING THE DEVELOPMENT OF DEFI: AN ANALYTICAL REVIEW

The formation of a conceptual field, possibly the future theory of DeFi, begins with the foundations of financial intermediation, laid down in the works of classical political economy, and continues within the framework of neoclassical, institutional, neo-institutional and network approaches. Each of these areas allows us to interpret digital disintermediation, the role of smart contracts, and the architecture of financial interaction in its own way without the involvement of centralized institutions, thereby forming a methodological basis for analyzing DeFi as an evolutionary form of a new generation financial system:

1. Classical economic theory (A. Smith [14], D. Ricardo [15] J. Mill [16], J.-B. Say [17], etc.) proceeds from the ability of the free market and competition to ensure the allocation of resources without external interference, relying on the mechanism of self-regulation. In the neoclassical tradition associated with C. Menger [18], K. Wicksell [19], E. Bohm-Bawerk [20], A. Marshall [21], I. Fisher [22], J. Hicks [23], this logic is complemented by rational choice and market equilibrium, in which economic agents pursue their own interests. interests shape prices through supply and demand. In the DeFi environment, these principles manifest themselves in eliminating intermediaries and providing users with direct access to financial instruments, where smart contracts automate lending, deposits and asset exchange without resorting to centralized trust. This increases competition and reduces financial transaction costs by increasing access to capital and transparency.

The transfer of these theoretical positions to the digital platform environment reveals discrepancies with idealized ideas. The high volatility of crypto assets, the lack of unified control mechanisms and the accompanying

[2] Due to the limitations on the volume of the article.

uncertainty limit the stability of such markets and hinder the formation of long-term trust. Nevertheless, the logic of free competition and self-regulation remains the internal foundation of DeFi as an alternative form of financial interaction. Distributed coordination mechanisms, open participation and transparency of operations create an environment in which users independently choose platforms and ways of interaction. Despite the vulnerabilities of decentralized markets, including manipulation and infrastructural risks, the rejection of excessive intermediation and the growth of financial autonomy make DeFi part of a new paradigm that is changing the models of financial intermediation.

2. The theory of transaction costs (R. Coase [24], O. Williamson [25], and others) considers firms and institutions as a mechanism for reducing the cost of concluding and executing contracts. Banks traditionally perform this function by undertaking solvency verification, accounting, clearing and liquidity maintenance, which allows depositors and borrowers to interact without directly searching for each other. DeFi is focused on eliminating such intermediary functions by replacing institutional trust with the code of smart contracts, the execution of which is provided by the blockchain. Theoretically, this reduces the cost of checking counterparties and conducting transactions, but in practice new forms of costs arise related to network fees, scalability issues and the complexity of user interfaces. As a result, the theory of transaction costs makes it possible to explain both the attractiveness of DeFi and the limitations of their mass distribution until a sufficient level of technological and user maturity is achieved.

3. The theories of contracts and agency relations (M. Jensen and W. Meckling [26], O. Hart [27], B. Holmström [28], etc.) describe the problems that arise due to a conflict of interest between the principal and the agent, when the latter may act in his own interests, and not in the interests of the owner. The Bank acts as an agent for depositors (principals). The problem of moral hazard and conflict of interest is obvious here. The bank may make overly risky decisions by issuing questionable loans, but it will be saved by the state in the event of a crisis. DeFi declares that such a conflict does not arise, since the user controls his assets through an electronic wallet, and the smart contract automatically executes the terms of the transaction, eliminating the risk of "overheating" or abuse by managers. However, a new dilemma arises — trusts in the code. A smart contract is developed by programmers, and it may contain errors and vulnerabilities. In addition, the average user does not always understand how the logic of a smart contract works and relies on code audit and the reputation of developers. This means that theoretically there is a transition from one intermediary (the bank) to potentially another (the developer or the protocol team), which can impose or hide some "malware". From the point of view of agency relations, we can say that DeFi reduces the risk of "improper" use of client funds by bank managers, but creates a specific technical risk. Thus, the concept of solving the agency problem does not mean eliminating all risks: the issue of trust is simply being reformatted, becoming focused on the developer community and smart contract audit mechanisms.

4. The theory of public choice (J. Buchanan and G. Tullock [29], M. Olson [30], K. Arrow [31], etc.) interprets the actions of government and supervisory authorities through the prism of their own interests, and not solely for the public good. The decentralized nature of DeFi takes them beyond national jurisdictions and allows them to partially bypass traditional control mechanisms, including KYC/AML and reserve requirements, which increases the concern of central banks about the risks of illegal activities and loss of monetary monopoly. In the logic of the theory of public choice, government structures tend to tighten rules or restrict individual protocols in order to maintain control, which places DeFi in a zone of stable legal uncertainty. The possibility of sudden bans or full identification requirements is at odds with the decentralized nature of DeFi, as

smart contracts embedded in the blockchain are not amenable to unilateral withdrawal or modification. As a result, a conflict is formed between the centralized desire for control and the decentralized logic of DeFi, which excludes the possibility of a single revision of the rules.

5. Theories of money and money circulation (K. Marx [32], I. Fisher [33], J. Keynes [34], M. Friedman [35], D. Patinkin [36], J. Tobin [37], B. Bernanke [38], etc.) traditionally analyze the functions of money, the mechanisms of its supply and influence on macroeconomic processes. In centralized systems, the exclusive right to issue belongs to central banks, which, through monetary policy instruments, affect the money supply and maintain the stability of the national currency. The development of DeFi has led to the proliferation of private digital forms of money that operate primarily outside the traditional institutional mechanisms of the financial system. In these conditions, the ideas of currency competition formulated by F. Hayek [39] are being put into practice, as users choose between crypto currencies and tokens, focusing on stability, liquidity and the degree of decentralization. This arrangement reduces dependence on national currencies, especially in economies with high inflation, but the absence of an "anchor" institution increases volatility and eliminates the use of centralized tools to smooth cycles.

In the absence of a single regulatory mechanism, the value of tokens is formed by market demand and supply, which makes them subject to sharp fluctuations. Even stable coins do not always withstand shocks, as shown by the collapse of TerraUSD in 2022. An additional problem is the lack of user protection mechanisms, since the risks of losses due to volatility, technical failures or hacks are entirely borne by participants, and anti-crisis interventions are impossible.

6. The theory of network effects, developed by M. Katz, C. Shapiro, and J. Farrell [40–42] and others, assumes that the value of a network increases as the number of its participants increases, which creates advantages for leading platforms. In DeFi, this is reflected in the concentration of liquidity around the most sought-after exchange, lending and profitable farming protocols, as a high level of liquidity creates more attractive conditions for users. As a result, the market tends to consolidate, and entry to new participants is significantly complicated. For the banking system, this means that individual DeFi projects, with global recognition, can be compared in scale with large international banks without having a centralized structure. This casts doubt on the thesis that decentralization automatically eliminates monopolistic tendencies, since it is possible to form a distributed infrastructure with a high concentration of liquidity and the actual dominance of a limited number of protocols.

Thus, considering DeFi through the lens of various economic theories provides a comprehensive understanding of how and why decentralization has such a significant impact on financial intermediation. Classical and neoclassical theories explain the appeal of eliminating intermediaries and market self-regulation. The theory of transaction costs identifies real risks and additional costs associated with the transition to a new model.

The theory of agency relationships shows that DeFi mitigates the problem of moral hazard but creates a different dependency on protocol developers and code security. Public choice theory captures the tension between decentralization and state interests in PREP and governance. Monetary theory emphasizes the competition between private currencies and its impact on inflation and deflation, while network effect theory explains the trend of the DeFi market to cluster around a few leading platforms.

All the considered theoretical approaches converge on a single logic, which is that DeFi is not just a technological innovation, but also a potential reorganization of existing financial intermediary institutions. This type of financial relationship challenges banks in their traditional role as intermediaries and governments in terms of monetary and regulatory policy.

In the DeFi ecosystem, banking functions are split into separate smart contracts, each solving a specific task related to asset exchange, secured lending, or insurance, without the need for a centralized coordinating entity. Users have the option to choose protocols that offer the most favorable terms, while also taking on the risk of interacting with algorithms that do not involve personal liability. Supporters of DeFi see it as a form of financial democracy, while critics highlight the risks of legal ambiguity and the difficulty in identifying defaults and abuse.

More broadly, DeFi can be seen as a phenomenon that arises from the intersection of various concepts, including competition, transaction costs, agency relations, government intervention, money circulation, and network effects. Analyzing these aspects requires simultaneous consideration, as the technological mechanisms of blockchain and smart contracts merely mediate deeper economic processes. This analytical framework becomes particularly relevant when discussing the transformation of the banking system and its potential adaptation to decentralized forms or the displacement of banks by platform solutions.

In this sense, DeFi, built on classical ideas of the free market and competition, brings technological changes that could redefine the very nature of financial intermediation and trust.

DEFI AS A CHALLENGE FOR THE BANKING SYSTEM

The future of the banking industry in the context of the growing role of decentralized finance (DeFi) remains a topic of debate, as experts and researchers have differing opinions on the rate of change. However, there are several possible development paths that range from banks' rapid adaptation to new conditions, to a gradual shift towards decentralized platforms.

The first scenario envisions banks quickly integrating DeFi technologies into their operations, transitioning from being traditional intermediaries to providing innovative digital products such as blockchain-based lending, tokenized assets, and smart contracts. In this scenario, banks continue to play a crucial role as custodians and guarantors, while also leveraging decentralization techniques to streamline transactions and enhance customer experience.

As a result, this could lead to the emergence of banks that remain traditional financial institutions, but become full participants in blockchain ecosystems by using DeFi (Decentralized Finance) tools as a competitive advantage.

The second scenario involves CeDeFi (Centralized DeFi) hybrid models, where banks retain significant control while providing customers with access to decentralized services via an interface that works under the "back-end on the blockchain — front-end under banking supervision" model. Examples of this approach can be seen in Switzerland[3] and Singapore, where banks are issuing stablecoins and tokenized bonds in compliance with regulatory standards. The Bank of Russia also acknowledges the possibility of such an arrangement, although there has not yet been widespread adoption of DeFi technologies in the banking sector.

The third scenario involves a gradual reduction in the role of banks, if the platforms are able to provide users with truly convenient and understandable solutions for all types of transactions. If restrictions are weakened or prove ineffective, and demand for DeFi (decentralized finance) tools continues to grow, some customers, especially the younger generation, may switch to directly using protocols that eliminate the need for interaction with banks. Banks that do not adapt and offer comparable conditions and speeds will find themselves as niche or outdated institutions focusing only on conservative customers.

Regarding these scenarios, researchers [3–5, 7] agree that a rapid, full-fledged transition to a fully decentralized financial system is unlikely due to states' desire to control cash flows. Central banks are not willing to

[3] A Swiss bank has launched a blockchain alternative to stock listing. URL: https://ru.beincrypto.com/shvejczarskij-bank-zapustil-alternativu-listinga-akczij/ (accessed on 02.03.2025).

abandon monetary policy tools, and DeFi undermines the concept of centralized liquidity management.

Therefore, it seems more plausible that banks either fully or partially adapt to decentralized innovations, or they could reach a general compromise through hybrid models where DeFi services are integrated under banking supervision.

It is likely that some banks will try to take on the role of a "liquidity regulator" in decentralized finance (DeFi) protocols, providing reserves or insurance funds in case of sudden fluctuations in crypto assets. In these scenarios, the bank will perform an auxiliary but crucial function as a stability guarantor, offering insurance services to DeFi participants who are concerned about hacking and the risk of smart contract failure. Additionally, there is the possibility of models where a bank account is linked to a cryptocurrency wallet and asset transfers to a DeFi pool can be made with a single click.

Furthermore, this transformation could lead to several specific models:

- "Bank as a Service" implies that banks evolve into technological platforms for managing digital assets, including staking, lending, and other DeFi tools.
- "Smart banks" take this a step further, becoming almost entirely blockchain-based: most processes, including lending or insurance, are automated, and human intervention is minimal.
- "Global DeFi banks" represent the extreme case, where the institution is not tied to any one country and operates as a multi-tiered digital network, providing services to users regardless of citizenship or location.

These concepts have not yet been fully implemented, but they indicate a direction in which the banking industry may evolve in the coming years.

Therefore, the future of banking may take different paths based on the growth of decentralized finance (DeFi). However, most studies and forecasts agree that the complete abandonment of traditional banking is unlikely.

THE NOVELTY OF THE RESEARCH AND A NEW PERSPECTIVE ON THE FUTURE OF BANKS IN THE "ERA" OF DEFI

The novelty of this research lies in moving beyond the traditional approaches that focus on the linear logic of banks' adaptation to DeFi or their displacement. The proposed concept takes a deeper look at the transformation of banks' role in the global economy and the development of new principles for financial intermediation. It challenges traditional ideas about the functions and place of banks in the future digital ecosystem.

In the traditional discussion, the integration of DeFi and banks has been mainly seen as a matter of regulatory barriers and competition between centralized institutions and decentralized networks. Some believe that states will attempt to control cash flows, while banks will continue to maintain their monopoly on financial intermediation. This approach, however, is based on the assumption that central institutions will remain dominant in the banking system. Decentralized solutions, in this scenario, would either integrate with the existing regulatory and institutional framework or find themselves on the sidelines of the market.

However, recent technological and behavioral trends, such as widespread digitalization, the increasing popularity of crypto assets, and the development of virtual spaces like met verses, suggest the possibility of a different outcome. These trends indicate a potential for a new approach to financial services that could disrupt the current status quo and lead to a more decentralized and innovative future. In this scenario, banks could move beyond the traditional model of centralized intermediaries and become autonomous ecosystems that operate using decentralized algorithms and artificial intelligence.

The first main hypothesis concerns the rethinking of the role of regulation. Instead of traditional government control over cash flows, decentralized regulation is being considered. DeFi is often associated with a lack of supervision or very weak supervision by national institutions

[42–45]. However, in the future, a self-regulating system could be formed where control over the security of banking operations and compliance with financial integrity principles would be carried out through distributed ledgers and cross-chain auditing. Central banks in the traditional sense would fade into the background as the rules of these systems would be encoded in smart contracts and their execution would be automatically verified by a global community of validators.

Under these conditions, banks no longer need to "apply for a license" from the state. Instead, they undergo algorithmic verification, ensuring that their smart contracts comply with generally recognized security and transparency standards. A system of decentralized autonomous organizations (DAOs) can assign trust ratings to the network, regulating access to specific segments of the global economy. This eliminates the need for human supervision, and national licenses become a thing of the past, replaced by cross-border algorithmic control.

The second hypothesis proposes that banks could evolve to become "decentralized states", taking on some of the functions of states, such as issuing their own digital currencies, managing economic zones, and introducing digital identities.

Already, large banks are issuing stablecoins and creating their own blockchain networks. They are even planning to collect biometric data in order to quickly identify users. In a more radical scenario, these "sovereign" banks could issue supranational digital assets that act as a basket of global financial instruments, not tied to any specific national economy.

At a new level, banks can organize virtual economic zones, including in metaverses, where users can receive financial services, work, buy and sell virtual goods, and real estate using bank tokens. Economic parameters such as interest rates, limits on new digital units issuance, and taxation within the metaverse will be managed by DAOs formed by holders of bank tokens.

The logic of "bank-client" will be replaced by "bank-ecosystem", where users vote on changes to bank policy. The bank itself will become a digital jurisdiction with its own monetary policy (MP).

The third hypothesis relates to the emergence of "metabanks", which is the financial infrastructure of the future fully integrated into Web3. Under this model, banks will be freed from dependence on fiat currencies and national regulations, moving towards 100% programmable money and assets [46–48]. Transactions in these systems will not require manual confirmation or authorization; everything will be handled through smart contracts. Each asset will exist in a tokenized form, allowing for real-time management. Payment systems, lending, and insurance will no longer require centralized clearing or compliance services. Instead, they will rely on code and distributed network nodes. Employees who perform approvals and checks will be replaced by artificial intelligence (AI) configured to monitor risks, detect suspicious transactions, and optimize liquidity flows. Such "metabanks" are not tied to any particular state and can provide access to finance for users from anywhere in the world. They rely on the technological infrastructure of Web3.

The novel aspect of this approach is that instead of discussing the future of traditional banks, we can consider the idea that banks will simply become programmable, autonomous "economies" governed by algorithms. Instead of adapting to decentralized finance (DeFi), banks themselves will become more like DeFi, with expanded functionality and reduced reliance on government regulations.

No doubt, such a scenario may seem utopian or overly fantastic given the desire of states to control monetary circulation. However, with further globalization and the strengthening of cross-border digital services, as well as the development of metaverses and AI, this transformation does not seem impossible. Moreover, the digital generation born in the internet era may see such "metabanks" as a logical continuation of Web3 principles, where power is distributed among participants rather

than concentrated in a few giant corporations or central banks.

In these scenarios, the banking system is being reimagined in the "era of DeFi", which is starting to develop on a fundamentally new basis.

The evolution of the banking model has led to the emergence of "Banks 5.0", a step beyond "Banks 4.0". In the proposed concept, "Banks 4.0" [49] are expanded into "Banks 5.0" [50], where financial institutions act as fully autonomous systems, rather than just digital platforms.

In the "Bank 4.0" model, banks implement AI, mobile apps, and analytical tools to provide personalized services. In contrast, "Bank 5.0" rejects the centralized hierarchy. Instead, banks operate in a decentralized autonomous organization (DAO) mode, where participants vote on changes to loan policies, rates, fees, and investment strategies. The infrastructure is supported by a distributed network, rather than a single governing body.

Self-learning algorithms ensure that the bank's operations adapt to market conditions, inflation expectations, and geopolitical factors. This allows for constant adaptation and flexibility in the face of changing circumstances. This project may seem radical, but it has the potential to be more efficient than traditional banks due to its ability to constantly renew itself and scale globally.

The evolution of the banking model: from "Banks 4.0" to "Banks 5.0". In the proposed concept, "Banks 4.0" are expanded to "Banks 5.0", where financial institutions act not just as digital platforms but also as fully autonomous systems.

If the "Bank 4.0" model involves banks massively implementing AI and mobile applications for personalized banking services, "Bank 5.0" rejects the centralized hierarchy. Instead, banks switch to the DAO (Decentralized Autonomous Organization) mode, where participants vote collectively on changes in loan policies, rates, fees, and investment strategies.

At the same time, the bank's infrastructure is not controlled by a single governing body but supported by a distributed network. Self-learning algorithms ensure continuous adaptation to market conditions, inflation expectations, and geopolitical factors. Such a project may seem radical, but it could be more efficient than a traditional bank, thanks to its ability to constantly renew itself and scale globally.

- *The concept of "Living Finance" and Adaptive Digital Assets.* Today, DeFi is mostly based on static smart contracts that define specific loan terms and interest rates. However, there may be protocols on the horizon that allow digital assets to automatically adjust their model as market and macroeconomic conditions change. These adaptive stablecoins will adjust the level of issuance and collateral structure in response to fluctuations in demand, maintaining stability through dynamic algorithms rather than hard collateral. Smart contracts managing loans will adjust interest rates based on changes in the borrower's credit rating, online activity, and external economic indicators, minimizing "moral hazard". This will create a new model for financial instruments that are both digital and able to adapt to their environment, like living organisms. This raises a number of questions: What are the risks associated with complete algorithmic control over assets, and could it lead to unexpected consequences for users? However, this is precisely where the true novelty lies — finance is no longer a static collection of products, but rather a constantly evolving and self-adjusting system
- *Global decentralization of capital, where DeFi can be seen as an alternative to supranational institutions like the IMF and World Bank.* In the traditional scenario, credit resources are distributed among countries, or large investment projects are negotiated through interstate agreements and spheres of influence. However, the introduction of decentralized protocols on a global economic scale allows for real-time movement of capital without geopolitical boundaries. In this context, banks no longer function as local institutions, but rather as global liquidity providers, connecting participants from various regions in a unified network of settlements and

investments. This requires banks to relinquish their status as national institutions and become decentralized platforms, where not national currencies operate, but tokenized assets, goods, and services, as well as supranational stablecoins, are utilized. From a global financial perspective, this represents a significant shift. For the first time, capital is no longer owned by specific entities, but is managed by network algorithms and decentralized autonomous organizations (DAOs). Decisions are made not by governments or bank boards, but by the decentralized community.

Together, these approaches form a new type of forecasting that goes beyond the traditional juxtaposition of "banks adapting to DeFi" and "DeFi displacing banks". We are talking about a new order, where the boundaries between banks, corporations, and states are becoming blurred, and the mechanisms of the PREP (to be defined) are shifting towards distributed algorithms that respond to market changes in real-time.

Under these conditions, banks, losing their monopoly on intermediation, can occupy new roles in digital ecosystems as trusted infrastructure. They can issue adaptive stablecoins, support managed DAOs (decentralized autonomous organizations), and provide other services. Users will have direct participation in the management and allocation of financial resources. Banks themselves will be transformed into distributed service structures with algorithmic coordination mechanisms.

All of the above implies a departure from traditional ideas about the relationship between states, banks, and customers. Implementing this approach involves significant uncertainties regarding the limits of government control, vulnerabilities in algorithmic systems, and users' willingness to abandon traditional protective measures, including deposit insurance.

At the same time, the task of breaking up banks and transferring their functions to decentralized systems takes DeFi beyond scenarios limited by regulation and digital innovation. This is the novelty of the proposed approach, which describes a more radical architecture for financial interaction. In this architecture, control, identification, and monetary mechanisms take on a global and algorithmic character. Banks lose their status as autonomous institutions and become elements of a distributed digital economy that is distributed around the world and is independent of national borders.

In fact, this evolution implies the transition to "live finance" and the creation of "5.0 banks" as autonomous ecosystems where intermediary and control functions are implemented in a programmable way. Moving beyond traditional institutional control, these structures operating in the Web 3 environment define an architecture where user-algorithm interaction becomes crucial, and the role of human and governmental institutions is significantly diminished. While such a scenario may seem overly optimistic or raise legitimate concerns, it allows us to move beyond simply assessing the current success of DeFi and consider its potential socio-economic implications. This is the main difference between the proposed approach and traditional forecasts, which are limited by regulatory or technological constraints: we are talking about a potential shift in the model of financial organizations, from centralized institutions to decentralized, programmable systems. The implementation of these systems is possible in the medium term, with the further development of technology.

Unlike most existing studies, which focus on partial DeFi integration or its strict regulation, this proposed concept aims to transform the financial intermediation on a global scale. Under this vision, banks lose their autonomy and become elements of decentralized digital ecosystems based on smart contracts and self-governing mechanisms. The novelty of this approach lies not in optimizing individual operations but in rethinking the architecture of the financial system. This new architecture blurs the boundaries between banking services, government administration, technology platforms, and users.

CONCLUSIONS

The trends discussed demonstrate how decentralized finance (DeFi) is changing the financial intermediation landscape and how the discussion about the role and future of banks in the new digital ecosystem is evolving. For a long time, banks held a monopoly in providing services, guaranteeing customer trust, and being an integral part of government monetary policy. However, today, thanks to the rapid growth of blockchain and smart contracts, banks are increasingly facing decentralized protocols that offer loans, currency exchange, insurance, and other services without centralized intermediaries.

This presents a fundamental challenge for banks, whose business models rely on intermediary margins. Banks must maintain high operating costs associated with infrastructure and regulatory compliance, while decentralized platforms can operate more efficiently through automation and global accessibility. The main conclusion of the study is that these changes go beyond the simple appearance of another financial technology trend, and indicate a more profound shift that could transform the way economic interactions work. The DeFi phenomenon not only poses serious competition to banks in the fields of lending and asset management, but also creates a new reality for how value is formed in the banking system.

The scenarios considered show that, in addition to local pressures, DeFi is forming a new configuration of the financial landscape, where the role of intermediary credit institutions is becoming less obvious. Banks need to review their business strategies, including abandoning some outdated services and shifting focus to innovations that combine the benefits of blockchain with traditional deposit protection mechanisms. This could be achieved through hybrid CeDeFi models where banks retain supervisory and security functions, while basic operations are conducted through decentralized protocols.

Thus, the future of the banking system largely depends on how quickly and efficiently banks can utilize the potential of blockchain and smart contracts. If banks continue to solely compete with DeFi (decentralized finance), there is a risk of losing significant customers, who will switch to platforms with lower fees and increased liquidity. However, the most innovative banks can benefit from acting as a "liquidity regulator" on decentralized platforms, providing tools for guaranteeing transactions, auditing smart contracts, and creating hedging solutions. This approach will allow banks to not only survive but also occupy unique positions in the digital landscape, remaining relevant.

At the same time, the development of hybrid CeDeFi models may be hindered by regulatory barriers. Governments seeking to maintain control over money circulation and prevent illegal activities may impose strict identification requirements for users or ban anonymous crypto assets. If these policies are implemented aggressively, the adoption of decentralized solutions in the banking system could slow down. However, central banks are not always prepared to impose widespread bans, as they realize that this would slow down FinTech development and make the domestic market less attractive to investors.

The study concludes that DeFi has started the transformation process and this impact is not a short-term trend but a long-term structural change in the financial system. Banks, especially large ones, must either find ways to coexist with DeFi or move to hybrid or more radical models. If they fail to do so, they risk losing significant market share in the future.

In the coming years, the ability to innovate and be open to digital formats will determine which banks can retain their leadership and which will fade into obscurity. DeFi encourages the banking system to make changes that focus on transparency, convenience, universal accessibility, and algorithmic risk management, rather than destroying it.

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ABOUT THE AUTHOR

Tatyana N. Zverkova — Cand. Sci. (Econ.), Assoc. Prof., Department of Banking and Insurance, Orenburg State University, Orenburg, Russian Federation
https://orcid.org/0000-0002-6540-6154
tnzverkova@mail.ru

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