“Development of financial inclusion from the standpoint of ensuring financial stability”

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DEVELOPMENT OF FINANCIAL INCLUSION FROM THE STANDPOINT OF ENSURING FINANCIAL STABILITY

Abstract

Since 2013–2015, financial inclusion has been considered a determinant of economic and social inclusion. Meanwhile, the impact of financial inclusion on economic development directly depends on financial stability. This paper focuses on the development peculiarities of financial inclusion in relation to ensuring financial stability and provides recommendations to Ukraine.

The inclusive development theory and gap theory form the theoretical research base, while generalization, statistical methods, coefficient and graphical analysis, comparison and ranking represent its methodological basis. Financial institution development, financial literacy, income level, cashless economy, and public confidence have been justified as the content-forming factors and impact channels of financial inclusion on financial stability. The development peculiarities of financial inclusion are studied by cross-country analysis considering different financial system models and economic development levels. The weak points of financial inclusion in Ukraine are a sevenfold gap between the banks' assets and non-bank financial institutions and 37% of the unbanked adult population. Moreover, there is a significant gap between the levels of human capital readiness and information security of banks' digitalization compared to EU banks – by 2.5 and 1.3 times, respectively, and a critically high level of distrust in banks (70%) with a reasonably high share of payment applications users (58%).

Further developing of financial inclusion and ensuring financial stability in Ukraine requires improving credit cooperation by transforming its structure from multi-institutional to mono-institutional and introducing the developed indicative tools for monitoring potential financial stability threats caused by technological innovations.

Keywords financial inclusion, financial stability, gap, channels of impact

JEL Classification G20, I30, G21

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INTRODUCTION

Over the last decade, the financial services market has undergone radical transformations. Under the influence of digital technologies and consumer needs, traditional business models in the financial sector have changed, and purely banking services have spread to non-banking institutions. The development of the financial services market is increasingly associated with financial inclusion, the relevance of which is emphasized by all financial regulators. The globalization of financial markets and the adverse effects of the Covid-19 have increased the importance of financial inclusion, viewing it as a driver of global and national economies and a prerequisite for ensuring financial stability. Ensuring financial inclusion for all financial market participants means creating conditions for their equal access to financial products and services. It can be ensured by introducing digital innovations in banking, improving the population's financial literacy, creating digital banks and/or strengthening banks' cooperation with FinTech companies. Financial inclusion opens additional perspectives

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for consumers of financial services (services become accessible, consumers can make informed choices and fully understand the benefits and risks), financial service providers, and the regulator by involving all population segments in the economic system. Consequently, there is the mobilization of their savings, which increases the level of domestic investment in the development of the state economy.

1. LITERATURE REVIEW

According to the Organization for Economic Co-operation and Development (OECD), financial inclusion is access to a wide range of financial products and services (OECD, 2020). The World Bank defines financial inclusion as: "the condition when individuals and legal entities have access to financial products and services that meet their needs and are provided appropriately and soundly" (The World Bank, 2018). The Consultative Group to Assist the Poor (CGAP) has adopted a similar position, emphasizing the characteristics of financial inclusion entities, which should be stable and reliable suppliers of financial services (CGAP, 2021). According to the National Bank of Ukraine, financial inclusion is "creating conditions for attracting all segments of the population and business to use a variety of financial services that are available in infrastructure and price, officially regulated and meet the needs of the population to stimulate the country's economic growth and reduce inequalities in society" (National Bank of Ukraine, 2022). Center for Financial Inclusion (CFI) defines financial inclusion as a "state in which all people of working age have access to a full suite of quality financial services, provided at affordable prices, conveniently, and with dignity for the clients" (Center for Financial Inclusion, 2018). The Global Partnership for Financial Inclusion (GPFI) interprets financial inclusion almost identically but clarifies the following:

1) financial inclusion applies to those sections of the population who are currently excluded from the consumption of financial services;

2) the subjects of financial inclusion are formal financial institutions (GPFI, 2011).

Sahay et al. (2015) define it as the access to and use of formal financial services, persisting with finance "available to as many as possible for a variety of uses." Atkinson and Messy (2013) defined it as the process of promoting affordable, timely, and adequate access to a wide range of regulated financial products and services and broadening their use by all segments of society. They also insist on using innovative approaches for the development of financial inclusion.

Besides, there is an approach where the object of financial inclusion is limited to certain social groups, for example, focusing on small and medium-sized businesses or only low-income groups. In particular, it is observed by Kalacheva and Kirienko (2018), Yoshino and Morgan (2016), Chakraborty (2011), and Hannig and Jansen (2010).

Such differences in the interpretation of the concept of financial inclusion, although more clarifying, significantly shift the semantic emphasis of the nature of the phenomenon under study. This can be considered a consequence of the fact that each country has its own level of economic development, the condition of the financial system, and the range and depth of financial services. Thus, certain aspects of financial inclusion become essential, particularly availability and accessibility (particularly in remote, sparsely populated, or inaccessible areas), or emphasize certain groups in society or business.

Therefore, when considering the interpretation of financial inclusion by subject-object characteristics, it is recognized as important to focus on the following aspects: 1) promoting universal access to financial services without separating certain segments of the population or business; 2) considering subjects of this process formal financial institutions, which are adequately supervised and recognized as financially stable and reliable institutions (i.e., no alternative financial system for the most "difficult" segments of the population and business be discussed).

Another important thing is studying the scientific position concerning the causal impact of financial inclusion on the economic environment. Until the 2000s, researchers mainly oppositely studied this

issue, i.e., from the standpoint of financial exclusion, and argued that limited access or lack of access to finance could lead to poverty and social inequality (Aghion & Bolton, 1997; Banerjee & Newman, 1993; Galor & Zeira, 1993). In addition, Tita and Aziakpono (2017) warn of the deep conviction of the high capacity of financial inclusion to contribute to poverty alleviation and emphasize the priority of the state of the institutional and political environment in a given country. King and Levine (1993), Beck et al. (2000), Clarke et al. (2006), and Omar and Inaba (2020) have empirically linked financial depth to more remarkable economic growth and lower income inequality. At the same time, Atkinson and Messy (2013) define financial well-being as well as economic and social inclusion as the goal of financial inclusion. CGAP (2021) considers financial inclusion primarily from the perspective of overcoming poverty, emphasizing empowering women capture opportunities and build resilience through financial services.

It should be noted that scientists are actively studying financial inclusion to achieve the Sustainable Development Goals (SDGs) successfully. Kuada (2019) grounded the expected positive impact of financial inclusion on the SDGs across all 17 goals. Sirtaine (2022) declares that financial inclusion is an essential ingredient in sustained development and emphasizes the need for better understanding the interplay between financial inclusion and green finance.

Allen et al. (2016), Rojas-Suarez and Gonzales (2010), and Karlan et al. (2014) identify many factors that affect both the level of financial inclusion and financial sector's development of a country, including per capita income, good governance, the quality of financial institutions, access to information and the regulatory environment.

Researchers pay special attention to the relationship between financial inclusion and financial stability. Thus, Han and Melecky (2013) studied the interaction of the number of people with bank deposits on the volume of stable financing, in other words, on the ability of banks to effectively cope with liquidity crises in times of economic shocks. Morgan and Pontines (2014) modeled the relationship between financial stability and financial inclusion based on a dynamic-panel equation. The paper describes each of the studied phenomena by two indicators: financial stability – bank Z-score and bank NPLs, and financial inclusion – SME outstanding loans and the number of SME borrowers. At the same time, such an approach is considered too narrow, both in terms of financial stability and financial inclusion.

2. AIMS

In view of the above, the research objective is to study the development peculiarities of financial inclusion concerning ensuring financial stability of the financial sector. In addition, the paper provides recommendations for Ukraine on this basis. In this context, the following has been envisaged: considering financial inclusion by identifying its content-forming factors; conducting a comparative cross-country analysis of the financial inclusion development peculiarities; substantiating the channels of the interrelation of financial inclusion and financial stability and courses to deepen financial inclusion in Ukraine from the standpoint of ensuring the financial stability.

3. METHODS

The theory of inclusive development should form the methodological basis for the study of both financial inclusion and financial stability, which, in turn, is an evolutionary deepening of the sustainable development concept. Within such a methodological perimeter, the following logical chain occurs: financial inclusion is an essential determinant of financial stability of the financial sector. In turn, it serves as a driving factor in ensuring a sustainable financial sector. Regarding the latter, a profound evolutionary transformation of the concept of ensuring financial stability in the financial sector has already taken place, precisely in terms of the theory of inclusive development (Table 1).

Another common theoretical basis for financial inclusion and financial stability is gap theory, which, in turn, is also the methodological foundation of the theory of inclusive development. "Gaps by their nature may precede a new stage in the development of the system or its destruction and disintegration; proceed separately, relatively inde-

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Table 1. Evolutionary transformation of financial stability in the financial sector

Source: Authors' development.

Criteria	The time horizon of evolutionary change		
	Before the global crisis of 2008	**2009–2015**	**After 2015**
Paradigm and its theoretical basis	• Paradigm of determinism (theory of general economic equilibrium, theory of equilibrium (sub-theory of static equilibrium))	• Synergetics paradigm (dynamic equilibrium theory, theory of change, chaos theory, theory of dissipative structures, theory of inclusive development)	
Basic concepts that form the language of theories	• "Stability," "order," "symmetry," "equilibrium," "crisis," "determinism," "systematicity," "homogeneity"	• "Bifurcation," "chaos," "emergent," "asymmetry," "imbalance/gap," "indeterminism," "fractality," "turbulence," "self-organization," "dissipation," "heterogeneity," "inclusiveness"	
Principles of research	• Rationality; • linear causality; • one-vector and invariant development of economic systems*; • information symmetry	• Multivariate development of economic systems, nonlinear relationship with the external environment; • irrational behavior of economic agents, information asymmetry, socialization and humanization of financial intermediation	
Determinants	• Steady profitability, including the growing dynamics of ROE and ROA; • Compliance with regulatory standards; • Risk assessment by a reactive approach	• Individual responsibility for the financial results of financial institutions; • Socio-economic impact of financial intermediation institutions; • Proactivity in risk management	• Harmonization of the interests of a wide range of stakeholders; • Increasing the inclusiveness of financial services; • The purpose of functioning is to maximize the value of one's activities for society; • Comprehensive and multifaceted measurement of performance efficiency; • The corporate management of the institution is based on risk culture
Types of risks	Financial risks	Financial risks and social impact	• Financial risks; • Social and environmental impact; • Risk culture
Postulates	• Rational behavior of economic agents; • Free market with the maximum spread of market self-regulation; • Market liberalism	• Irrational behavior of economic agents; • The need for administrative introduction of countercyclical regulation of the institution of financial mediation; • Socio-oriented economy	• Irrational behavior of economic agents; • Ensuring a sustainable financial system; • "Ethical" economics (classical liberalism)

Note: * – the study interprets financial institutions and the financial sector in general as open economic systems.

pendently of other gaps – or coincide, and interact with each other, causing resonance effects; act as an inevitable regular phase of cyclical dynamics, or as an accidental result of stochastic asymmetric shocks" (Kravchuk, 2014). This study interprets the gap as follows. Firstly, it is an objective permanent form of interaction of an open system with the external environment. Secondly, it is the cause of the imbalance of the system. Finally, it is the driving force of a new stage of system development after passing the bifurcation point. The complexity of gaps indeed lies in the fact that they are both a factor of violation and a fundamental factor in ensuring the development of any economic system. This paper draws attention to those gaps in the development of financial inclusion, which are significant in ensuring financial stability.

Regarding financial inclusion, it is crucial to study it in an integrated approach in the framework of inclusive development theory. It is also appropriate to apply a factorial approach by identifying the most critical factors in the development of financial inclusion. In terms of these factors, the features of financial inclusion should be explored.

Traditional data processing methods have been used, particularly ratio analysis, based on official statistics. Also, the methodological basis of the study is a set of scientific techniques and methods

of scientific knowledge. They include generalization (determining the types of business models of postal operators, classification of digital bank formats), statistical methods (studying the number of banks, non-bank financial institutions, postal communication operators), ratio and graphical analysis (constructing time series of poverty and the number of non-cash payments), comparison (comparing data on the coverage of the population with banking services and the level of financial literacy of certain countries), and ranking (building the TOP-10 richest and the poorest countries in Europe). Finally, the empirical basis of this study is the materials of the financial legislation of Ukraine and the EU, data from the World Bank, OECD, USAID, and NBU.

4. RESULTS

The factors that have a direct impact on the development of financial inclusion in the country are:

1) the presence and sufficiency of financial institutions;
2) financial literacy of the population;
3) income level;
4) development of the cashless economy;
5) public confidence in the financial system.

Under such conditions, these factors require special attention, as they are the main channels of influence on financial stability. Therefore, the study on the development peculiarities of financial inclusion in Ukraine based on comparative cross-country analysis has been carried out.

4.1. The impact of the presence and sufficiency of financial institutions on the financial inclusion

Banks are the leaders of the financial market in terms of financial services. Officially, non-bank financial institutions are equal participants in the financial market. Still, they do not have full access to financial resources compared to banks, in particular, due to regulatory restrictions on entering the deposit market. In 2020, the share of 73 Ukrainian banks in the financial sector assets was 88%, which characterizes the model of the financial system as bank-centric. An undeveloped non-bank financial sector and a monopolized banking sector are typical for the Czech Republic, Slovakia, Hungary, Mexico, and Turkey. Countries such as Austria, Belgium, Germany, Ireland, New Zealand, and Portugal have a bank-centric financial system with a high concentration share and a developed stock market. South Korea and the United States have a dominant role in the financial system and a developed non-monopolized banking sector. Australia, Canada, Denmark, Finland, France, Greece, Iceland, Italy, Norway, and Spain have equally developed banks and stock markets.

For example, credit unions are potent players in the financial services market in the US, numbering 5,241 institutions compared to 4,344 banks (75,500 branches) in 2020 (Figure 1). The National Credit Union Administration (NCUA) ensures the reliability and stability of credit union development in the United States. US credit unions serve 100 million members, 43.7% of the economically active population. US credit unions are non-profit cooperative institutions. In 2020, Navy Federal Credit Union was the largest American credit union, both in terms of assets (over USD 130.3 billion) and the number of members (9.6 million) (NCUA, 2020). The strong points of US credit unions are credibility, affordability, and government guarantees.

Banks continue to be the primary financial services providers, leading in the number of transactions. In Ukraine, the number of banks is less than non-bank financial institutions: insurance companies, credit unions, pawnshops, and lessors. Over the last decade, the problem of access to financial services has become relevant for citizens of different countries in optimizing (reducing) the network of bank branches, the lack of ATMs and payment terminals. Given that the National Bank of Ukraine pursues a policy aimed at consolidating financial intermediaries to increase their capitalization, the number of banks and non-bank financial institutions in Ukraine in 2015–2020 also had a steady downward trend. The number of banks decreased by 44 institutions (37.6%), insurance companies by 153 institutions (42.4%), credit unions by 266 institutions (45.2%), financial companies, pawnshops, and lessors by 301 institutions (22.8%). At the same time, despite the decrease

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Source: Compiled by the authors based on Statista (2020).

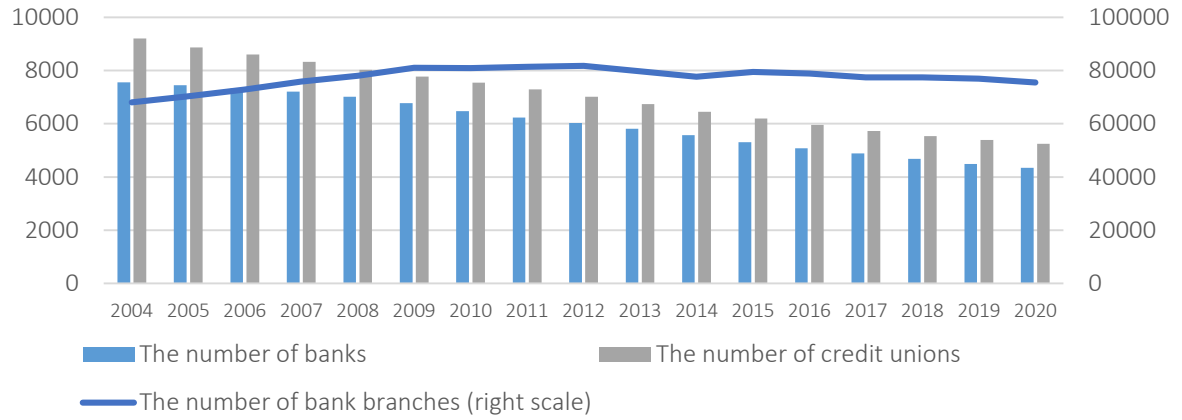

Figure 1. The number of credit unions and banks in the United States in 2004–2020

Source: Compiled by the authors based on the National Bank of Ukraine (2022).

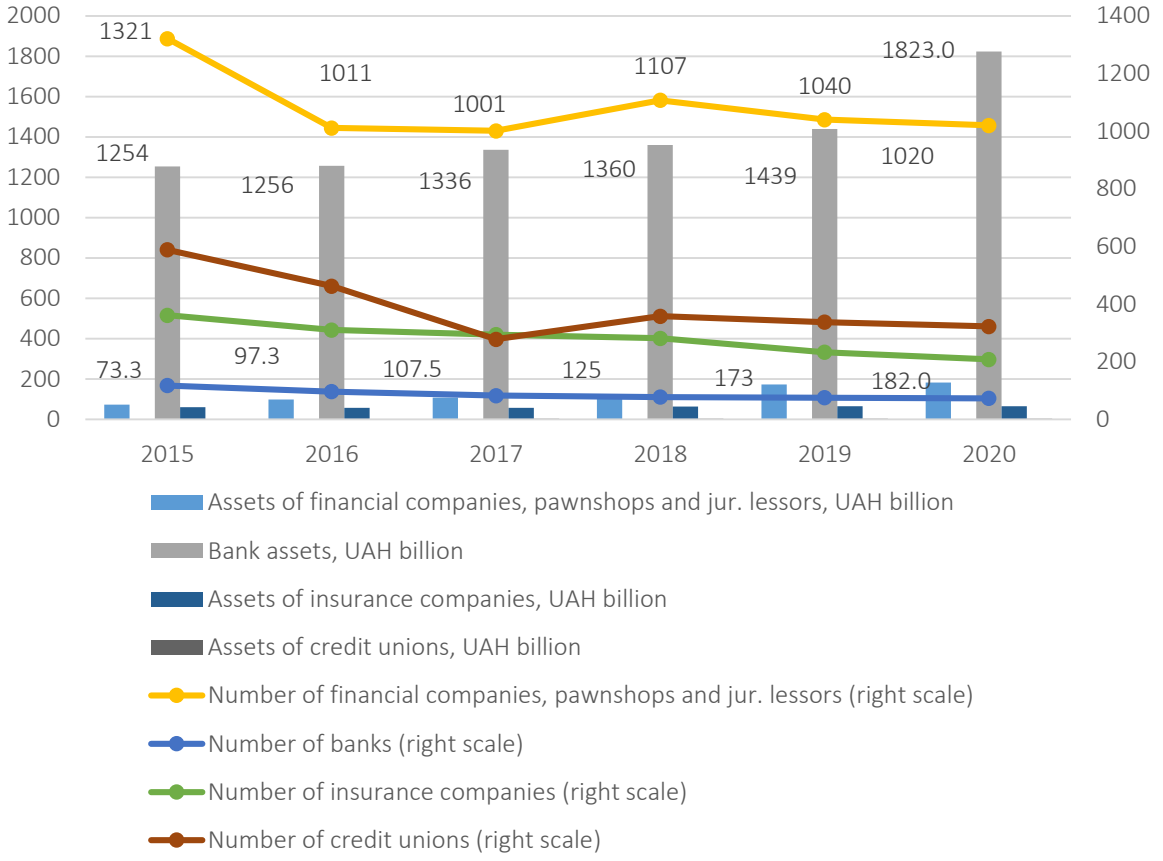

Figure 2. Number of non-bank financial institutions and banks in Ukraine in 2015–2020

in the number of financial institutions, the total volume of their assets during the study period increased by 45.4%, 5.9%, 21%, 148.3%, respectively.

Meanwhile, banks' assets exceeded the assets of non-bank financial institutions by 7.3 times (Figure 2). The number of bank branches decreased 1.7 times. Only 6% of settlements belong to bank branches, and 30% to ATMs. There are 7,947 terminals in Ukraine per 1 million cards and 29,000 in the EU (Figure 3).

Thus, considering this aspect of financial inclusion from the standpoint of financial stability, the sev-

Source: Compiled by the authors based on the National Bank of Ukraine (2022).

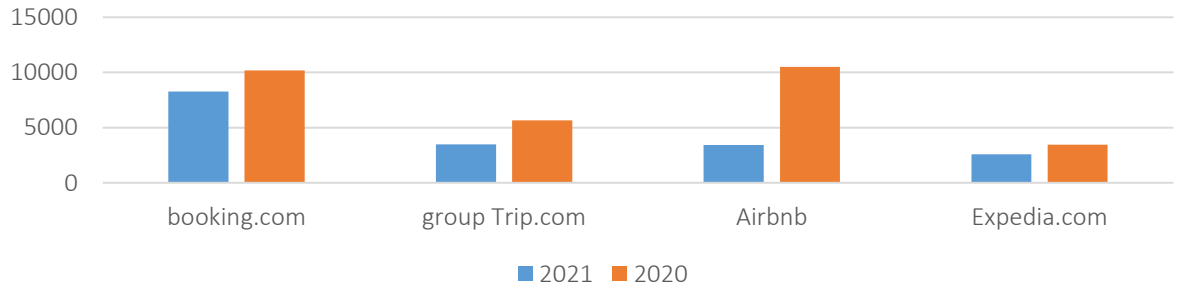

Figure 3. Number of ATMs and terminals in Ukraine in 2015–2020

enfold gap between the assets of banks and non-bank financial institutions is a significant weakening factor. This is primarily due to the functional limitations of the financial sector, taking into account the underdevelopment of specific specialized institutions. In particular, insurance companies, pension funds, investment funds, and companies, as well as credit unions are meant here. For example, the institutions of insurance, private pension provision, and credit cooperation stand out among other financial intermediaries for their unique social significance. It significantly affects the level of self-organization of society and increases its self-responsibility for its own well-being.

On the other hand, credit unions have a special place among non-bank financial intermediaries from the position of social inclusion. Therefore, to intensify credit cooperation in Ukraine, first of all, it is necessary to improve the institutional support of its functioning, particularly by strengthening its internal self-organization and clear determination of the functionality of the United Credit Union. Moreover, it is necessary to carry out a structural transformation of the domestic system of credit cooperation by moving away from its multi-institutional structure towards a mono-institutional one (Khutorna, 2019). This leads to a conclusion that currently, the state of financial inclusion in Ukraine by the "presence and efficiency of financial institutions" is characterized by significant imbalances that weaken the financial sector's potential to ensure financial stability.

The banking market of Ukraine and the Central and Eastern European Countries (CEECs) are similar in the scale of coverage of the adult population with banking services and the number of users of banking services (Table 2). For example, the level of coverage of the Polish population with banking services (mainly current and savings accounts) is characterized as high. It is 87% of the adult population, or more than 28 million people.

International experience shows that postal operators can perform an important social function – to attract broad sections of the population to the financial system and thus increase financial inclusion in the country. This is particularly relevant for countries or regions with a lack of bank branches, particularly Kenya, Pakistan, and Madagascar.

Postal operators around the world have a strong network of 661,000 branches, 91% of which pro-

Table 2. Coverage of the population by banking services: Selected CEECs in 2018

Source: Compiled by the authors based on USAID (2020).

Country	Proportion of adult population covered by banking services	Adult population, mln	Users of banking services, mln
Poland	87%	32.1	28.0
Slovakia	84%	4.6	3.9
Czech Republic	81%	9.0	7.3
Hungary	75%	8.3	6.2
Bulgaria	72%	6.0	4.3
Ukraine	63%	32.5	20.5
Romania	58%	16.3	9.5

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Table 3. Types of business models for postal operators

Source: Malyarchuk and Sibiryanska (2017).

Business model	The name of the business model	Countries		
		Quantity, units	Share,%	Main representatives
BM0	Real Estate Supplier	3	1.5	Romania, Mozambique, Mali
BM1	Cash Dealer	159	79.1	Turkey, Poland, Belarus, Kenya, Romania, Portugal
BM2	Domestic and international payments	150	74.6	Morocco, Brazil, Indonesia, Luxembourg, UAE, Saudi Arabia
BM3	Partnership with Financial Services Provider	56	27.9	Croatia, Czech Republic, Norway, Tanzania, Vietnam, Zimbabwe, Estonia, United Kingdom, Greece, Hungary, Ireland, Moldova, Malaysia, Poland
BM4	Postal Savings Bank	39	19.4	Tunisia, Turkey, Yemen, Egypt, India, Lithuania, Bangladesh, Italy, Pakistan, South Korea
BM5	Full-fledged postal bank	16	8.0	Belgium, France, China, Gabon, New Zealand, China, Ireland, Italy, Jordan

vide a wide range of financial services (from only basic money transfers to full-fledged banking operations). In 2012, the Universal Postal Union identified five main business models (BM1 – BM5) for postal operators' provision of financial services and the BM0 business model, according to which financial operators do not provide any financial services (Table 3).

The option of integrating the postal operator with a financial institution, i.e., the organization of a postal bank, is considered promising for the development of financial inclusion. European experience shows that the post office can keep a large number of branches only through the provision of financial services. Striking examples of such successful cooperation in the EU are Post Bank (Germany): sales channels are 850 bank branches and 8250 post offices, account management via the Internet for 2.4 million customers; Alliance and Leicester (UK): 50 bank branches and 15,000 post offices, 1 million customers (Lititanskas, 2014).

As of October 1, 2021, there were more than 11,000 branches (post offices, mobile and stationary branches) of JSC Ukrposhta in Ukraine against 6,763 branches of banks (including 1,679 branches of JSC Oschadbank) (NBU, 2022). The coverage of settlements by branches of JSC Ukrposhta is 100%; by branches of banks, it is 6%. On average, there are 16 bank branches per 100,000 population in Ukraine, and 30 in the United States. The rural population is less trusting and interested in financial services due to their lower penetration. Given the above and considering the successful international experience of financial intermediation of postal operators, including that in the EU, expanding the range of financial services JSC Ukrposhta, or establishing a postal bank on its basis, is considered necessary.

4.2. The impact of the financial literacy of the population on the financial inclusion

It is proved that in more economically developed countries, where the level of financial literacy of the population is higher, banking services are used more often. Hence, the level of financial inclusion is higher. In particular, according to the latest research on this issue in 2018, citizens of Ukraine and Poland (11.6%) have the same level of financial literacy, which is lower than that of Canadian (14.6%) and Western European citizens (Austria – 14.2%, United Kingdom – 13.1%, Czech Republic – 12.6%, Hungary – 12.4%).

4.3. The impact of the income level on the financial inclusion

In addition to the level of financial literacy, financial inclusion is directly affected by the level of income of the population. Even with financial institutions, the population will not be able to build savings due to low incomes.

According to the World Bank (2020), world wealth in 2020 amounted to USD 418.3 trillion, the number of millionaires was 56.1 million people. If all the economies of the EU are united, they will be the second-largest in the world after the Chinese economy. The top 10 richest and poorest countries

Table 4. The top 10 richest and poorest countries in Europe in 2020

Source: European Central Bank (2021).

No.	The richest countries			The poorest countries		
	Country	GDP, billion USD	GDP per capita, USD	Country	GDP, billion USD	GDP per capita, USD
1	Luxembourg	71.105	121,292	Ukraine	153.781	13,341
2	Ireland	388.699	88,240	Moldova	11.955	13,574
3	Switzerland	703.082	70,989	Albania	15.278	14,495
4	Norway	403.336	66,831	Bosnia and Herzegovina	20.048	15,791
5	San Marino	1.638	60,750	Northern Macedonia	12.695	17,814
6	Iceland	24.188	60,061	Serbia	51.409	18,989
7	Denmark	348.078	59,830	Belarus	63.080	19,943
8	Netherlands	909.070	59,686	Montenegro	5.495	22,988
9	Austria	446.315	59,110	Bulgaria	67.927	24,561
10	Germany	3845.630	56,052	Russia	1699.877	29,181

in Europe are based on a comparison of GDP per capita, taking into account purchasing power parity (PPP), which allows drawing conclusions about potentially affordable social wealth, taking into account inflation and prices in the country. The richest country in Europe is Luxembourg, and the poorest one is Ukraine (Table 4).

Under such conditions, the study of poverty deserves special attention. Over the last 20 years, Ukraine's highest poverty rate was in 2000, reaching 71.2%. By 2008, it gradually declined and reached a minimum of 19.9%. The dramatic deterioration occurred after the occupation of part of the territory, from 28.6% to 58.3% in 2014. In 2020, in the context of the Covid-19 crisis, the poverty rate increased to 43.6%. The growth of poverty affected the increase of domestic credit to the private sector in % to GDP in 2008–2014. Moreover, the occupation of part of the eastern territories of Ukraine led to a sharp decline in the solvency of the population and an increase in poverty in 2015–2016 (Figure 4).

According to estimates made by the World Bank (2020), the Covid-19 pandemic, coupled with conflicts and climate change that have been slowing progress in reducing poverty, will continue to increase. According to forecasts, from 88 to 115 million people will find themselves in extreme poverty (≤ USD 1.9 per day). However, all segments of the population should be able to use financial services, the traditional suppliers of which are banking institutions, microfinance organizations, credit unions, cooperatives. However, a large proportion of the poor lives in rural or remote areas where there are no traditional banks. Mobile operators, FinTech companies, and postal operators are increasingly using technologies to develop new methods of providing financial services in regions where traditional banks cannot be represented.

Source: Compiled by the authors based on the World Bank (2021) and Borodchuk and Cherenko (2020).

Figure 4. Poverty level and domestic credit to the private sector in Ukraine in 2000–2020, %

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4.4. The impact of the development of the cashless economy on the financial inclusion

FinTech companies, like banks, operate in cash payments, transfers and lending, but use a combination of technology, customer-centric service, and flexible business structures. Building a FinTech ecosystem requires some political and institutional conditions and a favorable legal and regulatory environment. FinTech plays a vital role in creating a competitive environment between financial service providers since it allows developing alternative ways of financing business. Thus, new electronic platforms appeared, which, in turn, led to the emergence of crowdfunding, the development of P2P lending, financing of trade and e-commerce (Blancher et al., 2019), and digital banks (neobanks).

However, if the qualitative and quantitative parameters of their development are maintained in the future (which is very expected), FinTech can become another channel for the emergence of systemic risks. Table 5 presents potential threats to financial stability from FinTech and a list of indicators for systematic monitoring of its condition. All those threats are currently unclear and have no practical evidence. However, this is the main problem of identifying threats to financial stability in the field of innovative technologies – their negative effects become apparent only at the time of their critical accumulation.

The integration of banks and FinTech has led to the emergence of digital banks, the leading modern trend in the development of financial inclusion. Modern digital banks can be classified according to the following features: legal format, business

Table 5. Potential threats and indicators for monitoring the importance of FinTech development in the context of ensuring financial stability of the financial sector

Source: Developed by the authors based on Financial Stability Board (2017) and Wyman (2017).

The content of threats to financial stability	Indicator
Increasing compliance costs of traditional financial institutions leads to active cooperation with FinTech companies on an outsourcing basis, which can apply to individual business areas and operational processes. Such process diversification leads to the delimitation of objects of regulatory influence within one financial service and thus eliminates the limits of business responsibility	• Number of functions of financial institutions outsourced to FinTech companies • Number of FinTech companies providing financial services (payment services, money transfer services, lending) • The ratio of cash turnover of FinTech companies and non-bank financial institutions
FinTech firms (depending on their specialization) operate either outside the regulatory perimeter of traditional financial institutions or are subject to significantly lower supervisory and regulatory standards. Given the significant increase in the volume of this business, the impact of regulatory arbitrage on the effectiveness of the system of supervision over the activities of institutions providing monetary intermediation services may significantly increase, i.e., the level of control of the financial sector as a whole will deteriorate	• Fact of introduction of risk-oriented supervision over the activities of non-banking financial institutions • The ratio of the number of FinTech companies' activities that require a financial license and those that are entitled to be done without it • Depth of cross-border activities of FinTech companies
The deepening of network connections between different types of institutions operating in the field of financial services increases the sensitivity of the financial system to: (1) cyber-attacks; (2) the risk of the unreliability of a third party (connection of a certain set of financial institutions, especially in the case of systemically important ones, with one FinTech company), may lead to operational failures; (3) reputational risks	• Quality of cyber security systems in financial institutions (number of cases of unauthorized entry into the internal system of financial institutions; the number of losses from unauthorized entry into the internal system of financial institutions) • The level of market concentration of FinTech firms in terms of their specialization • Level of protection of consumers of financial services provided by FinTech companies (FinTech lending, FinTech payments)
Supporting the critical mass of economic agents' demand for payments and transfers by FinTech. Operational failures in the work of payment services (for objective reasons or deliberately organized) are expected to throw the economic system out of balance, worsen the business climate, reduce confidence in the institution of financial intermediation in general	• The level of concentration of FinTech in the market of payments and transfers
Maximum introduction of artificial intelligence in order to minimize the cost of services can stimulate the emergence of new and unpredictable sources of infection of financial markets	• The number of financial institutions that use artificial intelligence as an alternative to human resources in the process of customer service • Depth of implementation of artificial intelligence in the activities of financial institutions

Source: Developed by the authors based on Zimmermann (2000).

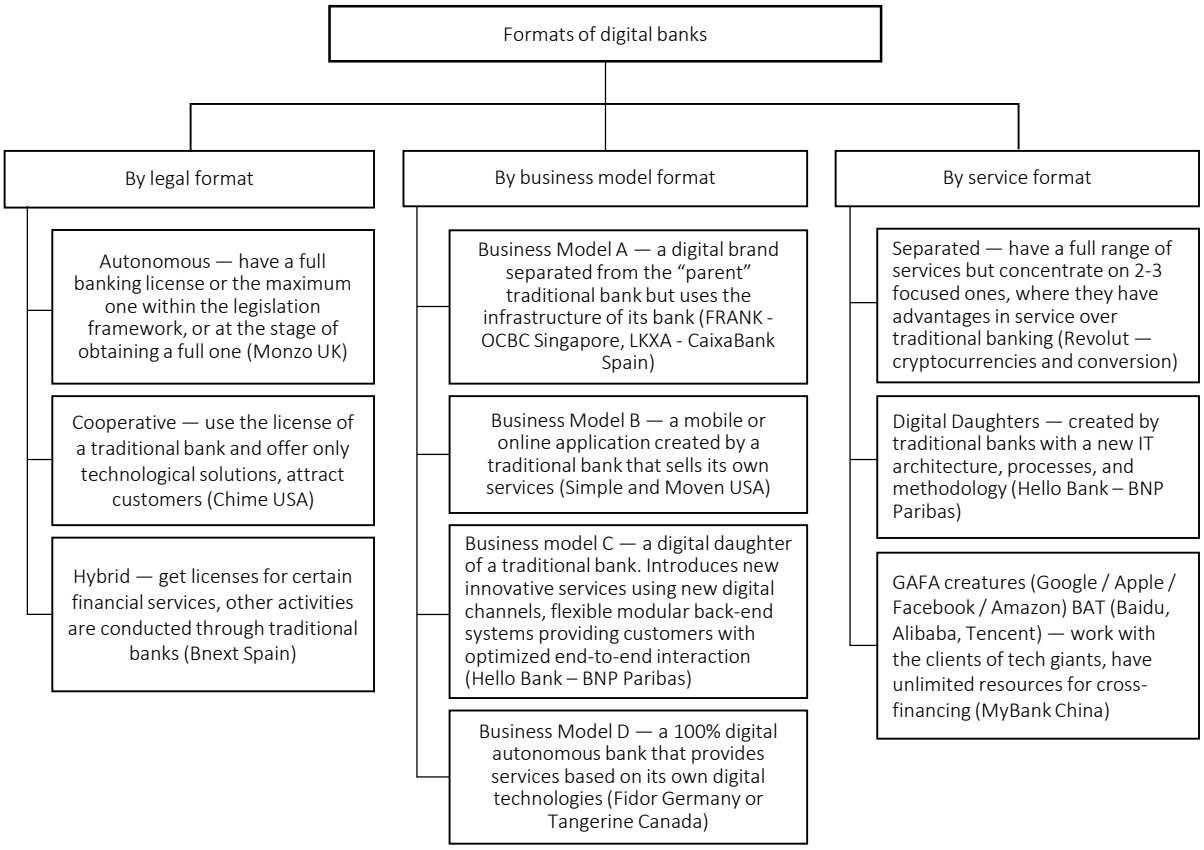

Figure 5. Classification of digital banks

model format, and service format (Figure 5). The top 5 digital banks in the world belong to Chime mobile-only, Varo, Dave (USA), Monzo, Revolut (UK). In Ukraine, digital banks (neobanks) are operating and based on licenses of traditional banks (Monobank, NEOBANK, O.Bank, Sportbank, Izibank, Todobank, and Vlasnyy Rakhunok). Unlike the United Kingdom, Ukrainian law does not provide for "limited" banking licenses, i.e., only banks can open and maintain customer accounts.

To assess the level of digitalization in the financial sector, the Index of readiness for digitalization of banks is used. Figure 6 shows its value for Ukraine and the EU. A significant gap of Ukrainian banks from EU banks is observed in two main points: human capital gap is almost 2.5 times, and information security gap is 17%. Ukrainian companies and banks do not pay enough attention to training employees in digital technologies, which both slows down the effective development of financial inclusion and generates potential threats to financial stability of the financial sector.

Developed countries of the world prefer non-cash payments. For example, in the United States, their share is 76% of GDP; in Switzerland, it is 83%. Ukraine has so far stopped at 55%. Herewith, 37% of the population of Ukraine do not have basic bank accounts and are outside the banking sector.

Under pandemic conditions, cash is used less frequently when non-cash payments have become more secure and convenient. Compared to the EU, Ukraine is the least developed in terms of non-cash payments – for every 1,000 adults, there are only 9 POS-terminals; in the EU, there are more than 22. The penetration rate of non-cash payments in Ukraine is about 20%; on average, it is over 60% in EU countries. In 2016–2020, the number of non-cash transactions using payment cards in Ukraine increased 2.9 times to 5,211.2 million charges, and the sum of payments grew 3.9 times to UAH 2,208.7 billion. The total number of non-cash payments in the EU over the same period increased by 33% to 127,093 million due to increased card payments. The dynamics of the number of

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Source: Compiled by the authors based on BAI (2018).

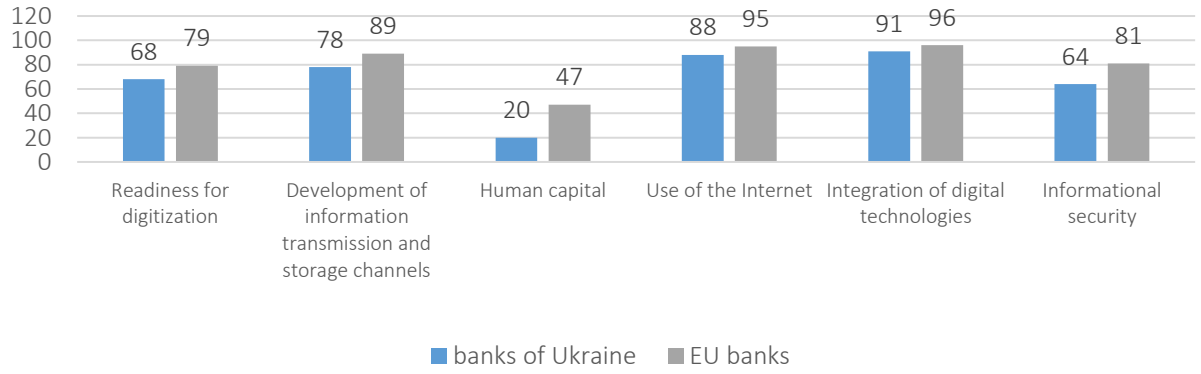

Figure 6. Index of readiness for digitalization of banks in Ukraine and the EU in 2020, %

non-cash payments in the EU in 2016–2020 is shown in Figure 7.

However, not every bank has a convenient application or sophisticated functionality on the website to make payments. In addition, many users do not trust banks, and that is why 55% of consumers use alternative payment systems when choosing payment aggregators. The most popular payment systems in the EU countries are their own payment systems (the Netherlands – iDEAL, Finland – OP Ryhmä and Nordea, Belgium – Bancontact). Google Pay and Apple Pay are rarely used. In Poland and Ukraine, most payments (48% and 65% respectively) are made through Visa and Mastercard systems.

Due to the Covid-19 crisis, clients are less likely to turn to bank branches to resolve financial issues. Most of the necessary features have already appeared in the smartphone. Therefore, the influence of mobile technologies on the development of

Source: Compiled by the authors based on European Central Bank (2021).

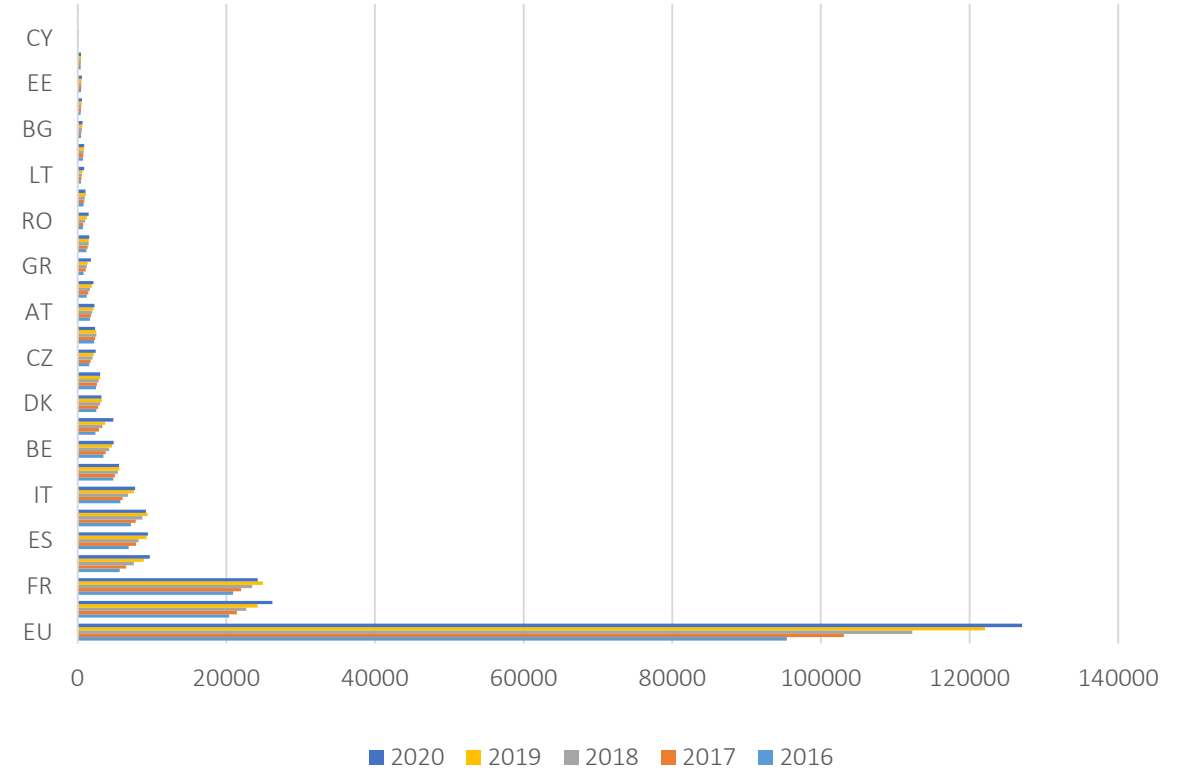

Figure 7. The dynamics of the number of non-cash payments in the EU in 2016–2020, mln pcs.

financial inclusion in the world is growing. Fifteen countries account for more than 60% of the financially excluded population: 607 million people have smartphones but not bank accounts. For example, in China, smartphone owners exceed the number of bank account holders by 204 million. There is a gender gap among bank account holders: in developing countries, it is 8% (67% of men and 59% of women); in Morocco, Peru, Pakistan, and Bangladesh it is 30%. This is due to a system of rules and regulations governing the interaction of women in Muslim countries with social institutions.

In Ukraine, 58% of the population use payment applications; this is one of the highest rates among the 11 surveyed European countries (in particular, in Austria – 67%, Poland – 57%, Serbia – 52%, Greece – 50, Hungary – 46%, Romania – 45%). Herewith, 70% of Europeans consider banks to be the most reliable source of information on managing their finances. In Ukraine, according to the Razumkov Center (2021) poll in March 2021, the level of distrust in banks was 70%.

The role of alternative means of payment (e-wallets, mobile applications, and digital currencies) in the international payment services market is constantly growing. At the same time, the trend is largely supported by developing countries' markets, actively influencing the international financial market. While credit cards remain the most common method of payment in the United States, in a number of countries, alternative payment services are not only in demand but also considered the safest and most desirable method of payment.

5. DISCUSSION

It has been convinced that the impact of financial inclusion on financial stability should be studied in terms of its content-forming factors. It is important to proceed from their equal importance and the impossibility of fully covering the weakness in one area with positive achievements in another one. This is justified by the fact that the source of threats to financial stability is the presence of gaps. Therefore only the balanced development of all its determinants (including such a complex phenomenon as financial inclusion) can prevent financial instability. These results are in line with Allen et al. (2014) and Ratnawati (2020), who revealed various mechanisms to bridge the existing gaps to increase financial inclusion and the financial sector's stability.

The results show that for the effectiveness of financial inclusion, in addition to the quantitative parameters of the development of financial institutions, the diversification of their varieties, and the development of non-bank financial institutions, are also important. Cotler (2017) rightly points out that "the best strategy would not be to target a single type of financial institution but to forge alliances between different entities." It is also of particular importance to expand the financing channels for the needs of small and medium-sized businesses. In the context of the development of credit cooperation, it helps to increase the self-organization of society to meet financial needs, especially those of low-income rural populations. These results are in line with Lemus and Rojas (2020), Lemus and Wong (2012), Potin (2012), who noted their unique place in the formation of an inclusive financial sector. On the other hand, most scholars underestimate the impact of credit unions and non-bank financial institutions in general on financial inclusion and are limited to the specifics of banking development (Ratnawati, 2020; Singh & Roy, 2015).

International empirical evidence shows that postal operators (due to a vast network of branches) are able to significantly increase the level of financial inclusion in economically underdeveloped regions. Postal operators cannot fully meet the financial needs of the population, but their presence in low-coverage areas greatly facilitates access to financial services. In rural areas, where there are no bank branches, the solution may be to organize a postal bank by integrating the postal operator with a financial institution. These results are in line with Lititanskas (2014), Rillo and Miyamoto (2016), Berthaud (2014), and Baradaran (2014). They gave this institution a transformative ability not only to increase the financial well-being of poor people but also to increase their resilience to economic shocks. However, the result is contrary to domestic scholars who study this issue and do not consider postal banking as a mechanism for deepening financial inclusion while maintaining the financial stability of the financial sector.

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Other than that, due to the Covid-19 pandemic, a public reassessment of the digitalization of finance has taken place, and in the context of financial inclusion, it has become one of the most critical factors in its development. The empirical evidence shows the technologization of the financial sector. However, it usually leads to increased financial inclusion and provokes a number of traditional and innovative risks for the institution of financial intermediation, and therefore can threaten financial instability. These results align with Banna et al. (2021) and Katsiampa et al. (2022), who studied FinTech sensitivity to liquidity risk. Huibers (2021) and Ebrahim et al. (2021) consider the impact of regulatory risk on their development, and special attention is paid to the technological risk and information security breaches (Barefoot, 2020). The dissemination of innovations in the field of finance causes the necessity to monitor the risks of FinTech thoroughly and in advance for possible transformation into threats to financial stability and to prevent blind faith in their exclusively positive impact. However, the result is contrary to Katinas (according to the information of the Thomson Reuters Regulatory Intelligence), who considers that "FinTech centers provide a mitigation of risk by their very nature." At the same time, it is emphasized that "cyber security is a key risk for FinTech firms" (Kovas, n.d.).

CONCLUSION

Thus, examining the peculiarities of the development of financial inclusion in its relationship with ensuring financial stability, it has been substantiated that financial inclusion is an important determinant of financial stability. Further, through the system of synergies, it affects the process of ensuring a sustainable financial sector. The relationship between financial inclusion and financial stability should be explored through the following channels of influence: financial institutions' development, financial literacy, income level, cashless economy, and public confidence. In this empirical study, the weakest points of financial inclusion in Ukraine have been identified. First, there is a critically low level of development of the non-banking financial segment, including credit cooperation and a high level of financial exclusion of adult population (37%).

Moreover, there is a significant gap between the integration of digital technologies, information security, and human capital, which significantly increases the potential operational risks of banks and their negative impact on financial stability. The study noted a critically high level of distrust in banks (70%) with at the same time leading positions in the share of payment applications users (58%). To narrow the found gaps and increase financial inclusion and financial stability, the integration of financial and production resources of the national postal operator JSC Ukrposhta and JSC Oschadbank is needed, facilitating the penetration of financial services in remote areas. Within the framework of promoting the development of non-bank financial intermediation, a special place should be given to improving the institution of credit cooperation in Ukraine by strengthening its self-regulatory principles and shifting from the multi-institutional structure to a mono-institutional one. The steady trend of digitalization of finance, as well as the diffusion of any other innovations, are able to generate threats to financial stability. Therefore, the proposed indicators will allow early detection of problematic gaps and prevent their accumulation.

It has been convinced that financial inclusion and financial stability should be part of the state sustainable development policy to improve the well-being of the population. Thus, further research will be devoted to the conceptualization of this process.

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Validation: Angela Kuznyetsova.
Visualization: Myroslava Khutorna, Yuliia Zhezherun.
Writing – original draft: Myroslava Khutorna, Yuliia Zhezherun.
Writing – review & editing: Iryna Boiarko.

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