

ACADEMY OF ECONOMIC STUDIES OF MOLDOVA

As a manuscript

CZU: CZU:336(478):336.7(100) (043)

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**RESHAPING OF THE FINANCIAL SYSTEM OF THE
REPUBLIC OF MOLDOVA IN THE CONTEXT OF THE
NEW INTERNATIONAL FINANCIAL ARCHITECTURE**

522.01 FINANCE

Summary of the thesis of doctor habilitate in economics

Chişinău, 2021

The thesis was developed within the department "Investments and Banking", Academy of Economic Studies of Moldova

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The presentation will take place on December 29, 2021, at 10.00 in the Commission's meeting for public defense of the thesis of doctor habilitat within the Academy of Economic Studies of Moldova, at the address: Chisinau mun., Str. Mitropolit G. Bănulescu Bodoni no. 61, MD-2005, block. A, Senate Hall. The doctoral thesis and the abstract can be consulted at the Scientific Library of the Academy of Economic Studies of Moldova and on the ANACEC website (www.cnaa.md)

The summary has been sent on November 27, 2021

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CONCEPTUAL GUIDELINES OF RESEARCH

Motivation for choosing the research topic. The globalization of economic activity has caused substantial quantitatively. It qualitatively changes the world economy, changing the international financial, monetary system's operation and relations with national financial systems, thus determining the need to change the research framework.

The profound transformations made in the world economy have put the issue of the foundation of a new international financial architecture on the international community's agenda.

The elaboration of the new architecture of the international monetary system conditioned the obligation to examine the fundamental problems of the national financial systems, establishing the research of this phenomenon as a priority field of economic science. As a result, national financial systems, characterized by asymmetric development in the international monetary system, can interact so that less developed countries can obtain the best financial practices through the catching-up process and contribute to the efficient execution of essential functions of their financial systems.

Changes in the relations of the architecture of the international monetary system impose the imperative to reform the financial system in the Republic of Moldova and adapt it to the processes of transformations within the new architecture of the international monetary system. This fact determined us to choose the topic proposed for research.

The topicality and importance of the topic were addressed. Over the last few decades, extensive changes in financial systems have impacted the strengthening of new forms of monetary and financial relations. As a result, an analysis of the financial space, the relationship between global financial practices and policies aimed at ensuring the integrated development of national economies, as well as the adaptation of national financial institutions to the prevailing trends in monetary and financial relations in terms of spread in the society of the financial component.

The focus of global economic "gravity" continues to change as emerging markets and developing countries integrate into the global economy. At the same time, financial interconnection has become more pronounced, financial cycles have increased in amplitude and duration, capital flows have become more volatile, and non-banks have gained importance, changing the nature of systemic risk. In addition, non-economic shocks - refugee flows, triggered by geopolitical conflicts and global epidemics - affect some countries and regions and, if left unchecked, could significantly affect the global economy. Such a shock, caused by the pandemic crisis, is currently being felt strongly by the world economy. At the same time, an enormous impetus for the development of financial systems and the accumulation of a range of risks is caused by "high" technologies and by the rapid growth of FinTech and digital currencies. These changes have important implications for the efficient functioning of national financial systems.

Furthermore, with the overall objective of promoting sustainable global economic growth and prosperity, the international monetary system must support an environment in which emerging markets and developing countries can continue to converge safely on countries' income levels with advanced economies.

To return to a "new normal," after the measures taken in response to the onset of the subprime financial crisis, discussions on a new shaping of the architecture of the international monetary system gained momentum in 2019, both among decision-makers and in academic research circles. Top central banks have started strategic reviews, which should have been completed before the end of 2020. On the one hand, these developments have reflected advances in theory, empirical evidence, and experience in economic policy. Thus, the Financial Conditions Index, an essential composite benchmark in financial analysis and policymaking of central banks and international financial institutions, rose in January 2020 by up to 1.5 points, compared with 4.5 points in January 2020, January 2008. This relatively good development during the pandemic crisis is due, finally, to the international financial architecture rebuilding following the subprime financial crisis.

On the other hand, new concerns have emerged about FinTech and monetary digitization, which also require a new supervisory and regulatory framework. However, the Covid-19 pandemic created a new situation in the international monetary system, which delayed the path to a "new normal" in the international financial architecture. As a result, the Italian presidency of the G20 and the non-profit organization Reinventing Bretton Woods Committee reopened, on 10 May 2021, the debates on the international financial architecture through a virtual platform entitled: "Towards a more resilient international financial architecture."

Under these conditions, the economy of the Republic of Moldova, being a small and open one, is subject to all the processes carried out within the international monetary system. Therefore, the complex phenomena that are registered international financial architecture have repercussions on the functioning of the financial system of the Republic of Moldova. Moreover, good practices in the financial systems of emerging countries with advanced integration into the international monetary system are essential for the Republic of Moldova to identify possible areas for capitalization. To determine the causes, which trigger metamorphoses in the international monetary system, but also to be able to anticipate its future directions, which will generate a reconfiguration of the international financial architecture, and ultimately, will have an impact on the financial system of the Republic of Moldova it is necessary to research the nature of the international monetary system.

Therefore, the research of the financial system of the Republic of Moldova in terms of complexity will help define the components of the system, determine the interactions between functional elements and characteristics of the financial system, and identify considerations that can generate various systems states.

Description of the research situation and identification of research problems. The multidimensional nature of the studied field predetermines its varying degree of research on thematic directions. On the one hand, studies on the new international financial architecture and issues directly related to this field have recently been some of the main and current sectors of the modern world economy and finance theory. On the other hand, the characteristics and consequences of the current economic crisis caused by COVID-19 have revealed a whole series of tasks, the solution of which depend on the development trends of the national financial systems. Usually, the periods in which researchers mainly reflect on economic science are those related to catastrophic phenomena. Thus, in the last two decades, we have witnessed a discordant financial crisis whose repercussions are felt, in some situations, even now, but also of an unprecedented pandemic crisis.

Consulting the literature, several aspects not covered by the research conducted in the field of the topic chosen for research were highlighted. The conceptual framework of the international monetary system does not have a secure theoretical background, so robust and widely accepted, that it can explain the phenomena that generate the crises of the international monetary system. At the same time, in the specialized literature, the description of a mechanism through which the signals from the international monetary system are transmitted to the national financial systems is missing.

The scope of analysis and evaluation of the development of national financial systems is quite extensive, and, therefore, structural issues cannot simply be broken down into autonomous segments that correspond to existing institutional arrangements. Structural and development issues arise across the range of financial markets and intermediaries, including banking, insurance, securities markets, and non-banking intermediation. These often require consideration of the many factors that influence financial systems. Therefore, the challenge is translating those broad and somewhat abstract concepts into a concrete and practical evaluation methodology.

From the analysis of specialized works, we can see a consonance in terms of the multidimensional nature of financial development and, at the same time, the lack of consensus on the definition and methodology for evaluating financial development.

Following the review of the literature and the highlighting of some gaps between the research fields of the thesis, the following important scientific problem was identified, proposed for solution:

The problem: The relationships between the international financial architecture and national financial systems have not yet been thoroughly researched in the context of their increasing complexity.

To identify how systemic changes in the international financial architecture are transmitted to national financial systems and therefore trigger transferable effects in the economy, it is necessary to develop the configuration of the national financial architecture.

The reconfiguration of the financial architecture of the Republic of Moldova is a fundamental one in the context of the potential replicas, which could be transmitted from the architecture of the international monetary system.

The purpose of the research consists in elucidating the potential areas to be exploited for the financial system of the Republic of Moldova, by theoretical-methodological substantiation of the dominant development of the architecture of the international financial monetary system and determining their impact on the configuration of the national financial system. The purpose of the research is to be achieved by achieving the following **objectives**:

- O1:** arguing the systemic nature of the functioning of the international monetary system.
- O2:** the methodological platform elaboration for the research of the international monetary system and the national financial systems from the perspective of the theory of complex systems.
- O3:** elucidation of the mechanism for propagating the impulses of the international monetary system to the national financial systems.
- O4:** research of the new international financial architecture in the conditions of transformations in the world economy.
- O5:** elaboration of the configuration of the national financial architecture.
- O6:** analysis of the particularities of the financial architecture of the Republic of Moldova.
- O7:** the methodological framework building for evaluating the perspective of the development of the national financial system.
- O8:** analysis of the financial system of the Republic of Moldova from the perspective of the international financial architecture.
- O9:** benchmarking the efficiency of the banking systems of the signatory countries of the Association Agreements with the European Union.
- O10:** elucidating the global challenges of the international monetary system.
- O11:** determining the external position of the Republic of Moldova in the face of the challenges of the international monetary system.
- O12:** investigating the impact of changes in the international monetary system on the financial architecture of the Republic of Moldova.
- O13:** arguing the priorities for developing the financial system in the Republic of Moldova under the impact of global challenges.

To achieve these objectives, the following **research hypotheses** are formulated:

- H1:** the development of the architecture of the international monetary system is based on the principles of nonlinearity;
- H2:** the financial systems regulation policy is the main component of the results catalyst of the financial perspective index;
- H3:** on the foreign exchange market of the Republic of Moldova, there is a long-term relationship between the effective nominal exchange

rate and the interventions in/for the official foreign exchange reserve, made to mitigate the vulnerabilities of the financial system;

H4: in groups of countries, classified by income level, there is a direct relationship between the value of the financial infrastructure index and GDP per capita.

Synthesis of the research methodology and justification of the chosen research methods. The research of financial systems in this paper is inclined to objectivity. From the perspective of the *objectivist ontology*, the financial monetary system, but also the national financial system is seen as a concrete structure. The epistemology of the thesis is included in the philosophical paradigm of *positivist* nature, by the fact that most of the research tends to use accurate and very specific data for analysis. During the research, a series of research approaches were applied: *the deductive approach*, by drawing four hypotheses, which were therefore validated; *the inductive approach* in the process of formulating the purpose and objectives of the research that were achieved in the research process; *the abductive approach* throughout the work by using its pragmatic reasoning, through a process of "systematic combination".

During the research, a mix of complex methods was applied, namely: *quantitative analysis* (mathematics, statistics, bibliometrics) and *qualitative analysis* (analysis and synthesis). The research started with the revision of the thesis literature and, respectively, of the quantitative evaluation of the academic results through the bibliometric analysis performed on the VOSviewer platform. In the process of testing the nonlinearity of the international financial monetary system, the mathematical method was applied, namely the *Lyapunov test*. To appreciate the international financial monetary system and highlight the existing challenges, but also to conceptually substantiate a new international financial architecture in the conditions of changes in the world economy, analysis and synthesis were used. In the relationship between the official foreign exchange reserves of the Republic of Moldova and the evolution of the exchange rate, within the establishment of the external position of the Republic of Moldova, the statistical method, the *Johansen cointegration test*, was applied. To achieve a series of objectives proposed for research (O8 and O12), composite indices were constructed and the impact of factors on the value of the constructed indices was evaluated, by factorial methods: *FA* and *PCA*. And because one of the most obvious characteristic methods of complex systems theory is the comparison, the benchmarking of the efficiency of the banking systems in the Republic of Moldova, Ukraine and Georgia was performed by the *nonparametric DEA method*. The statistical data were processed through statistical software XLSTAT, DEAFrontier, but also the R programming platform (R Core Team, 2020).

The research strategies applied for the research of the identified problem, the achievement of the formulated purpose and objectives and the validation of the research hypotheses were the following: *the experimental research* within the validation of the research hypotheses; *case studies*, which favored us in the

process of elaborating the mechanism for disseminating the impulses of the international financial monetary system to the national financial systems; *phenomenology*, which has been applied to research on the functioning of the international financial monetary system under the incidence of global economic metamorphoses; *historical studies*, in the process of creating the algorithm for analyzing the evolution of the international financial monetary system under the incidence of shocks generated by its dysfunctions. From the perspective of the time horizon in the thesis, *cross-sectional* and *longitudinal* studies were performed. To a large extent, correlations were identified through cross-sectional studies, which were therefore investigated by longitudinal studies. The techniques and procedures applied in the paper started with the collection of data from various public (IMF, World Bank, Central Bank) and private (Fitchconnect) databases. And because the listing of the data is not equal to the production of results, the data analysis was continued. The data were interpreted after identifying the relationships with the research problems found during the research.

The novelty and scientific originality of the research include the following elements:

- determining the non-linearity in the functioning of the international monetary system by testing the existence of chaotic behavior in the system.
- building the methodological research platform of the international monetary system from the perspective of the theory of complex systems.
- elucidation of the mechanism of propagation of impulses from the international monetary system to the national financial systems.
- elaboration of the algorithm for analyzing the evolution of the international monetary system in the context of the theory of complex systems.
- redefining the structure of the new international financial architecture.
- building the configuration of the national financial architecture.
- establishing the interdependence between the level of financial infrastructure development and GDP per capita.
- elaboration of the methodology for evaluating the perspective of the development of the national financial systems
- elaboration to the framework for solving in transition challenges to a reconfiguration of the Moldovan financial system in the "new normal" context.

The theoretical significance of the research lies in the proof of the existence of bizarre phenomena of synergistic nature in the international monetary system, which, subsequently, is reflected in the functioning of the national financial systems. To systematize the information on the interactions within the system, a research framework of the international monetary system has been developed, which includes research from various sciences (economics, physics, biology, mathematics, philosophy). In this way, further interdisciplinary research

was laid. Furthermore, the non-linearity and complexity that characterize the international monetary system and the presence of many feedbacks cause the systemic nature of the world-financial phenomenon and generate numerous synergistic effects, changing the qualitative aspects of the functioning of national financial systems. Consequently, without adequate attention to such effects, the study of financial systems leads to an incomplete or incorrect understanding of the objective laws of developing national financial systems and their inefficient management. Based on these arguments, the configuration of the national financial architecture was developed, which brings together the links between the international financial architecture and the national financial architecture, presenting how their interactions can affect the structure, conduct, and governance of the domestic financial sector.

The paper's applicative value consists of the possibility of using different financial institutions of the methodologies and analysis tools proposed for evaluating and analyzing the aspects of the development of financial systems. Accordingly, the following recommendations form the applicative value of the paper:

- the application of factor analysis to identify the essential factors, which can influence the level of financial infrastructure development, and which allow the determination of potential areas to be capitalized;
- arguing the need to monitor the level of financial complexity, which conventionally can be determined through the KAOPEN index;
- justification for determining the channels through which external vulnerabilities are transmitted in the national financial system;
- implementation of nonparametric methods for evaluating the efficiency of the banking system or a banking entity;
- recommendation to adjust the procedure for determining the official exchange rate;
- the framework elaboration with solving the challenges of the transition to a new reconfiguration of the Moldovan financial system in the context of the "new normal."

The conclusions and proposals formulated can be used by the authorities of the Republic of Moldova in the development of economic policy measures. In addition, specific theoretical provisions of the paper can be used in the teaching of the disciplines "Macroeconomics," "International foreign exchange and financial relations," "International financial management," "Financial systems."

The main results. As a result of the research activities, the results obtained are expressed synthetically, as follows: research of the international financial monetary system from the perspective of complex systems theory and, therefore, creation of the methodological platform for research of the international financial monetary system and national financial systems; elucidating the ways of propagating the impulses of the international financial monetary system in the national financial systems; elaboration of the algorithm for analyzing the evolution of the international financial monetary system in the context of the

theory of complex systems; redefining the structure of the new international financial architecture; drawing up the configuration of the national financial architecture; elaboration of the methodology for evaluating the perspective of the development of financial systems; comparing the efficiency of the banking systems of the signatory countries of the Association Agreements with the European Union through the non-parametric DEA method; identifying challenges in the international financial monetary system; determining the impact of challenges in the international financial monetary system on the financial system of the Republic of Moldova.

Implementation of scientific results. The results obtained in the research activity were reflected in: 1 monograph published in the country; 2 collective monographs published in the country; 11 publications in scientific journals published abroad; 4 articles in magazines from the National Register of profile magazines; 4 publications in materials of international conferences; 7 articles in the works of scientific events included in the Register of materials published based on scientific events organized in the Republic of Moldova. The results of the project were disseminated in 10 international scientific forums and an international round table.

The scientific results of the paper were implemented in two research projects: institutional project 15.817.06.31A, "Reconfiguring the financial system of the Republic of Moldova in terms of efficiency criteria in the context of the Association Agreement between the European Union and the Republic of Moldova" (2015-2019); project within the State Program 10.840.08.02 A, "Sustainable economic growth in the Republic of Moldova by ensuring the stability of the national financial system in the context of regional integration", Academy of Sciences of Moldova (2010-2011).

CONTENT OF THE THESIS

Chapter 1, "*Conceptualizing the International Monetary System about National Financial Systems*," is dedicated to reviewing the literature on the International Monetary System about national financial systems, to create a basis and justification for further research, but also to present research on the current state of the fields studied in the introductory chapters of the thesis. Guidelines for the study of the effects of complex systems theory shall focus on the support pursued in various fields of the basic sciences with a view to their subsequent application to financial systems. The analysis of scientific opinions on the complexity of the world-financial phenomenon aims to relate ideas and theory to international monetary and financial practices. The conceptual benchmarks on the impact of the international financial architecture on national financial systems aim at taking on new perspectives in identifying their interdependencies. Next, the principal research methodologies and techniques used in the works dedicated to developing financial systems are established.

Following the representation of the fields researched in the paper, trends are specified, including relevant theories, strengths, and weak methodological points, demonstrating the need for our research. The literature review, combined with the research of the thesis areas, led to the formulation of research problems and, therefore, the formulation of research hypotheses.

The use of the complexity approach in economic research is becoming more widespread, as it allows, compared to other earlier approaches, to detect irregular effects existing in economic realities; at the same time, it offers the possibility to understand more deeply the nature of their appearance, to identify and, in a proper way, to influence the course of economic processes. The nature of financial systems, being essentially a complex one, can only be investigated in the theory of complex systems. Analyzing the vast literature in this field, we can see that the number of theories that fall under the umbrella of complexity is quite large; therefore, for a systematization, it would be appropriate to divide them into several main directions, namely

1. adaptive systems complex.
2. dissipative structures, as studied by Ilya Prigogine and her co-authors.
3. Haken's synergetic.
4. auto poetry based on Maturana's work in biology and its applications to social systems by Lohmann.
5. chaos theory.
6. increasing profitability or dependence (Brian Arthur and other economists).

Chaos theory is the most frequently approached for research on IMS and national financial systems.

IMS can be considered an example of "complexity in action": a complex real-world system, the evolution of which is dictated by the decisions of many agents. Under these conditions, IMS's prospects are not without risk for at least

two reasons. First, there is no secure theoretical background, both robust and widely accepted, in international monetary economics. Second, the process of financial digitization is too new to allow an accurate assessment of the issues involved in international macroeconomic regulation. Nevertheless, under these conditions, from our point of view, the theory of complex systems will allow a quantitative and qualitative analysis of the sustainable development of IMS.

The reform of the international financial architecture means further development, according to a scenario that foresees the introduction of new institutions, using multilateral forms of interaction of the essential participants in IMS and the modernization of the coordination direction of these international economic organizations. Therefore, a crucial aspect of the reform of international financial architecture is its transposition on the national financial architectures.

From our point of view, the research of the particularities of manifestation of the synergistic effects of IFA on the national financial systems (for example, the financial system of the Republic of Moldova) will facilitate

- deeper analysis of negative influence factors, considered as an obstacle to the transition innovation development.
- substantiation of economic cyclicity, caused by its synergistic nature.
- developing the theoretical basis for formulating economic policies aimed at financial development.

A sustainable and functional financial sector is a powerful catalyst for economic growth. The development of financial systems supports diversification and risk management, contributes to the targeting of savings in more usable forms, supports the efficient allocation of capital, and reduces information asymmetries. Therefore, assessing financial development is crucial in determining the progress of financial sector development and understanding the corresponding impact on economic growth and poverty reduction. In our opinion, in the current conditions of operation of national financial systems, it is essential to assess them. It would allow a deeper understanding of how a particular national financial system works, its mechanisms, and its stability and efficiency.

The current conditions of globalization and digitalization impose the need for a new theoretical paradigm of economics in general and another theoretical basis, which would lay the foundations for further economic and financial systems development.

There is currently a large gap between the work devoted to the development of quantitative models of the effects of complexity in financial systems and the work that addresses their qualitative aspects. Thus, in most qualitative studies related to the effects of the complexity of financial systems, insufficient empirical arguments of the conclusions are presented, and relatively weakly, the qualitative features and consequences of the effects of complexity on IMS are revealed in national financial systems, respectively.

Chapter 2, *“The Complex Approach to the International Monetary Financial System from the Perspective of the Impact on National Financial Systems”*, substantiates the research methodology of the International Monetary

Financial System and therefore elaborates the methodological framework for researching the International Monetary System from the perspective of complex systems theory. Furthermore, the mechanism for transmitting signals from the international monetary system to the national financial systems aims to determine mutual relations. Moreover, finally, the evolution of the international monetary system is analyzed under the incidence of the shocks generated by its crises.

The dominant factor, which determines the vector of the transformation processes in the corresponding IMS in the national financial systems, is the complexity. The complexity also applies to the way IMS works, as it consists of complex actions and interactions between individual financial institutions, national and international financial markets, national financial systems, and the policies that govern them. As a result of this feature of IMS and national financial systems, we can conclude the following:

IMS has the characteristics of a complex system. Complexity offers a new way of looking at changes in IMSs and, therefore, national financial systems, but can reveal hidden trends and patterns in financial data, unavailable in conventional models. Estimating the complexity performed on a data set (USDX index) by exploring the attractor structure, applying the Lyapunov test (the largest Lyapunov exponent), demonstrates the nonlinear nature of IMS.

The phenomenon of complexity causes difficulties in IMS analysis. The methodological platform for IMS research from the perspective of complex systems theory allows the systematization of information flows and the realization of complex research of IMS and national financial systems.

IMS analysis involves an overall concern of the system and the interaction between the whole and its components. Of course, narrow partial analysis is also allowed, which can only be an essential tool for exploration. In this sense, individual preferences are also essentially the products of the system itself. If the system changes, preferences change.

To facilitate the exchange of goods, services, and capital between countries and to support sustainable economic growth, the IMS should:

- be supported by adequate supervision of each country, as well as by the interconnections between them and the potential for spillovers, to help mitigate risks and ensure sustainable global macroeconomic and financial balances.

- provide a basis for countries to mitigate risks through rules effectively and conventions governing current and capital account transactions, as well as through loans, hedging, or other risk-sharing instruments to help manage risk from the balance sheet (for example, to reduce the risk of currency mismatches or the impact of economic downturns).

- ensure the provision of adequate global liquidity to support countries facing temporary liquidity constraints.

- ensure that robust resolution mechanisms, with clear ex-ante rules, are provided to help countries address imbalances, including dealing with over-indebted sovereigns.

Moreover, in this context, the indisputable link of the IMS with the national financial systems is highlighted.

The interconnection of national financial systems with IMS does not mean their identity because the tasks, the principles of operation and regulation, their influence on the economies of individual countries and the world economy are different.

In our view, there are two basic ways to bring typological order in transmitting IMS impulses on national financial systems. One approach is to specify how to broadcast signals through IMS elements. The alternative approach is based on the conditions and origin of the organizational structure of the international monetary order.

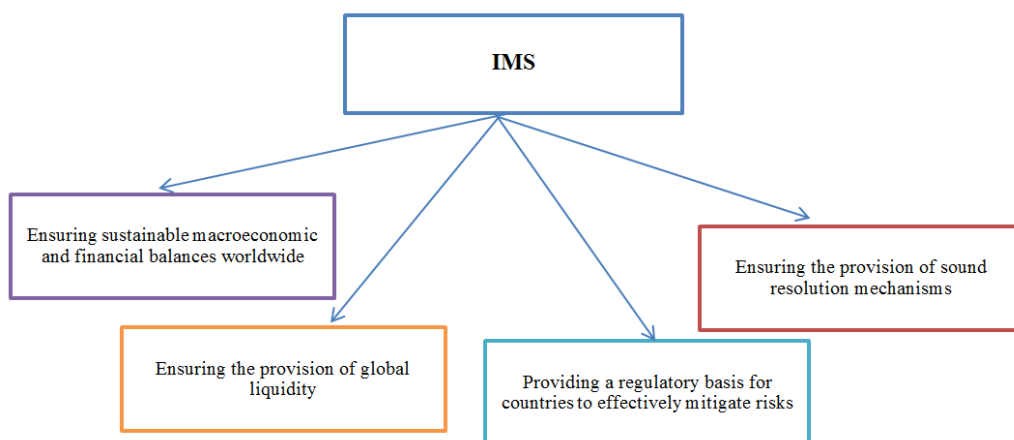


Fig.1. Interaction of the international monetary system with national financial systems

Source: prepared by the author.

The nature of IMS can be considered dualistic. On the one hand, national financial systems play an essential role in its development, and on the other hand, IMSs have a significant influence on their configurations. Consequently, in its activities, national financial systems need to identify the mechanism for transmitting signals from the IMS. In this sense, in our opinion, there are two approaches through which the propagation of IMS impulses on national financial systems can be determined. The first approach is achieved through the IMS elements; the second approach is based on the conditions and origin of the organizational structure of the international monetary order. As a component of the world economy, IMS reflects all the changes in its system and, at the same time, contributes directly to the development of the international economic activity. The functioning and stability of the IMS depend on the compliance level of its principles with the structure of the world economy, the distribution of forces in the system with the interests of large countries. If these conditions change, the IMS faces some periodic crises, ending with its collapse and a new IMS. At this

point, in our opinion, the steady-state of the system is interrupted by short periods of chaotic behavior ("forks"), after which the transition to another steady-state ("attractor") takes place, the choice of which is usually determined of bifurcation point fluctuations. This approach to IMS development is fundamental as it provides opportunities to predict future developments. The research of the IMS evolution, but also of the biggest financial crises triggered concerning the theory of complex systems, made possible the elaboration of an algorithm for the analysis of the IMS evolution under the incidence of the shocks generated by its dysfunctions. This algorithm highlighted, once again, the complex nature of IMS, this time, through the logical-historical research method. The national financial systems, as part of the IMS, are affected by its dysfunctions.

IMS failures are transmitted, through various channels, to national financial systems. As a result of these developments, national financial systems face several exogenous risks, which are added endogenous risks. This finding will be the basis for research on the financial system of the Republic of Moldova.

Chapter 3, "*Transposition of the new international financial architecture on national financial systems*," is intended for the mechanism of operation of the new international financial architecture and its transposition on national financial systems. Therefore, adjusting the financial architecture of the Republic of Moldova to the new international financial architecture was analyzed, and the configuration of the financial architecture of the Republic of Moldova was elaborated. The world economy has a hierarchical, multidimensional structure, but at the same time, it is a subsystem with society. The intrinsic property of an economic system is its evolution as a cumulative process of change in society. The profound changes of the system, which lead to the emergence of a new system, are considered transformations. It has a temporal characteristic and depends on the forces' activity, marked by large-scale changes in the economic, political, social, and technological spheres. Drawing an analogy with the term "architecture," we could consider that the framework of the global financial architecture consists of the principles of construction, operation, and development of the institutional structure of the global financial system. Such an interpretation of the essence of IFA could be misleading if we understand it in the strict sense of the word. Therefore, from our point of view, in terms of IFA, it is more appropriate to associate it with the analogy, rather, of the computer architecture (software, network), which covers the entire functionality and connections between the components of large software systems. From the point of view of the software architecture, a system is abstract, revealing implementation details, algorithms, and data structures but focusing on the interaction and functionality of the established components [7]. The globalization of economic activity and the increase of potential conflicts in IMS has highlighted the issue of analyzing the current state of development of financial architecture both internationally and at the level of national financial systems. Within the theory of complex systems, economic development is seen as a process of continuous innovation, which can be analyzed in the light of the following approaches: institutional, procedural,

structural-functional. Considering these three approaches, we will analyze the development of national financial systems under the auspices of IFA.

IFA has gone through several stages in its evolution. To better understand the mechanism of operation of the new IFA at the level of national financial systems, a brief analysis of the contingency of the large cycles of the world economy and the stages of development of financial globalization is needed. The starting point of this analysis was determined by the specifics of each of the evolution periods, previously reported:

- the formation of national regulations during the appearance of the premises for the development of globalization processes.

- developing the tendencies of deregulation and liberalization of national regulations in the context of the intensification of the processes of financial globalization.

- strengthening supranational regulation and modernizing the international standards of activity of financial institutions at the current stage of the development of financial globalization and the broad cycle of the world economy

As a criterion for staging the evolution of the global financial architecture, in the current analysis, it highlights the dominance of the different levels of regulation of financial relations. This aspect of the research allows the creation of an instrumental and methodological basis for forecasting the directions of further development of IFA from the perspective of national financial systems.

The national financial architecture can be represented of three components: financial infrastructure, financial integration, and the macroeconomic regime's relevant components. Consequently, the changes associated with IFA can have a considerable impact on critical areas of national economies. Specifically, changes in the IFA can directly affect the development and stability of the financial sector, the macroeconomic regime, and the process of integration into international capital markets. To be able to manage this process, national authorities must be prepared to make the necessary changes resulting from the IFA. In this context, the following need to be established:

1. The links between the IFA and the national financial architecture.
2. How their interactions may affect the structure, conduct and governance of the internal financial sector and its relationships with firms and investors.
3. How changes in the IFA and the national financial architecture can trigger effects that are transmitted to the economy.

IFA and the national financial architecture are, first and foremost, a network of institutions. Therefore, the argument that they matter for the financial sector's performance and the macroeconomics implies that institutions are not economically neutral, and transaction costs matter.

Proceeding from the fact that, in the correlation between IFA and the national financial architecture, many elements are engaged, to highlight their interaction, we made systematization. We elaborated the configuration of the national financial architecture, which is presented in fig. 2.

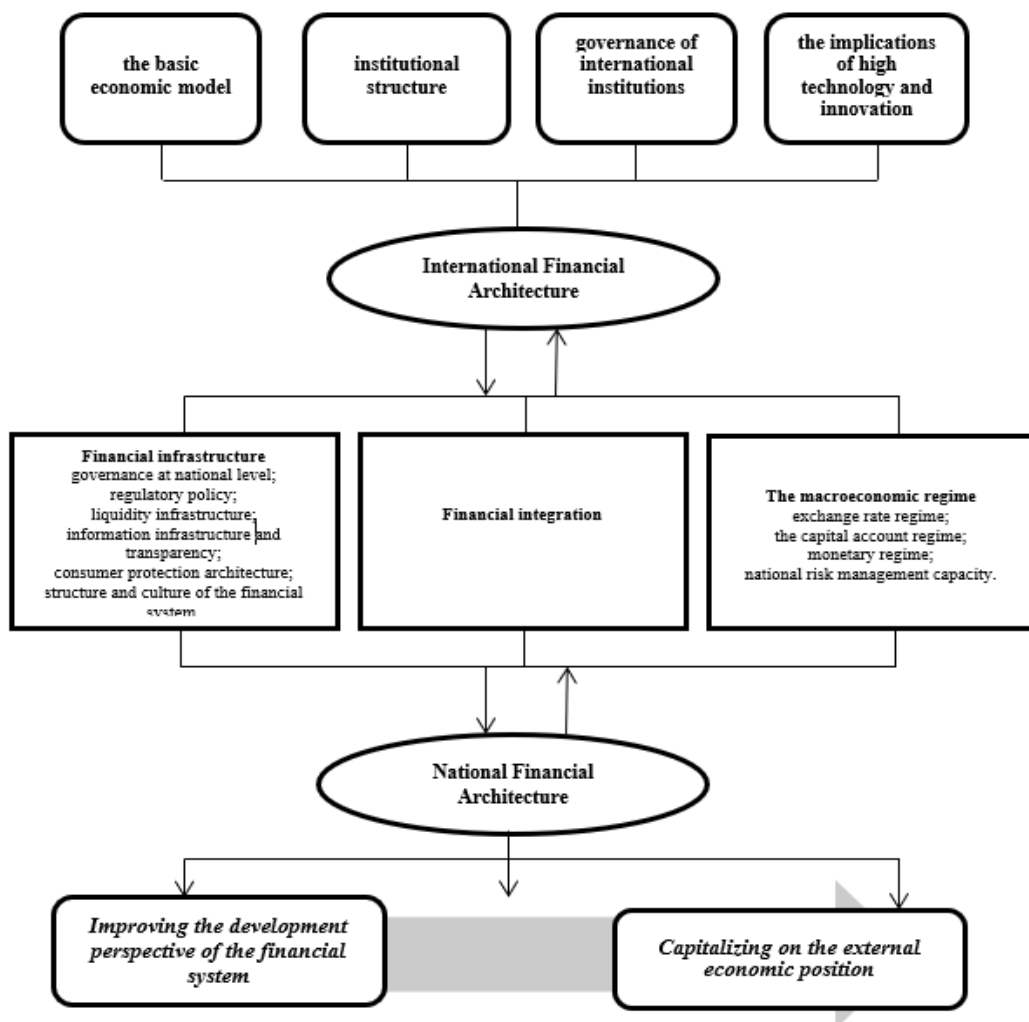


Fig. 2. The configuration of the national financial architecture

Source: prepared by the author.

The scheme shows that a deeper integration, represented by the interactions between IFA and the national financial architecture, depends on the advancement of the global integration process. Recent experience in emerging countries shows that deeper integration with global capital markets can be a valuable tool in encouraging growth and competitiveness. However, the process can be painful and can jeopardize financial and macroeconomic stability. In this context, the term "twin crises" has appeared in the literature to describe the interdependence between financial and currency crises [15]. As a result, for example, in the case of capital account liberalization, there is a growing need to adopt rules and regulations that allow a country to compete internationally. Financial systems need to adapt to absorb global shocks, national authorities need to consider that weak foundation make the economy more vulnerable to global shocks, and

domestically created shocks can jeopardize regular market access to international capital.

If we refer to emerging economy countries, then some factors influence the level of interaction between IFA and the national financial architecture:

- high costs of contract execution and issues related to protecting investors' rights in some countries. The judicial process can be slow and corrupt; lack of transparency and the information is less reliable. Recent research suggests that legal rules that institutions do not adapt sufficiently to changes and innovations in the financial sector and that difference in institutional structure are essential in understanding patterns and levels of investment [24].

- high volatility is another factor influencing financial development in emerging markets.

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- high volatility is another factor influencing financial development in emerging markets. When uncertainty is high, it is challenging to describe ex-ante future states of nature and to quantify risk by probability distribution [16].

In the lower part of fig.2, two quadrilaterals are represented, which present the primary objectives of AFN: the development of the financial system and the capitalization of the external economic position. The cumulative effects of IFA and AFN on these objectives will impact the conditions for sustainable growth. The two quadrilaterals are interconnected by lines to draw attention to the interdependence between the currency framework, financial conditions, and deeper integration.

They are improving the development perspective of the financial system. The primary objective of the national financial architecture is the development of the financial system. Assessing financial development is crucial in assessing the progress of development and elucidating the shortcomings of the financial system, especially in developing countries. At the same time, it should be mentioned that the evaluation of financial development, based on its dimensions, is a complex and challenging process. A country's financial sector comprises a variety of financial institutions, instruments and services, markets, and financial intermediaries, so the approach to financial development can only be a holistic one. This vision helps decision-makers consider all dimensions of the financial system (access, depth, efficiency, and stability) and identify directions for sustainable development.

They are capitalizing on the external economic position. The second imperative for the national financial architecture is to capitalize on the external economic position. As more and more countries reap the benefits of financing growth through capital inflows, avoiding temptation is becoming increasingly important for the beneficiaries and the health of the system. This principle means that every country that attracts capital from international markets must ensure that its macroeconomic policies align with the exchange rate policy. The analysis of the financial architecture development of the Republic of Moldova in IFA context

involves the impact evaluation of the four elements of the IFA. From fig. 2, we can see that the first element is the basic model for international financial, monetary activity. Moreover, as reported in the previous paragraphs, an essential aspect of the market-led model is economic flexibility because only an economy with a flexible structure can quickly adapt to the needs of the time and achieve faster development.

A component of economic flexibility can be considered the level of economic openness. In 2021, according to the Index of Economic Freedom, the Republic of Moldova ranked 85th (84th place - Paraguay; 86th place - Mongolia), with a score of 62.5, placing itself in the category of moderately free countries. In Europe, the Republic of Moldova ranks 40th among the 44 countries in the region, and its overall score is below regional and global averages. In the figure below, we can see the evolution of this score in the Republic of Moldova compared to other countries in the region, particularly the Eastern Partnership countries, signatories of the Association Agreements with the European Union (Republic of Moldova, Georgia, Republic of Moldova).

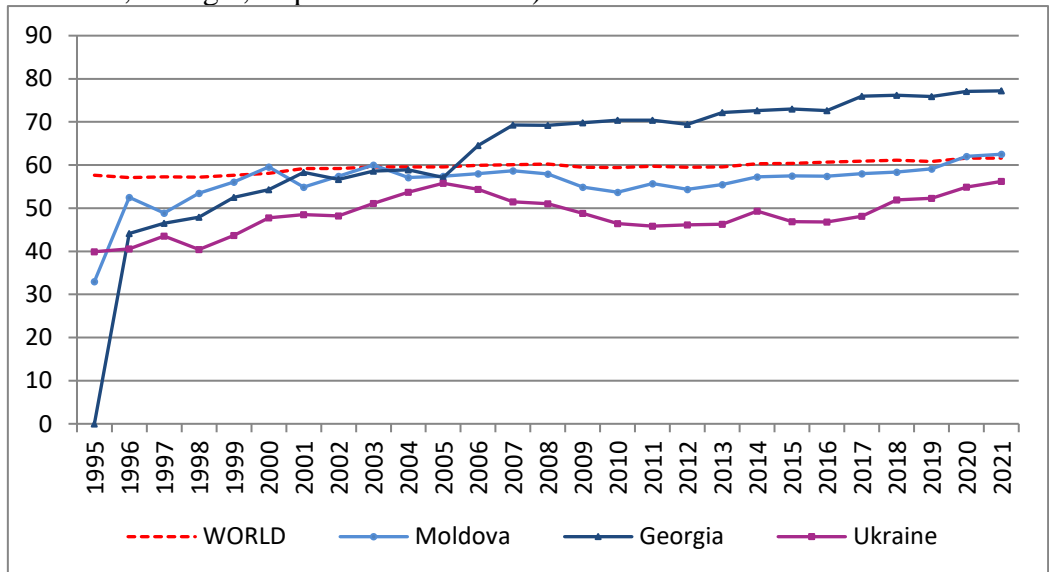


Fig. 3. Index of Economic Freedom evolution in the Eastern Partnership countries

Source: [6].

The figure shows that the most favorable value of the Index of Economic Freedom is in Georgia, higher than the world average, while the Republic of Moldova ranks at the world average.

The financial system of the Republic of Moldova is dominated by the banking sector, the other segments of the national financial system being, according to the size of the assets, far below the performance of the banking sector.

The structure of the financial system in the Republic of Moldova is presented in table 1.

Table 1. Structure of the financial system in the Republic of Moldova, 2020

Financial Corporations Sector (FCs) 2020	Asset Value (million lei)	Number of Institutions	Share of assets in the subsector FCs (%)	Share of assets in the sector FCs (%)
National Bank of Moldova	78255.00	1	42.72	39.59
<i>Deposit Takers (DTs)</i>				
Commercial banks	103773.59	11	56.66	52.50
with local capital	3836.00	1	2.10	1.94
with domestic and foreign capital	85582.95	6	46.76	43.30
with fully foreign capital	14354.64	4	7.84	7.26
Depository institutions-Savings and Loan Associations	986.15	64	0.54	0.50
Total (NBM and depository institutions)	183014.74	76	100	92.66
<i>Other Financial Corporations</i>				
Insurance companies	3174.00	11	21.89	1.61
composite	834.7	1	5.76	0.42
non-life	2339.20	10	16.13	1.18
(Other Financial Corporations	10790.86	337	74.43	5.46
Non-depository institutions - Savings and Loan Associations	129.18	164	0.89	0.07
Non-bank lending organizations	10597.68	166	73.09	5.37
Securities dealers	64.00	7	0.44	0.03
Financial auxiliaries	533.71	93	3.68	0.27
Brokers and agents	n.a.	102	n.a.	n.a.
Stock Exchange	14.01	0	0.10	0.01
Payment service providers	519.7	7	3.58	0.26
Currency exchange offices	n.a.	383	n.a.	n.a.
Total (other financial corporations)	14498.57	830	100	7.4
Total	197513.31	906		100

Source: based on the data developed by the author: [3].

The NBM performs traditional central bank functions, including ensuring the sustainability of the banking system by licensing and regulating banks. The roles and functions of the NBM are stipulated in the NBM law, which empowers the NBM to regulate and supervise banks [2]. The total assets of the NBM amount to 78.25 billion lei (38.9% of GDP) at the end of 2020.

Commercial banks account for a significant share in the financial system in the Republic of Moldova, except for the central bank, representing 52.5% of the total assets of financial corporations (51.6% of GDP). Out of 11 commercial banks (total assets of 103.7 billion lei), one bank has wholly domestic capital, six

have domestic and foreign capital, and four have fully foreign capital. Thus, the share of foreign capital in the total banking system is 86.63%. Depository institutions (savings and loan associations, category B) with total assets of 986.15 million lei represent almost 1% of the total assets of depository institutions.

In the sector of other financial corporations, insurance companies and non-bank lending organizations play a dominant role. In the Republic of Moldova operate 11 insurance companies, with total assets of 3174.00 million lei, of which ten non-life insurance companies represent 73.7% of the industry. One hundred sixty-six non-bank lending organizations operate in the Moldovan financial system, with total assets of 10597.68 million lei and a share of 73.09% in the sector of other financial intermediaries. At the same time, there are seven payment service providers with total assets of 519.7 million lei, constituting 3.58% in the sector of other financial intermediaries. Savings and loan associations (non-depository) have limited penetration of assets in the sector of other financial corporations, representing only 0.89% of its subsector. Three pension funds are registered but not operational.

The data in Table 1 show that the financial system of the Republic of Moldova is dominated by the banking sector, the other segments of the national financial system being, by the size of assets, well below the level of the banking sector.

In the last ten years, the reforms introduced in the components of the first element of our country's national financial architecture - financial infrastructure - have been radical and have affected all its elements.

These reforms were mainly carried out following the Association Agreement with the European Union [1].

Regarding the financial supervision arrangements, we can consider that in the Republic of Moldova, the financial supervision model is a unique hybrid called the Two Agency model. In the Republic of Moldova, this currently adopted system could be seen as a derivative of the partially integrated model with two supervisors: one agency is responsible for prudential supervision of the banking sector (NBM), and another agency is responsible for the insurance sector and securities and markets companies (CNFP). In its classic version, one agency is responsible for the prudential supervision of the banking and insurance sectors, and another agency is responsible for securities companies and markets.

The central role in the institutional structure of any national financial architecture is given to central banks. Furthermore, due to the financial crisis, two essential functions for the financial sector have been added to the central banks: macro-prudential policy and resolution.

The NBM performs traditional central bank functions, including protecting the sustainability of the banking system through licensing and regulating banks. The role and functions of the NBM are stipulated in the NBM law, which empowers the NBM to regulate and supervise banks [4]. The NBM regulates and supervises mainly banks, while CNFP is responsible for regulating non-banking financial institutions. The NBM regulates commercial banks and foreign

exchange offices, and payment service providers, including electronic money corporations. CNFP regulates other non-banking financial institutions, including insurance companies, microfinance institutions, Savings and Loan Associations (both depository and non-depository), brokers and agents, securities dealers, and stock exchanges. The law regulating non-bank lending organizations (microfinance institutions and leasing companies) in Moldova was adopted in October 2018 [5].

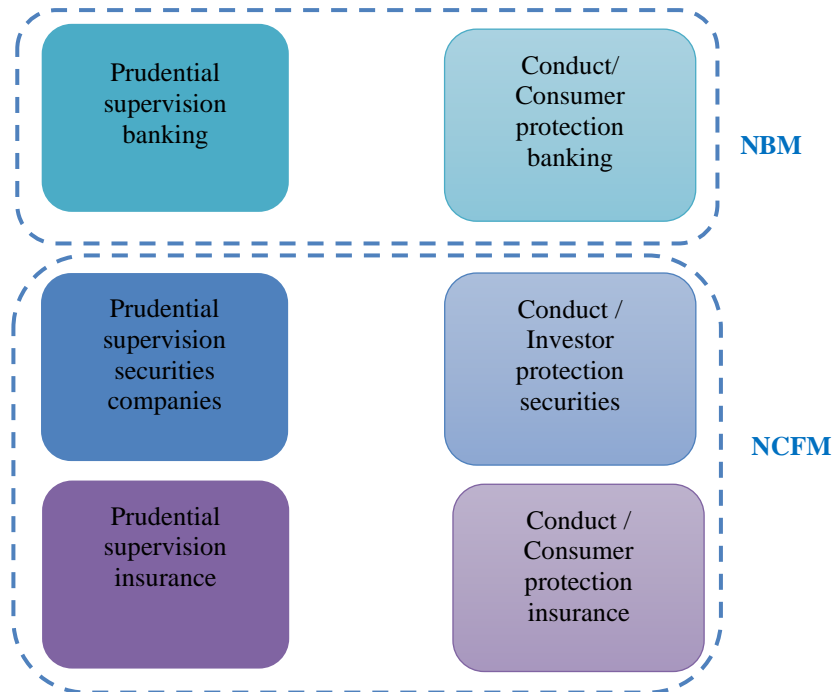


Fig. 4. Financial system supervisory model in the Republic of Moldova

Source: developed by the author on the basis: [10].

The characteristics of the financial architecture of the Republic of Moldova indicate that the financial system of the Republic of Moldova is an integral part of the international financial, monetary system and is developed under the complex approach, aiming at improving the supervision of the financial sector; regulation of international capital flows; improving macroeconomic policies.

Chapter 4, “*Development of the financial system of the Republic of Moldova within the new architecture of the international monetary system,*” presents the methodological framework of the concept of financial system development. Next, the perspective of developing the financial systems of 139 states of the world, the period 2014-2019, is evaluated. Finally, the financial system of the Republic of Moldova was evaluated from the point of view of consolidation and efficiency in the context of the new IMS architecture. Furthermore, as the efficiency of the banking system can have a significant influence on economic performance, the comparison of the efficiency of the

banking systems of the countries signing the Association Agreements with the European Union was made: the Republic of Moldova, Ukraine, and Georgia.

For the most part, financial development is measured by financial depth, which from our point of view shows only its quantitative aspect. In the literature, there are several papers in which indices of financial development have been developed [11], [12] [14] [20]. Therefore, we set out to build a composite index, which would integrate the quantitative, qualitative, and institutional aspects of the development of national financial systems, which could further indicate the prospects for the development of financial systems. Based on these considerations, the constructed composite index was called the financial perspective index (FPI).

According to Martin Čihák, the definition of financial development as the degree to which the financial system mitigates market imperfections is too narrow and does not provide much information about the actual functions provided by the financial system to the general economy [12]. Therefore, in the literature, definitions are discussed that give a broader interpretation of the development concept, which focuses on the financial system functions [17], [18].

From a broader perspective, the financial system perspective can be defined as a continuous improvement of the quality of five critical financial functions:

- The production and processing of information on possible investments and the allocation of capital based on these assessments
- The exercise of corporate governance after the allocation of capital
- Facilitating trading, diversification, and risk management
- Mobilizing and combining savings
- Facilitating the exchange of goods, services, and financial instruments
- Furthermore, financial institutions and markets worldwide differ significantly in how well they deliver these critical services.

In our case, we will rely on the idea that financial development is a multidimensional process and can be analyzed from three broad aspects: quantitative, qualitative, and institutional.

In order to quantify, from a quantitative point of view, the perspective of the financial system, as a rule, a subindex composed of multiple variables is created, which includes the size and depth of the different types of financial markets. Another sub-index, which can measure the quality of financial development, analyzes the efficiency and stability of the financial system. Furthermore, the last facet of the financial development perspective is institutional development. Combining these three facets of financial development will build the index of the financial perspective. A subindex must be created for each of these categories, using a wide range of variables. Next, it is essential to set the selection criteria (input, output, or process) for the variables we will use. Based on the fact that the FPI is a composite index, it can include both input and output measures (for example, the rate of provisions to nonperforming loans (inputs) and the number of ATMs per 100,000 adults (results)).

The next step in building the composite index is to select the variables. Ideally, the variables should be selected based on relevance, analytical soundness, timeliness, accessibility, etc. At the same time, the lack of relevant data may limit the possibility of building a solid composite index. The quantitative sub-index is made up of 14 indicators, including in the access and depth section. The qualitative sub-index is composed of 11 indicators from the efficiency and stability compartments. The variables of the financial infrastructure sub-index include nine indicators from the following compartments: governance at the national level; regulatory policy; liquidity infrastructure; information infrastructure and transparency; consumer protection architecture; structure and culture of the financial system.

For individual grouping indicators according to their degree of correlation, the most appropriate is statistical methods: analysis of principal components (PCA) or analysis of factors (FA). At the same time, it should be noted that the weights cannot be estimated in the case where there is no correlation between the indicators. Therefore, in our analysis, we used PCA.

PCA is a statistical procedure; it orthogonally transforms the initial n coordinates of a data set into a new set of n coordinates, called principal components. As a result of the transformation, the first principal component has the most significant possible dispersion; each subsequent component has a maximum possible dispersion, provided that they are orthogonal (i.e., uncorrelated) to the previous components.

The idea of PCA analysis is to consider the most considerable possible variation in the set of indicators, using the smallest possible number of factors. Therefore, the composite index no longer depends on the size of the data set but rather is based on the "statistical" dimensions of the data. Thus, to prevent a variable from excessively influencing the main components, it is necessary to standardize the variables - so that 0 averages and unit deviations are recorded at the beginning of the analysis.

Table 2. Correlation of FPI variables

Correlation matrix (Pearson):										
Variables	Acces	Detph	Efficiency	Stability	GNL	RP	LI	IIT	CPA	OCFS
Acces	1	0.516	-0.247	0.048	0.549	0.645	0.407	0.608	0.544	0.434
Detph	0.516	1	-0.083	0.142	0.252	0.710	0.526	0.424	0.499	0.633
Efficiency	-0.247	-0.083	1	0.233	-0.156	-0.168	-0.074	-0.181	-0.116	-0.065
Stability	0.048	0.142	0.233	1	0.043	0.086	0.117	-0.021	-0.044	0.182
GNL	0.549	0.252	-0.156	0.043	1	0.458	0.254	0.372	0.625	0.285
RP	0.645	0.710	-0.168	0.086	0.458	1	0.689	0.609	0.652	0.748
LI	0.407	0.526	-0.074	0.117	0.254	0.689	1	0.564	0.454	0.757
IIT	0.608	0.424	-0.181	-0.021	0.372	0.609	0.564	1	0.567	0.516
CPA	0.544	0.499	-0.116	-0.044	0.625	0.652	0.454	0.567	1	0.451
OCFS	0.434	0.633	-0.065	0.182	0.285	0.748	0.757	0.516	0.451	1

Values in bold are different from 0 with a significance level $\alpha=0.05$

Source: research data.

According to the PCA, weighting occurs only to correct information overlapping between two or more correlated indicators and is not a measure of the theoretical importance of the associated indicator. If no correlation is found between the indicators, the weights cannot be estimated with this method.

Therefore, the first step of the analysis is to check the correlation structure of the data.

From the matrix of the correlation of the FPI components, we can observe that the highest correlation is registered between the components LI (Liquidity Infrastructure) and OCFS (Structure and culture of the financial system), with a coefficient of 0.757.

Table 3. Eigenvalues of the correlation matrix, FPI

Eigenvalues:										
	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Eigenvalue	4.778	1.382	0.984	0.773	0.568	0.521	0.369	0.237	0.216	0.172
Variability (%)	47.776	13.819	9.838	7.734	5.680	5.213	3.688	2.367	2.164	1.720
Cumulative %	47.776	61.596	71.434	79.168	84.849	90.061	93.749	96.116	98.280	100.000

Source: *research data.*

The second step is to identify latent factors (less than the number of individual indicators) representing the data. Each factor depends on a set of loadings, and each coefficient measures the correlation between the individual indicator and the latent factor.

Table 3 presents the eigenvalues of the correlation matrix of the ten indicators (standardized values) that make up the FPI.

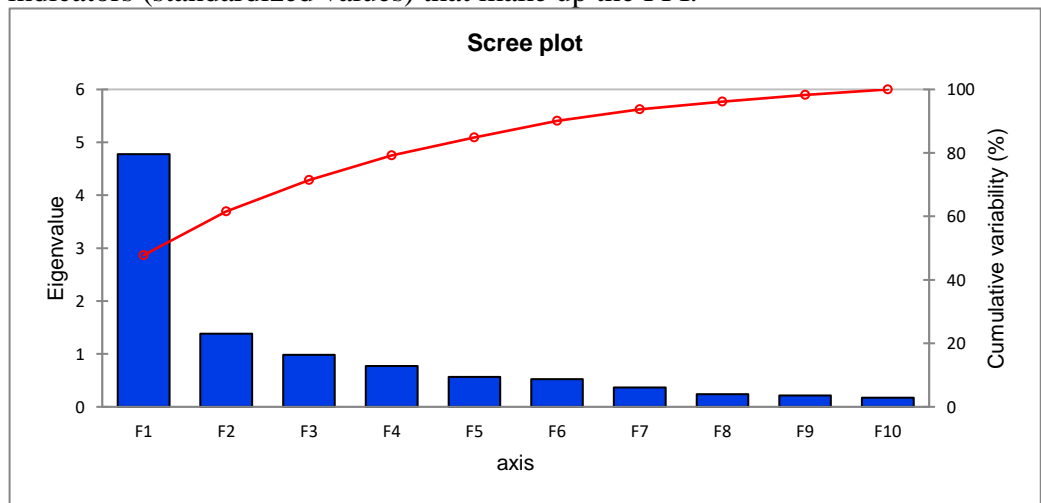


Fig. 5. Eigenvalues of IFI data set

Source: *research data.*

The analysis of the main components is usually used to extract the factors. For the analysis of the factors, only a subset of the main components (m) is kept, ie, the one that represents the highest value of the variation. Standard practice is the choice of factors that

- have associated eigenvalues greater than one;

- contributes, individually, to the explanation of the global variation by more than 10%; and
- contributes cumulatively to explaining the overall variation by more than 60%.

Moreover, the last step is to construct the weights in the factor load matrix after rotation, resulting from the fact that the square of the factor loads represents the proportion of the total unit variation of the indicator, which is explained by the factor. The FPI data set consists of five intermediate composites (Table 4).

Table 4. FPI loading factors, based on the main components

Factor loadings:						Squared cosines of the variables:				
	F1	F2	F3	F4	F5	F1	F2	F3	F4	F5
access	0.766	-0.230	0.206	-0.158	-0.006	0.587	0.053	0.042	0.025	0.000
depth	0.750	0.226	-0.156	-0.046	0.501	0.563	0.051	0.024	0.002	0.251
efficiency	-0.214	0.650	0.359	0.607	-0.002	0.046	0.422	0.129	0.369	0.000
stability	0.101	0.701	0.403	-0.544	-0.128	0.010	0.491	0.163	0.296	0.016
GNL	0.595	-0.333	0.604	-0.015	0.005	0.354	0.111	0.364	0.000	0.000
RP	0.908	0.073	-0.087	0.010	0.125	0.825	0.005	0.008	0.000	0.016
LI	0.766	0.271	-0.314	0.084	-0.247	0.586	0.074	0.098	0.007	0.061
IIT	0.761	-0.134	-0.063	0.112	-0.463	0.579	0.018	0.004	0.012	0.214
CPA	0.770	-0.212	0.282	0.248	0.100	0.594	0.045	0.080	0.062	0.010
OCFS	0.796	0.334	-0.268	0.000	-0.015	0.634	0.111	0.072	0.000	0.000

Source: *research data.*

The first includes access (access - 0.587), depth (depth-0.563), regulatory policy (RP-0.825), liquidity infrastructure (LI -0.589), information infrastructure, and transparency (IIT-0.579), consumer protection architecture (CPA-0.594), the structure and culture of the financial system (OCFS-0.634). The second intermediate composite consists of efficiency (efficiency - 0.422) and stability (stability - 0.491), the third only by national governance (LNG -0.364). The fourth and fifth are not relevant, which can be seen in fig. 6, where it is observed that these intermediate compounds have a value below unity.

In conclusion, we can constate that the PCA in the case of FPI was achieved by combining all series of the three sub-indices of 139 countries for 2019 to find the linear combination in the direction of the most considerable variation. Greater weight is given to a series that contributes more to the direction of the standard variation. Then, the subindices are combined into higher indices, using the same procedure. As can be seen, we cannot say that there is a single relevant component of the financial development perspective. In other words, although such components as regulatory policy, the structure, and culture of the financial system play a significant role in the development of many national financial systems, they are far from being the main components of the results catalyst. The given situation is quite evident in the figure below.

Sensitivity analysis is the eighth step and can be used to assess the robustness of the composite index. At this stage, the sources of uncertainty were

highlighted, and composite sub-indices were developed. In constructing the subindexes, the variables described above were analyzed, including 139 states of the world.

To illustrate the performance of groups of countries is the use of so-called spider or radar charts. Individual indicators are then used to show strengths and weaknesses. Thus fig. 6 indicates that in countries with a higher income level, indicators from the components of regulatory policy and those of the structure and culture of the financial system have a strong relevance on the composite index, unlike low-income countries. At the same time, the value of the access and depth components in these countries is higher than in low-income countries, while the difference in the values of the indicators in the efficiency and stability compartment is not so significant.

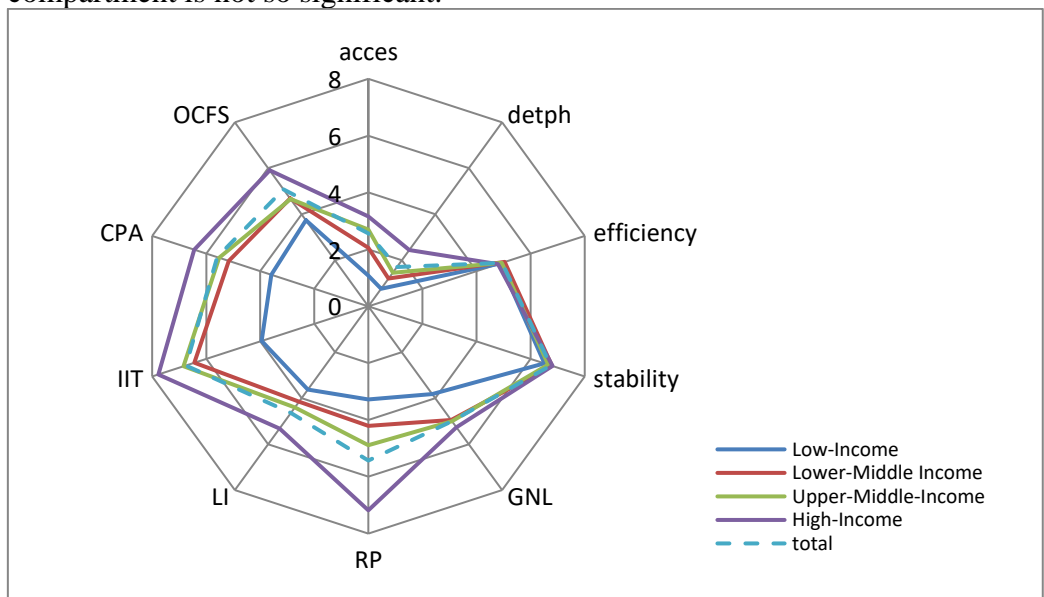


Fig. 6. Radar diagram of FPI components, 2019

Source: *developed by the author.*

The breakdown of the FPI can thus clarify the overall performance of a given country or group of countries. In addition, such an analysis verifies the correlation and causality (if possible) and identifies whether a small number of indicators dominates the results of the composite index but also explains the relative importance of its subcomponents.

The next stage of building the composite index is of great importance, as it measures the links with other composite indices or simple indicators.

Composite indices include process-related indicators expressed in measurable variables. These interdependencies are essential because they can be used to test the explanatory power of FPI. To demonstrate these links, a simple interdependence relationship is sufficient. In our case, we tried to show the interdependence between FPI and GDP per capita.

From the graph, it can be seen that most countries are close to the trend line. Only Qatar and Kuwait are out of trend, due to oil trading revenues.

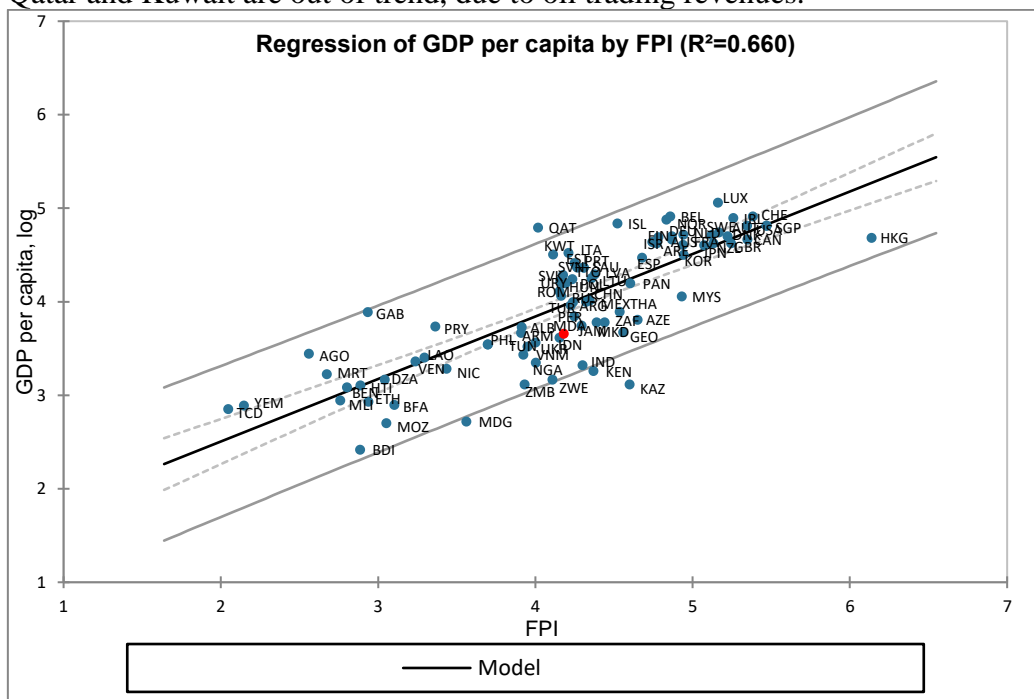


Fig. 7. Interdependence between FPI and GDP per capita (log), 2019

Source: developed by the author.

In conclusion, we can see that financial development is a multidimensional phenomenon and, in order to evaluate it, for further analysis, it is necessary to build a composite index. The importance of financial development stems from its interdependence with GDP growth through the possibility of access to finance, favoring the mobilization of savings and more efficient allocation of resources, mitigating information asymmetry and therefore efficient allocation of capital, reducing transaction costs, and facilitating the exchange of assets and products. The FPI Composite Index is based on three sub-indices (quantitative sub-index; qualitative sub-index; financial infrastructure sub-index), which in turn are divided into ten compartments (access; depth; efficiency; stability; national governance; regulatory policy; infrastructure liquidity, information infrastructure, and transparency, consumer protection architecture, structure and culture of the financial system), consisting of a large number of indicators (34).

However, the built-in indicator also has limits, which must be mentioned:

Firstly, the lack of databases is related to many countries' financial markets' depth, efficiency, and stability. At the same time, we can see that there is not a comprehensive coverage of data related to FinTech, services that have registered a significant boom in recent years, but also of the data of some financial institutions, whose activity has also increased recently (example: shadow banks);

Secondly, some of the values of the indicators, especially from the qualitative sub-index, do not reflect the actual level of financial development. In some countries, as noted above, some measurement indicators, especially efficiency, do not reflect the actual situation (example: high NIM values, which inflate the final value of the quality sub-index).

At the same time, as Svirydzenka pointed out, in the case of the financial development index, its advanced ranking may not necessarily be a positive phenomenon. However, it may indicate instead that a country's financial system is beyond its structural capabilities and negative implications for growth and stability; in the case of the financial development index, its advanced ranking may not necessarily be a positive phenomenon but may indicate instead that a country's financial system is beyond its structural capabilities; with negative implications for growth and stability [20]. This statement is also valid in the case of FPI.

Finally, we would like to mention that although there are challenges in building the FPI index, it undeniably serves as an essential step towards assessing future financial development and should clarify in more detail the interdependencies between financial development prospects and desired economic outcomes. Therefore, we will continue to strive to improve the financial perspective index as new information becomes available.

The fundamental mission of the financial system is to provide financial services, which must meet the requirements of the economy and society to increase investment and social stability. For the financial system in the Republic of Moldova to correspond to the needs of the economy and society, a concept is needed to ensure:

- the imperatives of the real sector of the national economy in resources, without which innovative growth and efficient development are not possible. These resources are necessary for: completing the circulating means; expanding the production base; infrastructure renovation;
- the demand of the population in financial instruments, which would lead to the increase of the living standard; so that the financial sector can contribute to achieving the social stability needed by the population and to ensure minimum social guarantees;
- the request of the state in maximizing the added value obtained on the territory of the country, and in the development of the financial infrastructure of the economic policy development, meant to contribute to the assurance of the sustainable economic growth and the economic competitiveness.

The development degree of the financial system, to a large extent, is influenced, on the one hand, by international macro-financial developments, and on the other hand by the real possibilities of the economy of the Republic of Moldova.

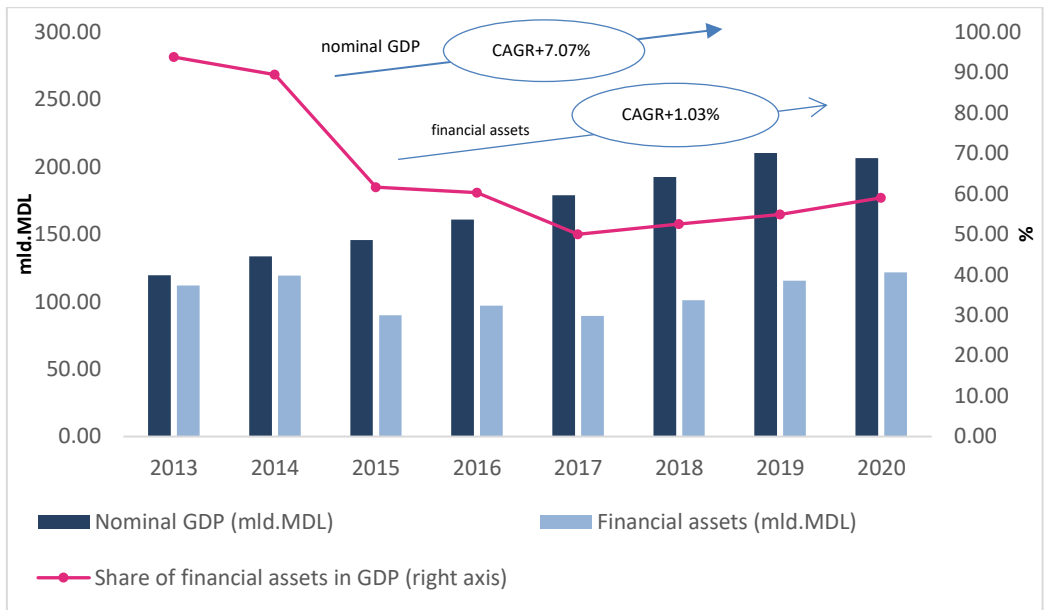


Fig. 8. Share of financial assets in GDP

Source: developed by the author on the basis: [3].

In the current economy of the Republic of Moldova, following the exogenous shock caused by the pandemic crisis, the country's economy has contracted, which has also affected the financial system [2].

The Moldovan financial system is a crucial component of the national infrastructure, which determines the efficiency of transforming savings into investments and also the competitiveness of the economy of the Republic of Moldova. On the other hand, the level of development of the national economy directly impacts the development of the financial system. We will apply the CAGR method to detect trends in these parameters, which allows a quick analysis of the previous period and allows anticipating. The compound annual growth rate (CAGR) is one of the most widely used financial analysis and modeling indicators. CAGR can be defined as a measure of the constant growth of a data series. The most significant advantage of the growth rate of the compound is that the composition effect is taken into account.

From 2014 to 2020, there is a continuous increase of the assets of non-bank lending organizations (CAGR 18.04%) and the assets of savings and loan associations (CAGR 12.66%), while the other sectors had variable evolutions. First of all, this situation is explained by the tightening of banking regulation, both in response to the materialization of systemic risk in the banking system and in the context of implementing the provisions of the EU-Moldova Association Agreement in financial-banking matters. Although the financial supervision arrangements will change as a result of these developments in mid-2023, the model remains the same Two Agency.

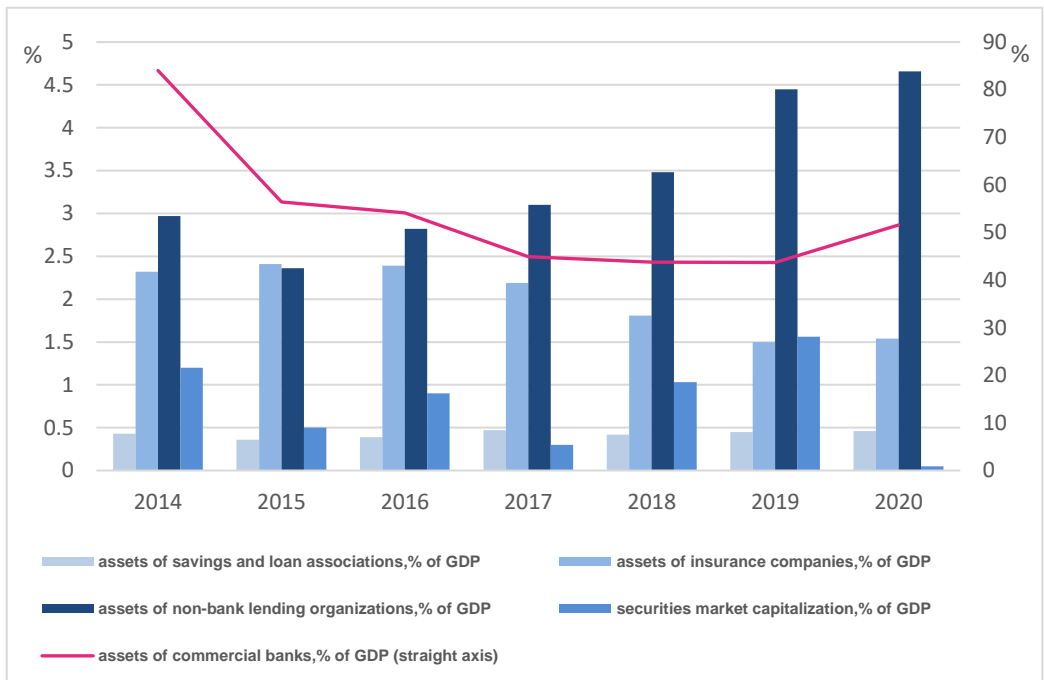


Fig. 9. Dynamics of the components of the financial system assets in GDP

Source: developed by the author on the basis: [3].

The level of quality of the financial sector of the Republic of Moldova is determined by the fundamental characteristics of the country's socio-economic situation: economic diversification, population welfare, development of state and legal institutions, degree of integration of domestic financial market on global capital markets and others. As a result, the model of the Moldovan financial system is similar, in many respects, to that of other emerging countries.

The quality of the financial system is essential for the countries of Central and Eastern Europe, where modern financial systems have been built from scratch. We can see the state of the Moldovan banking system through the GCI ranking, the 9th pillar: Financial system.

From fig. 10, it can be seen that there are several problems in the Moldovan financial system that should be urgently overcome. Regarding the financial system, according to the World Economic Forum Global Competitiveness Index, the Republic of Moldova has an alarming situation compared to the countries in the region. The main features of the financial system of the Republic of Moldova are the dominance of the banking system in the financial system, the assets of the banking system in 2020 accounted for about 87.49% of total assets of the financial system in the Republic of Moldova [4], poor capital market development and lack of a base of institutional investors (represented by insurance companies and pension funds). These particularities limit the ability of the economy to turn the economies of the population into long-term investments necessary for sustainable economic growth and the improvement of the well-being of citizens.

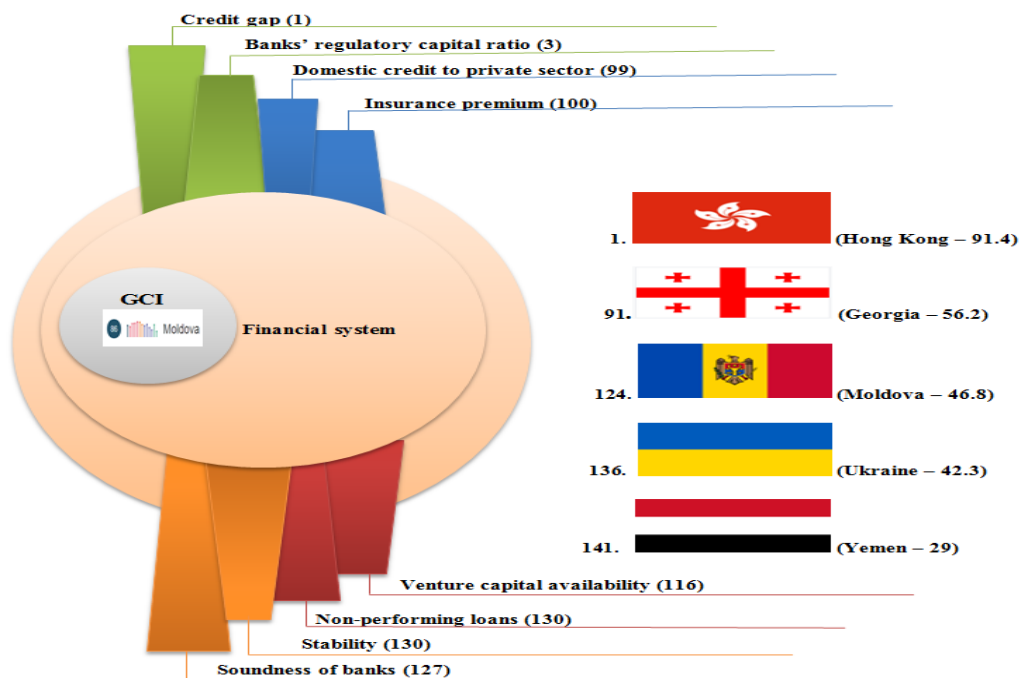


Fig. 10. Financial system pillar of the Global Competitiveness, 2019

Source: developed by the author on the basis: [22].

One of the two objectives of reconfiguring the national financial architecture is to improve the development perspective of the financial system. The development of the financial system, having a multifaceted nature, cannot be segmented by markets or financial intermediaries because structural problems are manifested in all its dimensions.

The final point of reconfiguring the financial system in the new international financial architecture context is to determine the potential areas to be capitalized on for further sustainable development. In this regard, we will further analyze the financial system of the Republic of Moldova from the perspective of access, depth, stability, efficiency, national governance, regulatory policy, liquidity infrastructure, information infrastructure, and transparency, consumer protection architecture, system structure, and financial culture.

For a more detailed analysis, it is advisable to compare the median values for the components of the sub-indices of the financial perspective of the Republic of Moldova, the group of countries to which our country belongs (UMC), and the 139 countries included in the FPI calculation. The median is chosen because the included data have extreme scores (for example, Hong Kong and Chad), so its value is more representative for the sample than the average.

From fig. 11, we can observe that the most part, values of the components of the financial development of the Republic of Moldova fall within those of the group of Upper middle-income countries; however, there are also deviations.

First of all, it is necessary to mention the values of the components of the financial system in the Republic of Moldova, which exceed the values of the UMC countries. These components are access, stability, national governance, and consumer protection architecture. The results are remarkable, considering that our country, in 2020, entered this group of countries, which are placed the countries with GDP per capita between 4096 -12695 USD (GDP per capita in the Republic of Moldova, in 2019, was \$ 4494.02).

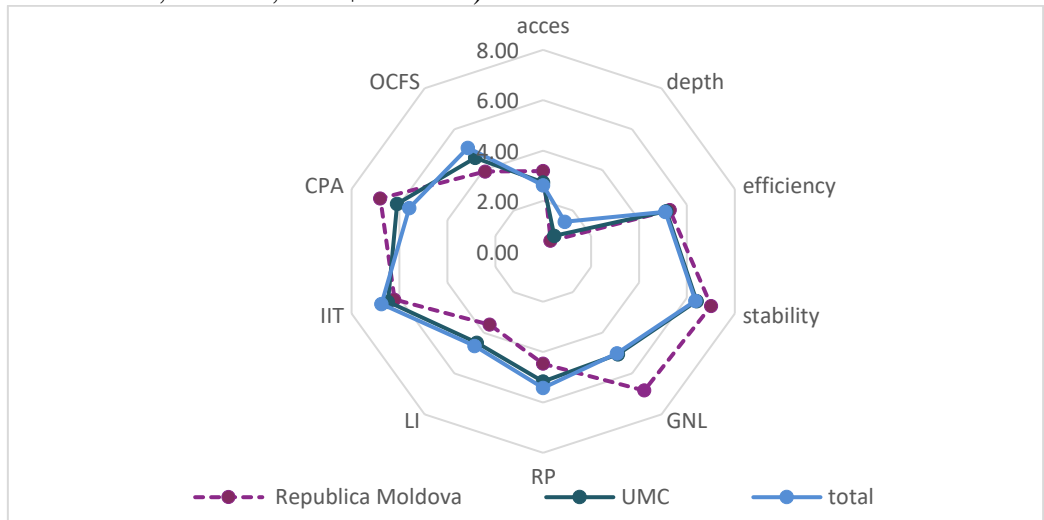


Fig. 11. The median of the sub-indices components of the financial perspective of the financial system in the Republic of Moldova, period 2014-2019

Source: prepared by the author.

Next, we will focus on the components of the financial system, which still have reservations: depth, regulatory policies, liquidity infrastructure, structure, and culture of the financial system.

The financial depth includes a series of indicators, which confront the financial sector to the economy. In other words, the depth of the financial sector is the size of financial institutions and markets in a country, compared to a measure of economic output. In order to determine the depth of the Moldovan financial system, the following indicators were added: the central bank's receivables from the national non-financial sector as a share in GDP, deposits in the financial system relative to GDP; the volume of non-life insurance premiums, relative to GDP; the volume of life insurance premiums, relative to GDP; private sector debt, relative to GDP; liquid liabilities (cash or M3), relative to GDP; the portfolio of gross assets receivables, relative to GDP; the portfolio of gross debt receivables, relative to GDP; the portfolio of own gross assets in GDP; gross debt portfolio in GDP. It should be noted that the difference in this compartment is quite significant between the group of HIC countries and the other groups. Thus, the median financial depth in high-income countries was 1.97, and in low-income countries, 0.32. According to the analysis in the construction of the FPI, financial

depth has a solid statistical link with long-term economic growth and is also closely linked to poverty reduction. In this respect, central monetary authorities need to increase the financial depth, mainly through the growth of private-sector debt relative to GDP.

Chapter 5, “*Connecting the financial system of the Republic of Moldova to the challenges of the international monetary system*,” begins with the analysis of the functioning of the international monetary system under the incidence of global economic transformations. This relevant analysis identifies the biggest challenges of the international monetary system and determines how the financial system of the Republic of Moldova will be able to overcome them.

In the conditions of globalization, the challenges faced by the economy of the Republic of Moldova are becoming more and more pronounced. Solving these complex challenges requires creating the foundations for implementing progressive structural changes in the economy, capable of contributing to sustainable economic development.

The world economy is undergoing a profound transformation caused by some factors, which have direct implications for increasing the economy's complexity. As a result of these developments, the industrial landscape of the world economy and the management of international monetary and financial affairs are fundamentally changing. Therefore, how IMS will evolve in the future is crucial for national financial systems development policies. In this context, we would like to mention the following:

IMS has proven ineffective in the face of the global financial crisis. For the most part, we can highlight two critical factors that predetermined the depth of the fall of the world economy in the last crisis: procyclicality and financial innovation. The pro-cyclical nature of the development of the global economy has been associated, on the one hand, with false incentives for the development of financial management and corporate governance of financial institutions and, on the other hand, with a fundamental underestimation of long-term risks. Financial innovation, another factor, played a significant role in the development of the crisis. New financial instruments, technologies, and non-traditional financial institutions have emerged, while the risk management, financial supervision, and regulatory systems have remained unchanged. However, in the years following the subprime financial crisis, changes and transformations have taken place, which can lead to vulnerabilities.

Global economic and financial activity depends on the ability to finance in USD. The widespread international use of a dominant currency generates significant IMS benefits but also risks. The benefits come from the effects of the network, which reduces the costs of capital transfer and the risks around the financial system. The risks are generated by the exposure of many international investors and borrowers to the US dollar. As a result, shocks from US monetary policy, US credit conditions, or general increases in global risk aversion may be passed on to national financial systems. These dynamics increase the imperatives

of national financial systems to manage the risk of a reduction in cross-border flows.

How we respond to the challenges of digitizing international currencies depends on the international monetary community. On the one hand, it can focus on efforts to ensure the prosperity of private payment systems in an area that respects common global policy priorities. Alternatively, on the other hand, mobilizations can be accelerated to overcome the remaining weaknesses in global payment systems, given that it is believed that only public money can provide a security deposit of value, a credible unit of account, and a stable means of payment. There is also a third option: the simultaneous realization of both possibilities and, therefore, creating an environment in which public and market-based payment systems effectively complement each other, jointly shaping the 21st-century payment universe.

FinTech presents unique opportunities for financial systems. Rapid changes in the technology that is transforming the financial system will allow financial institutions to improve the performance of their various core functions. However, some aspects of fintech technology represent unprecedented significant new challenges. Adjusting the regulatory framework of financial systems to the challenges posed by FinTech is one of the main objectives of the new configuration of the financial architecture after COVID-19.

The rapid development of money digitization and FinTech phenomena gives IMS even more complexity.

Given that IMS is a subsystem of the world economy, its complexity cannot be analyzed separately from economic complexity.

Economic complexity is calculated by Harvard University's Center for International Development using the Economic Complexity Index (ECI). This index is a measure of a company's productive knowledge and illustrates the complexity of savings based on the quantity and complexity of exported products and the frequency of exports.

Complex economies can produce large amounts of relevant knowledge to generate various knowledge-based products in large networks of individuals. In contrast, simpler economies have a narrower productive knowledge base and generate fewer and simpler products through smaller interaction networks. Individuals are limited in what they know, and the only way societies can expand their knowledge base is to facilitate the interaction of individuals with knowledge sets from different networks of complex organizations and markets. Therefore, greater economic complexity is needed to own and use a more significant amount of productive knowledge. Hence, the possibility of assessing complexity through the combination of products that countries can produce [13].

To understand the interconnections between the complexity of the world economy and the complexity of IMS, we will try to calculate the interdependence between the index of economic complexity and the index of financial openness of world economies. The relationship between financial openness and economic

complexity is close, with a variance of 74.4%. Thus, we can see that countries with a more complex economy also have a greater financial openness (fig. 13).

In conclusion, it is necessary to mention the systemic impact that the financial system's increasing complexity and its financial products have on economic growth and macroeconomic stability. For example, higher financial complexity in some situations maybe to the detriment of increased financial fragility, a more crisis-prone economic system, and rising income and wealth inequality levels. At the same time, some researchers argue that increasing complexity does not always have positive consequences for the economy's well-being. This is especially true when it comes to financial innovations and financial complexity [9].

Economic globalization from the perspective of the world-financial phenomenon strongly influences the historical trends of international finance through two phenomena: financial integration and technological development. These core forces have shaped the evolution of international finance for centuries. First, global integration of money and capital markets is the essence of international finance; through such channels, purchasing power over natural resources is transferred, today, from areas of the world, where expected rates of return are lower, to areas of the world, where expected rates of return are than higher. This process, in turn, is facilitated by technological changes, which have helped to accelerate not only the flow of funds but also the flow of information about investment opportunities.

It should be noted that private debt is an essential and beneficial part of any economy. According to World Bank reports, domestic credit provided by the financial sector includes all loans for various sectors on a gross basis (except for government loans, which is net). Financial resources, credit, and securities, which are not equity and are provided to the private sector by financial institutions, such as banks and other financial corporations, are measured as a percentage of GDP (or the national size of the economy) [25].

Debt is necessary for growth, and countries with low levels of private debt relative to GDP are well-positioned for a possible strong growth, which will later lead to an increase in the share (role) of the private sector in the national economy, therefore GDP.

At the same time, it should be noted that the private sector debt to GDP ratio has a double interpretation. On the one hand, this is one of the indicators or signs (but not the only one) of economic development and prosperity. The higher the value of this indicator, the greater the funding of the private sector in a country and thus the greater the opportunities and space for the private sector to develop and grow. The increase in the role of the private sector in the national economy generates a higher level of economic development. Moreover, on the other hand, high indebtedness can be an aggregate vulnerability for national financial systems. Another problem that can be highlighted is much more subtle and insidious: when it is too large, private debt becomes an obstacle to economic growth.

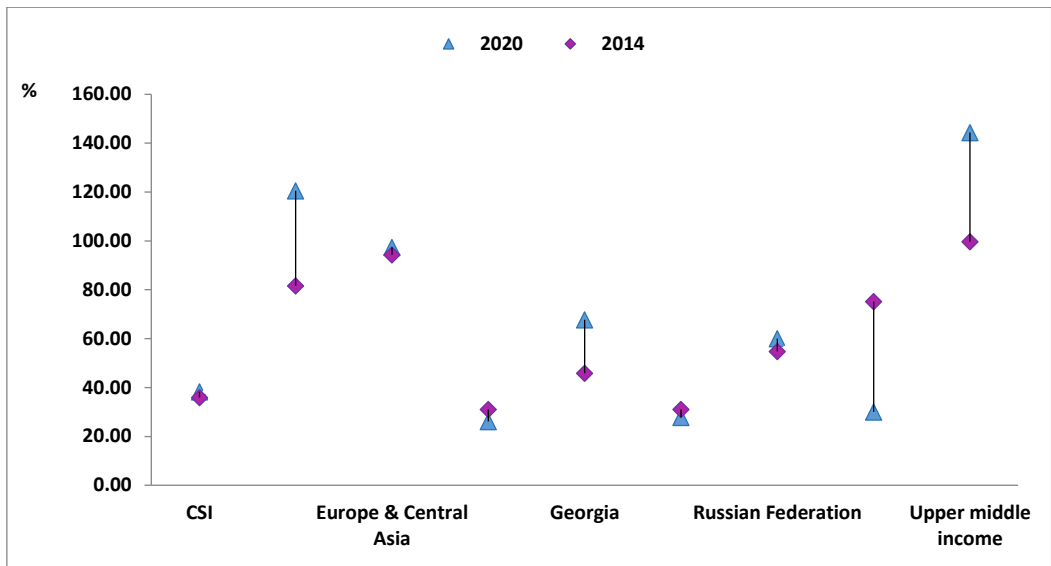


Fig. 12. Private sector debt to GDP, comparison

Source: developed by the author on the basis: [22].

Another element over which the financial system is overdue is regulatory policy, which includes the quality of regulation and the strength of the legal rights index. The first indicator shows the ability of authorities to formulate and implement sound policies and regulations, and the second measures the extent to which collateral and bankruptcy laws protect the rights of debtors and creditors and thus facilitate lending. In addition, the liquidity infrastructure indicates to what extent the private sector can have access to the necessary financing for business through the financial sector, and the structure and culture of the financial system determine the level of investments of financial companies in financial inclusion, but also in training and development of its employees.

In order to determine the areas that should be valued primarily following the reconfiguration of the financial system of the Republic of Moldova, we need to analyze the results of the PCA test, which highlighted the relevant components of financial development (Table 4). From the factor analysis performed, it was identified that all components of the FPI contributed to its value, two of them still having a more significant contribution: regulatory policy, structure, and culture of the financial system. Unfortunately, both constituents are attributed to the arrears in the development of the financial system of the Republic of Moldova. Thus, these compartments, first of all, should attract the attention of decision-makers in the Republic of Moldova.

In conclusion, we would like to mention that the financial system of the Republic of Moldova, as an integral part of IMS, is in a constant process of transformation. Based on the criteria of the evolution of the financial system, but also taking into account the impact of the globalization of the world economy, it is necessary to take into account the changes that have occurred in the following institutional constraints:

- the value of the transaction costs of the international financial architecture;
- the nature of the information on the functioning of financial markets and national financial systems;
- the implementation of the principles and methods of operation of the IFA in a single reproduction process.

Given the profound changes in the IMS, the national financial system naturally requires searching for forms of interaction and directions that would correspond to international requirements, adapted to the national specifics.

At the same time, the perspective of developing the financial system in the face of global financial challenges is inextricably linked to regulatory policy, the structure and culture of the financial system, access, stability, and efficiency, depending on the objectives and tasks that must result from IMS architecture.

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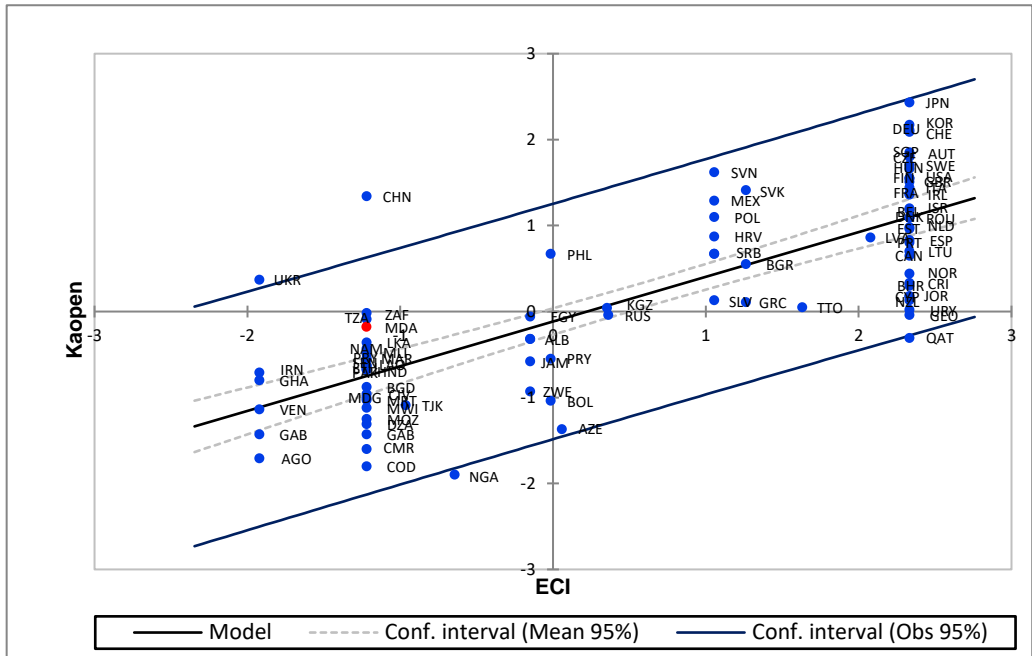


Fig. 13. The relationship between the KAOPEN and the Economic Complexity Index (ECI), 2019

Source: developed by the author on the basis: [26].

On the other hand, amid many complex controversies related to globalization, the challenges individuals and institutions face in the international financial system are daunting, and these challenges must be taken seriously.

Innovation and globalization have brought benefits, on a large scale, in both the financial and non-financial fields. However, it is better to address the negative consequences of these problems than to reverse the flow of history.

For the Republic of Moldova, as for any country, rational internationalization in the international division of the world economy is one of the significant economic and social development problems because internal development is possible only in the direct and diverse context of international economic flows. The insurance of inputs (raw materials, equipment, technologies, product or economic-financial information, etc.) and the capitalization of an essential part of the resulting outputs (products, services).

The Republic of Moldova has a small, open economy, a continuous current account deficit, and a solid subordination to international financial flows. Our country's economy can be characterized by a series of structural features, which expose it a lot to external developments. For these reasons, any imbalances in the

global economy trigger increasingly pronounced external vulnerabilities for the Republic of Moldova.

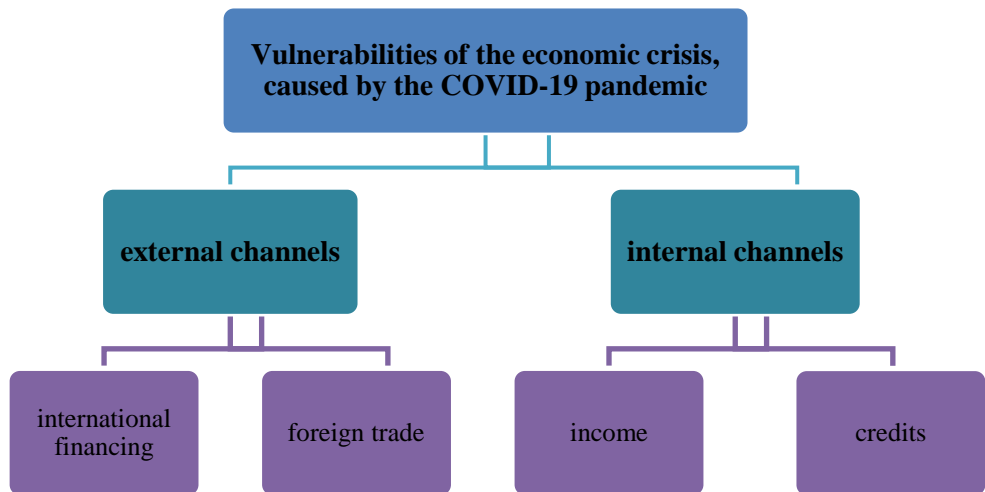


Fig. 14. COVID-19 risk propagation channels for the financial systems of developing countries

Source: developed by the author.

Current developments in the world economy, under the COVID-19 pandemic, pose risks to the financial systems of developing countries. These risks can be transmitted in the economy of our country through several channels, divided, in turn, into external (international financing channel; foreign trade channel) and internal (revenue channel; credit channel).

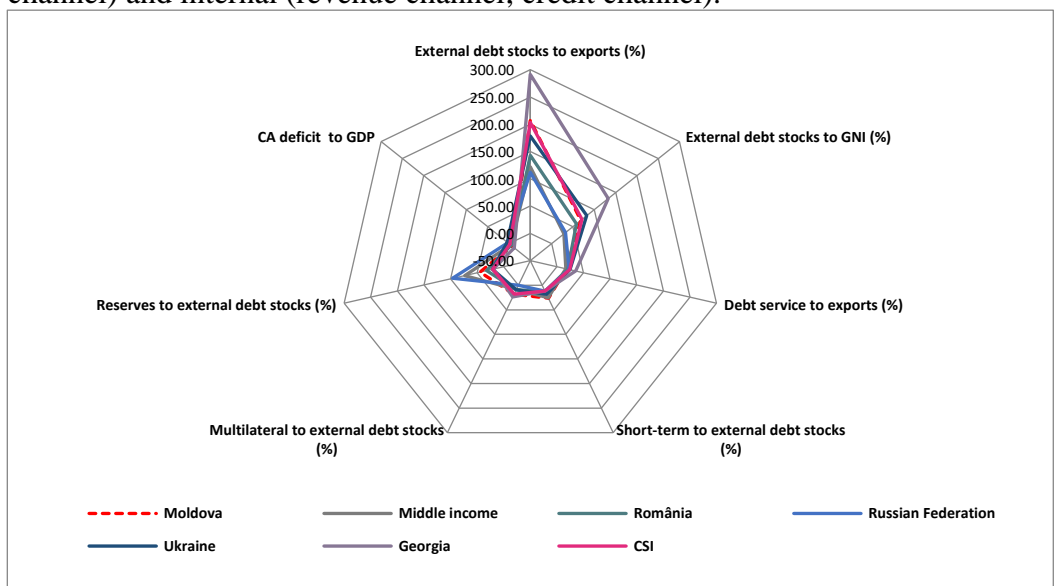


Fig. 15. Vulnerabilities of external indicators (comparison), 2020

Sursa: developed by the author on the basis: [25].

If we compare the indicators of the external debt of the Republic of Moldova with other economies, we can see that they are positioned at the median of the CIS, but are worse than the median of low and middle income countries (fig. 15).

Next, it should be noted that a considerable part of the external debt of the Republic of Moldova is loans from international financial institutions on concessional terms. The debt service burden for such loans is less than the amount involved in market rates. In general, the vulnerability of the Moldovan economy to the external environment is comparable to the CIS countries, but it is higher compared to the countries in the *Upper middle income* (fig. 15).

In conclusion, we can point out that in the current framework of the world economy, anticipating the possible evolutions of the world-financial phenomenon becomes an integral part of the evaluation of the processes in the national financial systems.

Table 6. Components of the financial conditions index

Subindex	Components	Risks and Vulnerabilities	
Price of Risk	<ul style="list-style-type: none"> • Credit market interest rate spread; • Residential real estate price change. 	Domestic / Short term	
Leverage	<ul style="list-style-type: none"> • Credit to GDP ratio change; • Return on equity in the banks. 	Domestic / Medium term	
External Conditions	<ul style="list-style-type: none"> • CBOE Volatility Index (VIX); • Nominal effective exchange rate change. 	Global and Regional	

Current developments in the world economy, under the COVID-19 pandemic, pose risks to the financial systems of developing countries. These risks can be transmitted in our country's economy through several channels, divided, in turn, into external (international financing channel; foreign trade channel) and internal (revenue channel; credit channel).

In the current context of the world economy, anticipating possible developments in the world economic phenomenon is becoming an integral part of assessing the processes in national financial systems. For example, in the case of the Republic of Moldova, the disruption of financial flows has consequences on the increase of production. Therefore, to take into account the existing risks and understand the probability of negative results, it is appropriate to determine the index of financial conditions. This approach was developed by the IMF [18] and involved the construction of a composite index - the index of financial conditions (FCI). According to the authors of the study, the financial conditions aim to determine the price of the risk inherent in asset prices, the ease of obtaining financing, the cost of financing, and the degree of financial stress.

The component variables of the financial conditions index are presented in table 6. The normalization of the financial conditions index in the case of the Republic of Moldova was achieved through a z-score.

The FCI component sub-indices (risk price, leverage, external conditions) cover internal and external vulnerabilities and risks in increasing production for the short and medium-term. In general, stricter financial conditions, which lead to increases in the corresponding indices, are associated with a decrease in production in the short term.

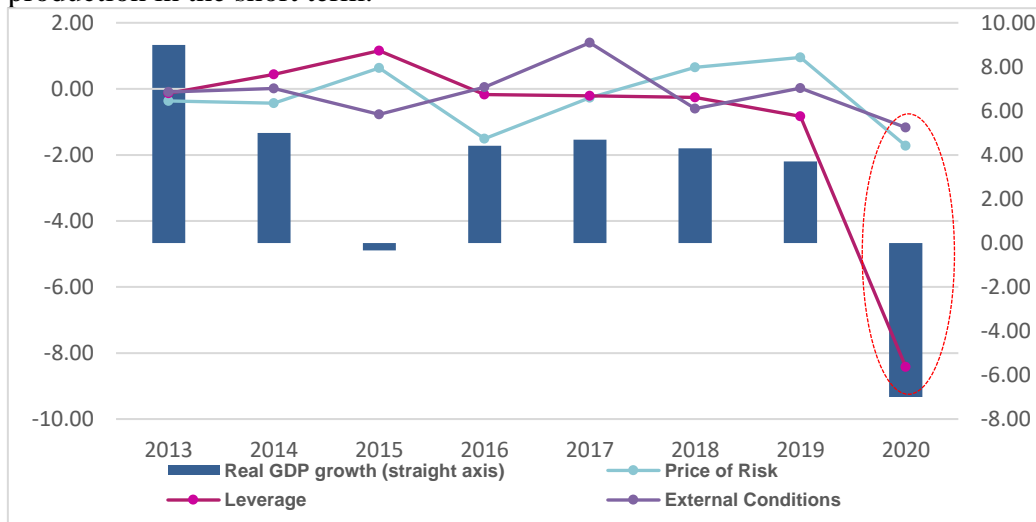


Fig. 16. Financial conditions index

Source: developed by the author on the basis: [2], [23].

Analyzing the sub-indices of financial conditions in fig. 16, we note that they provide clear early warning signals in periods of declining GDP. Of course, the current crisis caused by the COVID-19 pandemic cannot be anticipated by the FCI, as it has no economic roots, but anyway, the leverage index in 2019 indicates an increase in vulnerabilities; in 2020, the high level of financial conditions is evident. The results obtained indicate that the FCI can reflect financial conditions and be a primary indicator of them.

In this context, a single role must be given to national financial systems and their financial infrastructures as primary elements. In order to reduce the vulnerabilities of national financial architectures, especially of low and middle income countries, in our opinion, it is appropriate to determine the factors that have a more significant influence on their development.

Capital account liberalization has had a positive association with growth in both developed and emerging countries. Access to capital markets should allow countries to "insure" to some extent against fluctuations in their national incomes so that national consumption levels are relatively less volatile. Moreover, as good times and bad times are often out of sync between countries, capital flows can, to some extent, offset the volatility of countries' national revenues. Liberalization of the capital account means, first of all, a higher level of financial openness.

We will represent the financial opening of the economy of the Republic of Moldova through the evolution of the KAOPEN index. For a greater relevance, we will compare the evolution of the financial opening of the Republic of Moldova with the financial opening of the signatory countries of the Association Agreements with the European Union in the period 1996-2019. From fig. 17, the advantage of the Georgian economy in this respect is highlighted, Ukraine registering the weakest results. Thus, we can see that both the degree of financial openness and the position of Georgia in the FPI ranking have contributed to higher GDP growth in this country. Georgia's experience is significant for identifying areas to be exploited for the financial system of the Republic of Moldova.

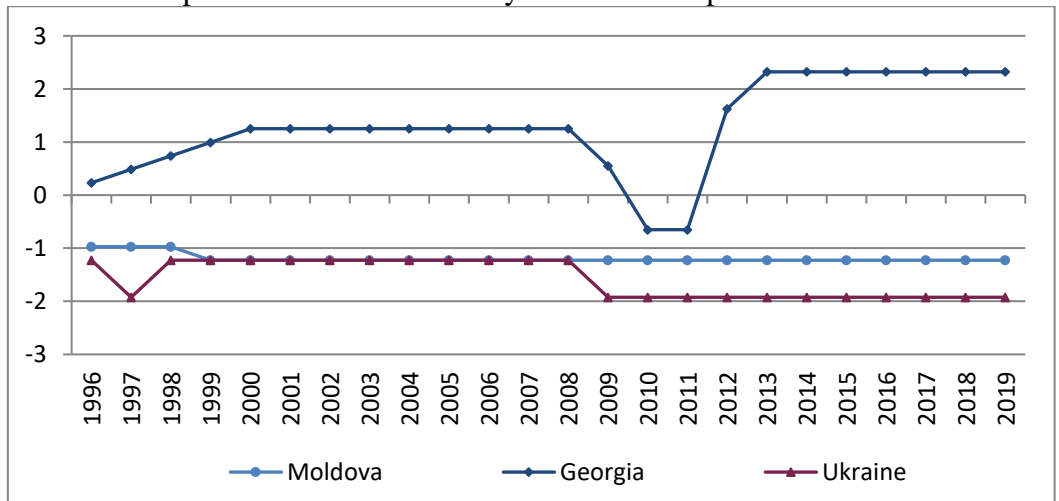


Fig. 17. KAOPEN index evolution in the signatory countries of the Association Agreements with the European Union in the period 1996-2019, (%)

Sursa: developed by the author on the basis: [21].

Finally, we can see that the Republic of Moldova is a country with a small and open economy, dependent on external flows, which makes it vulnerable to external shocks. While the external vulnerability of the Moldovan economy is comparable to that of the CIS countries, it is still relatively high compared to emerging market economies (fig. 15).

These developments are significant in the context in which the capitalization of the external economic position is the second objective of reconfiguring the national financial architecture. From our point of view, the Republic of Moldova could obtain favorable results in this regard by promoting exports with a high level of complexity and attracting FDI flows. However, the attraction of FDI flows is directly correlated with another deficiency of the financial system of the Republic of Moldova, namely regulatory policies (fig. 12). At the same time, decision-makers should also focus on the degree of financial openness of the Republic of Moldova in the context of a relationship between financial openness and economic complexity (fig. 13).

Despite all the internal difficulties our country faces and those of the economic, political, and social situation in the area, we can see with certainty that the Republic of Moldova is becoming an increasingly secure partner in carrying out the international financial-monetary activity. At the level of 2020, the Republic of Moldova has advanced and placed among the group of countries Upper-Middle-Income Economies (an economy with higher average incomes); the rating is based on GDP per capita from \$ 4,096 to \$ 12,695. On the other hand, in the Doing Business 2020 ranking [22], which assesses business facilitation, Moldova ranked 48th out of 190 countries. In conclusion, we can note that the Republic of Moldova, although it has several problems it faces, is an integral part of SMFI and can be seen as a reliable partner in international foreign exchange and financial relations.

The post-COVID-19 world is consolidating the trends and problems already present before the pandemic. The growth of e-commerce and distance work, the subordinate role of cash and the widespread interest in cheap, convenient payment methods, the need for banks to manage operating costs and invest in innovation: all this has preceded COVID-19 and is not coming surprise. However, the post lockdown economy is probably witnessing an acceleration in demand for simple, intuitive and personalized services provided by integration into digital platforms both owned by banks and managed by non-bank players.

On the other hand, several threats specific to the financial system are intensifying: the increase of vulnerabilities in the non-banking financial sector, higher non-performing loans, the rebirth of inflation, the decrease of the value of the commercial property pledged as collateral.

The configuration of the financial architecture of the Republic of Moldova attests that the financial system of the Republic of Moldova meets the criteria imposed by the international financial institutions and can withstand possible economic and financial turmoil.

At the same time, through the configuration of the Republic of Moldova financial architecture, the channels can be elucidated, through which the SMFI vulnerabilities in the national financial system can be transmitted, and the elements, which could be transmitted be reconfigured.

The elaboration of the configuration of the financial architecture of the Republic of Moldova is an essential one in the context of future changes, which could occur in IFA.

In our opinion, all components of the financial architecture of the Republic of Moldova, therefore, contribute to the development of the national financial system and provide opportunities for capitalizing on the external economic position.

Following the research, which is based on the particularities of the financial system of the Republic of Moldova, but also on the external financial context, we consider that a series of measures are needed, which could lead to achieving the objectives of reconfiguring the financial system of the Republic of Moldova.

Reshaping of the financial architecture of the Republic of Moldova

Improving the development perspective of the financial system

- increasing the depth of the financial sector, particularly by increasing private sector debt relative to GDP.
- strengthening regulatory policy, which includes the quality of regulation and the strength of the legal rights index.
- reducing vulnerabilities in the non-banking financial sector by tightening regulations.
- providing the basis for further growth by reorienting strategies in the banking system, by greater diversification of net income sources, and by increasing corporate lending.
- promoting the structure and culture of the financial system by increasing the level of investments of financial companies in financial inclusion but also in the training and development of its employees.
- developing the liquidity infrastructure by offering access to financing to the local business.
- incorporating agility to institutionalize new decision-making models in the context of changes generated by the dominance of the international financial architecture.
- prioritize investments in modern digital technology to streamline operations and meet customer expectations.
- protecting consumers and other users of financial services, as artificial intelligence and big data pose new risks to privacy and financial inclusion.

Capitalizing on the external economic position

- promoting exports with a high degree of complexity.
- attracting FDI flows by providing a generally beneficial framework, but also by ensuring advantageous economic and business determinants.
- increasing the degree of financial openness by liberalizing the capital account;
- management of the external vulnerability of the Moldovan economy.
- adjusting the mechanism for determining the official exchange rate to the realities of the segmentation of the internal foreign exchange market.
- the development of a digital currency by the NBM, in a long-term perspective.

Fig. 18. Solutions to achieve the objectives of reconfiguring the financial system of the Republic of Moldova in the context of the "new normal"

Source: *developed by the author.*

How will the transition of a "new normal" to the financial system of the Republic survive? Only time will tell, which allows us to see clearly that only national financial systems can reinvent themselves and prepare for the new normalcy, will significantly reduce their risk of falling victim to the crisis. In doing so, they will also be able to master the many challenges of the post-pandemic era.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

The international monetary system is in continuous tension in a rapidly changing global environment, being a multilateral one and in direct connection with the national financial systems. This process requires global financial governance, on the one hand, to review existing international policies and agreements for both international financial institutions and those at the national level in order to suit their purposes, and, on the other hand, calls on the scientific community in field to reflect on the complex nature of financial systems, bringing new visions and methodologies that would facilitate the management of national financial systems. The topic of the thesis was chosen, the critical scientific problem were identified, submitted for a solution, the research hypotheses were drawn, the purpose and objectives were proposed. Following the analysis of the literature in the field of the thesis in the first chapter and the research carried out following the objectives proposed in the fundamental chapters, the following conclusions were found:

1. Knowledge of the content aspect of the international monetary system must logically start from the theory of complex systems and its concepts related to the category of system. Applying the systemic approach in the research of the international monetary system is essential because it allows the quantitative and qualitative analysis of the development and functioning of the international monetary system. In this regard, it is essential to determine the type of system to facilitate the forecast of future developments. The international monetary system, by all its characteristics, represents a non-linear open system. The non-linearity of the international monetary system is demonstrated in the paper through the Lyapunov test;

2. Financial globalization profoundly affects the expansion and spread of momentum in the international monetary system. In our opinion, there are two approaches to identifying ways to transmit signals from the international monetary system to national financial systems. The first approach is based on how impulses are propagated through the international monetary system elements. The second approach is based on the conditions and origin of the organizational structure of the international monetary order.

3. The stages of development of the international financial system have highlighted that, during its evolution, it has faced several crises. A catastrophe (crisis) changes the system's organization and is not always in the direction of its growth. Thus, in the process of passing from one bifurcation point to another, the system develops. At each bifurcation point, the system chooses the path of development, the trajectory of its movement. Finally, at the bifurcation point, a catastrophe occurs - the system's transition from the region of attraction of one attractor to another. An attractor can be a state of equilibrium, a limit cycle, or a foreign attractor (chaos). The system is attracted to one of the attractors, and at the bifurcation point, it can become chaotic and collapse, enter a state of equilibrium, or choose the path of forming a new order. Thus, a catastrophe

(crisis) changes the architecture of the international monetary system, which, therefore, has direct effects on the organization, functioning of national financial systems.

4. The analysis of the mechanism of operation of the international financial architecture outlined its similarity with the structure of a software system by how the functionality of the system is decomposed and divided into implementation teams. As a result of this approach, we identified four components of the international financial architecture: the basic economic model, institutional structure; the distribution of decision-making authority in international institutions; the implications of high technology, and innovation on the international financial architecture.

5. The international financial architecture represents an institutional matrix of the international monetary system, ensures its stability as a whole, and regulates its development in the context of intensifying the influence of the globalization of economic activity. Consequently, the efficiency of the international financial architecture's functioning depends on how balanced and interconnected its elements are with national financial systems.

6. The national financial architecture, in our opinion, can be represented as a totality of three components: the financial infrastructure, the financial integration, and the relevant components of the macroeconomic regime. Changes associated with the international financial architecture can have a considerable impact on critical areas of national economies. Specifically, changes in the international financial architecture can directly affect the development and stability of the financial sector, the macroeconomic regime, and the process of integration with international financial markets. In order to be able to manage this process, national authorities must be prepared to make the necessary changes resulting from the international financial architecture. In this context, the following need to be established: the links between the international financial architecture and the national financial architecture; how their interactions may affect the structure, conduct, governance of the internal financial sector and its relations with firms and investors; how changes in the national financial architecture may trigger effects that are transmitted in the structures of the international financial architecture.

7. The reforms carried out in the last decade in the first pillar of the financial architecture of the Republic of Moldova - financial infrastructure - have been radical and have affected all its elements. These reforms were mainly carried out following the signing of the Association Agreement with the European Union. Although the presence of a regulatory framework, aligned with best practices, is in itself a sustainable strategic approach, it is essential to assess the progress made by the Republic of Moldova in transposing Community financial-banking regulations into national law. In our opinion, the financial system of the Republic of Moldova has made progress in this regard.

8. In order to highlight the architectural features of the financial infrastructure in the Republic of Moldova, in our opinion, it is appropriate to apply

the systemic approach. Thus, all the components of the financial infrastructure are elucidated, which contribute to the access, depth, stability and efficiency of the financial system of the Republic of Moldova.

9. Financial development is a multidimensional phenomenon and, to evaluate it, for further analysis, a methodology is needed. Starting from this argument, we built a composite index of the financial perspective, which includes multiple and broad essential aspects: quantitative, qualitative, and institutional. In addition, composite indices include process-related indicators expressed in measurable variables. These interdependencies are essential because they can be used to test the explanatory power of the composite index of the financial perspective. In our case, we tried to show the interdependence between the financial perspective index and GDP per capita. Thus, countries with a higher index of the financial perspective also attest to an adequate GDP per capita. Although there are challenges in building the financial outlook index, it undoubtedly serves as an essential step in assessing outlook financial development and clarifies in more detail the interdependencies between the outlook for financial development and the expected economic results. We will continue to improve the financial perspective index as new data becomes available.

10. In the context of the new international financial architecture at the level of the national financial system, the banking system is given a vital role in the functioning of the financial system. Consequently, creating the preconditions for the efficient operation of the banking system must become a key priority for central monetary authorities. However, in the literature, there is no generally accepted methodology for determining banking efficiency. The simplest method, that of financial indicators, based on the balance sheet analysis, is considered a traditional one, while the analysis of banking efficiency through econometric methods has monopolized the recent literature, primarily due to its complexity. Starting from this argument, regarding the evaluation of the efficiency of the banking system of the Republic of Moldova, applying both approaches, benchmarking the efficiency of the banking systems of the signatory countries of the Association Agreements with the European Union, we find that the systemic approach, compared to financial ratios, better reflects the multifactorial nature, relativity, and stochasticity of the banking system.

11. The stability of the international monetary system requires special attention and constant monitoring of several issues, with a direct influence on the issues affecting it. The analysis of the development of the current international monetary system clearly shows a potential change, which has occurred in its operation. From the multitude of challenges facing the international monetary system, we mention four, which, from our point of view, deserve constant research, identifying their impact on national financial systems. These challenges are the rapid growth of Fintech, the growing role of emerging economies in the international monetary system, the digitization of currencies, and the move towards a multipolar international monetary system. In our opinion, the impact of

these challenges on the financial system of the Republic of Moldova, in our opinion, can be better reproduced through a loop diagram.

12. The sphere of the analysis of the structure of the financial system and the evaluation of its development is quite extensive. Therefore, the structural aspects cannot simply be broken down into autonomous segments, which correspond to the existing institutional arrangements. Moreover, structural and development issues arise across the range of financial markets and intermediaries, including banking, insurance, securities markets, and non-banking intermediation. Thus, this analysis often requires consideration of some factors for which a well-adapted and standardized quantification is not available. Based on this argument, we analyzed the financial system of the Republic of Moldova from the perspective of access, depth, stability, efficiency, national governance, regulatory policy, liquidity infrastructure, information infrastructure, and transparency, consumer protection architecture, system structure, financial and culture. Following the analysis, the components that exceed the median values of the group of countries to which the Republic of Moldova belongs are highlighted: access, stability, national governance, and consumer protection architecture. At the same time, some components still have significant reservations: depth, regulatory policies, liquidity infrastructure, structure, and culture of the financial system.

13. The Republic of Moldova has a small, open economy, a continuous current account deficit, and a solid subordination to international financial flows. Our country's economy can be characterized by a series of structural features, which expose it a lot to external developments. For these reasons, any imbalances in the global economy trigger more and more pronounced external vulnerabilities in the Republic of Moldova. Thus, in the current context of the world economy, anticipating possible developments in the world financial phenomenon becomes an integral part of the evaluation of processes in national financial systems. In this sense, in the case of the Republic of Moldova, the construction of the index of financial conditions allows the predictability of existing risks and the understanding of the probability of adverse events for the national financial system.

14. The configuration of the Republic of Moldova's financial architecture attests that our country's financial system meets the criteria imposed by international financial institutions and can withstand possible economic and financial turmoil. Regarding the purposes of reconfiguring the financial system of the Republic of Moldova in the context of the new international financial architecture, these are: improving the perspective of financial system development; capitalizing on the external economic position. For developing countries, achieving the goals of reconfiguring the national financial system is possible only by capitalizing on the experience of countries advanced in this regard.

The testing and validation of the research hypotheses in the thesis were performed through mathematical and statistical methods. *First*, the estimator of the exponent Lyapunov was determined by the indirect Jacobian method to test the nonlinearity of the international monetary system. The estimator of the Lyapunov exponent obtained indicated that the process of generating data consisted of 784 numerical values (US Dollar Index (DXY) weekly, period 03.07.2006 - 05.07.2021) has a chaotic attractor, which indicates the property of sensitivity to the initial conditions. *The second hypothesis* is tested by analyzing the main components, the essence of which is reduced to considering the most significant possible variation in the set of indicators, using the smallest possible number of factors. Therefore, the composite index of the financial perspective no longer depends on the size of the data set but rather on the "statistical" dimensions of the data. Thus, following the application of this statistical method, it was clarified that the policy of regulating financial systems plays a crucial role in the development of many national financial systems, not reaching the threshold of the main component of the results catalyst. To determine the interdependence between NEER and the official foreign exchange reserve of the Republic of Moldova, the Johansen cointegration test was applied, as a result of which a long-term relationship was identified between NEER and interventions in/for the official foreign exchange reserve and thus *the third hypothesis* was validated research. Following the construction of the financial infrastructure index, it was found that, in the groups of countries classified by income level, there is a direct relationship between the financial infrastructure index and GDP per capita, with a variance of 81.7%, which validates the *last hypothesis* of research.

In our opinion, the general conclusion of the research is the belief that the development of strategies for the development of national financial systems, without taking into account the changes in the architecture of the international financial system, generates intra-system conflicts, distortions in the integrity of financial system elements, which will subsequently be expressed in increases in the costs of financial regulation and insignificant imbalances in the financial system.

As a result of the research carried out following the indicated purpose and objectives, recommendations were formulated regarding the potential research directions of the approached topic and proposals for using the results obtained in the financial practice.

Theoretical recommendations:

1. The financial systems from the vision of complexity are not mechanical, static, timeless, and perfect, but some organic, in perpetual transformation, and full of disordered vitality. Those characteristics complicate the research of the international monetary system and that of the national financial systems. In such conditions, it is necessary to substantiate a theoretical research framework. Therefore, the methodological platform of the international monetary system research from the perspective of the theory of complex systems, elaborated by us,

includes formative, functional elements and can be proposed in systems research from other fields of science.

2. In researching the world-financial phenomenon, a unique role is the evolution of the international monetary system. Past lessons can help us understand that as the complexity of the current international financial system increases and the institutional and regulatory framework does not cope with internal vulnerabilities, the breaking point will usually be reached with the onset of an economic crisis; this leads, in large part, to social chaos, revolution, social, economic and financial reengineering, but also to qualitative leaps in development. In this regard, we recommend the application of chaos theory to anticipate the time of the bifurcation point, an essential one in the investigation of financial crises.

3. The international financial architecture is an abstraction of the international monetary system, which restricts the details of the elements for which it matters how they are used, related, or interacted with the adjacent elements. In the case of modern systems, the elements interact through interfaces that share the components in private and public. Therefore, in our view, in terms of international financial architecture, in further research, it would be appropriate to associate it with the analogy, rather, of computer architecture (software, network), which covers the complete functionality and connections between software components.

4. The international and national financial architecture is, first and foremost, a network of institutions. Based on the fact that, in the correlation between the global financial architecture and the national financial architecture, a large number of elements are involved, to highlight their interaction, in this paper, the configuration of the national financial architecture was developed, which we recommend. In the analysis of designs in national financial systems, from a systemic approach, able to facilitate the decision-making process. Moreover, the configuration of the national financial architecture allows the identification of the channels through which the impulses from the international financial architecture are transmitted to the national financial system and the possible influences that they may have on the national economy.

5. Financial development is a multifaceted concept. To capture the subtle complexity of financial development, we need to focus on several aspects of it. For this purpose, the composite index of the financial perspective was constructed. Based on the results obtained from the construction of the composite index and the possibilities of further analysis through statistical methods, we recommend the construction of a composite index in the case of research of economic, multidimensional, complex phenomena.

Practical recommendations:

6. The comprehensive assessment of the financial infrastructure index of 139 countries has drawn conclusions that there is an interdependence between the degree of development of financial infrastructure and GDP per capita. Therefore, the factor analysis of the financial infrastructure index may be relevant for central

monetary authorities, as it highlights the key factors that can influence the level of financial infrastructure development.

7. The relationship between financial openness and economic complexity is close, with a variance of 74.4%. Thus, we can see that countries with a more complex economy also have a greater financial openness. Therefore, to enhance the economic complexity, a determining factor of sustainable growth, we recommend, at the national level, monitoring the level of financial complexity, which, conventionally, can be determined through the KAOPEN index.

8. Current developments in the world economy, under the COVID-19 pandemic, pose risks to the financial systems of developing countries. These risks, in our opinion, can be transmitted to the economy of developing countries through channels. Thus, in the case of external vulnerabilities, we propose the determination of the channels through which they propagate in the national economies. Determining the channels through which external vulnerabilities are transmitted can be considered the first step that monetary authorities can take to mitigate external economic risks.

9. The evaluation of the efficiency of the banking system is a rather complicated analytical problem, which requires solving some fundamental tasks of a methodological nature. Unfortunately, to date, there is still no generally accepted methodology for analyzing banking efficiency. Based on these arguments, we recommend the use of nonparametric methods to comprehensively assess the efficiency of the banking system in general or of a banking entity in particular.

10. The US dollar, in the international monetary system, plays a central role, remaining the dominant international currency. At the same time, the euro has gained importance as a reserve currency for both the official and private sectors of the world. Also, on the foreign exchange market of the Republic of Moldova, the European currency has a vital role, its share on the cash foreign exchange market being around 70%, and on the non-cash foreign exchange market, approximately 30%. In this context, we mention a contradiction between the reference currency (USD) in the mechanism of determining the official exchange rate and the weights of currencies traded on the foreign exchange market of the Republic of Moldova. Thus, in determining the official exchange rate, we recommend that to reflect both the share of currencies in transactions on the foreign exchange market of the Republic of Moldova and the trend of transition to a multipolar international monetary system.

11. Financial globalization has a multidirectional effect on the level of stability of national financial systems, which is manifested, on the one hand, by an increase in the volume of cross-border financial transactions, by the emergence of new financial institutions and instruments, by the development of FinTech and the digital currencies, and on the other hand, in changing the dynamics and mechanisms of the spread of financial crises, in intensifying the use of funds borrowed by financial institutions and accepting higher risks. Therefore, the formation of a strategy for developing the national financial system should

consider these fundamental changes, which will become more pronounced in the post-COVID-19 period.

12. A new emphasis on the architecture of the international monetary system to return to the "new normal" is anticipated shortly. In these circumstances, we recommend that the central monetary authorities take steps to strengthen the remaining components of the development of the financial system, namely: increasing the depth of the financial sector, in particular by increasing private sector debt relative to GDP; strengthening regulatory policy, which includes the quality of regulation and the strength of the legal rights index; reducing vulnerabilities in the non-banking financial sector by tightening regulations.

13. The dominance of the architecture of the international monetary system will also have an impact on the financial intermediation institutions in the Republic of Moldova. Therefore, in order to facilitate the transition to a new reconfiguration of the Moldovan financial system, we propose the following: ensuring the bases for further growth by reorienting the strategies in the banking system, by diversifying the sources of net income, and by increasing corporate lending; promoting the structure and culture of the financial system by increasing the level of investment in financial inclusion and the training and development of employees; incorporating agility for the institutionalization of new decision-making models, in the context of changes generated by the dominance of the international financial architecture; prioritizing investments in modern digital technology, to streamline operations and to meet customer expectations; protecting consumers and other users of financial services, as artificial intelligence and big data pose new risks to privacy and financial inclusion.

Finally, we would like to note that the digitization of currencies, combined with the expansion of FinTech, could usher in a new era for the international monetary system. This new era will transform everything, including the services provided by financial institutions, the ability of a central bank to control the money supply, the monetary policies of central monetary authorities, financial stability, the future of dominant USD reserves, and global financial transactions. In our opinion, the areas of the end in further research are related to the answer to a series of questions: What will be the impact of digital currencies and Fintech on financial institutions; how central monetary authorities should respond to the expansion of private digital currencies and FinTech; what will be the impact of digital currencies and Fintech on financial services and instruments; will the US dollar continue to support global transactions or will digitize national currencies give rise to other dominant currencies; which will be the regulatory framework for private digital currencies and FinTech; how monetary policies will be shaped in the context of the expansion of private digital currencies and FinTech; the financial stability of FinTech and cryptocurrencies will be affected.

Unfortunately, at present, there are still no clear answers to these questions. But, on the other hand, this situation leaves the door open for research into the fascinating and alluring world of complex financial systems.

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ADNOTARE

LOPOTENCO Viorica, „Reconfigurarea sistemului financiar al Republicii Moldova în contextul noii arhitecturi a sistemului monetar financiar internațional“, Chișinău, 2021

Structura tezei: introducere, cinci capitole, concluzii generale și recomandări, bibliografie din 477 de titluri, 5 anexe, 288 de pagini de text de bază, 93 figuri și 21 tabele. Rezultatele obținute sunt publicate în 29 de lucrări științifice.

Cuvinte-cheie: sistem financiar, infrastructura financiară; sistem monetar financiar internațional, teoria sistemelor complexe, arhitectura financiară internațională, Fintech, monede digitale.

Scopul cercetării constă în elucidarea zonelor potențiale de valorificat pentru sistemul financiar al Republicii Moldova, prin fundamentarea teoretico-metodologică a dominantelor dezvoltării arhitecturii sistemului monetar financiar internațional și determinarea impactului acestora asupra configurației sistemului financiar național.

Obiectivele studiului: elaborarea cadrului metodologic pentru evaluarea perspectivei dezvoltării sistemului financiar național; analiza sistemului financiar al Republicii Moldova din perspectiva arhitecturii financiare internaționale; realizarea benchmarking-ului eficienței sistemelor bancare; elucidarea provocărilor globale ale sistemului monetar financiar internațional; determinarea poziției externe a Republicii Moldova în fața provocărilor sistemului monetar financiar internațional; investigarea impactului modificărilor sistemului monetar financiar internațional asupra arhitecturii financiare a Republicii Moldova; argumentarea priorităților dezvoltării sistemului financiar din Republica Moldova sub impactul provocărilor globale.

Noutatea și originalitatea științifică constă în fundamentarea unui set de prevederi teoretice privind sistemul monetar financiar internațional din perspectiva teoriei sistemelor complexe, care catalizează schimbările sistemice, semnificative la scară largă și durabile și vine cu un impuls integrat pentru replicare și adaptare către sistemele financiare naționale.

Rezultatele principale: cercetarea sistemului monetar financiar internațional din perspectiva teoriei sistemelor complexe și, prin urmare, crearea unei platforme metodologice pentru cercetarea sistemului monetar financiar internațional; elucidarea căilor de propagare a semnalelor sistemului monetar financiar internațional în sistemele financiare internaționale; întocmirea configurației arhitecturii financiare naționale; elaborarea cadrului metodologic pentru evaluarea perspectivei dezvoltării sistemelor financiare naționale; compararea sistemelor bancare a țărilor semnatare ale Acordurilor de Asociere cu Uniunea Europeană prin intermediul metodei nonparametrice DEA; identificarea provocărilor din sistemul monetar financiar internațional.

Semnificația teoretică a cercetării rezidă în dovada existenței unor fenomene neregulate de natură sinergică în sistemul monetar financiar internațional, care, ulterior, se reflectă în funcționarea sistemelor financiare naționale.

Valoarea aplicativă: soluțiile dezvoltate pentru reconfigurarea sistemului financiar al Republicii Moldova, care reflectă particularitățile noii arhitecturi financiare internaționale sunt axate pe: aplicarea analizei factoriale pentru a identifica factorii esențiali, ce pot influența nivelul dezvoltării infrastructurii financiare și care permit determinarea zonelor potențiale de valorificat; determinării canalelor prin intermediul cărora sunt transmise vulnerabilitățile externe în sistemul financiar național; implementarea metodelor nonparametrice pentru evaluarea eficienței sistemului bancar recomandarea ajustării procedurii determinării cursului valutar oficial, în condițiile tranziției spre un sistem monetar financiar internațional multipolar

Implementarea rezultatelor științifice: rezultatele obținute în activitatea de cercetare au fost reflectate în: 1 monografie editată în străinătate; 2 monografii colective editate în țară; 11 publicații în reviste științifice editate peste hotare; 4 articole în reviste din Registrul Național al revistelor de profil; 4 publicații în materiale ale conferințelor internaționale; 7 articole în lucrările manifestărilor științifice incluse în Registrul materialelor publicate în baza manifestărilor științifice organizate din Republica Moldova. Diseminarea rezultatelor cercetării s-a realizat în cadrul a 10 foruri științifice internaționale și al unei mese rotunde internaționale.

ANNOTATION

LOPOTENCO Viorica, „Reshaping of the financial system of the Republic of Moldova in the context of the new international financial architecture, Chişinău, 2021

Thesis structure: introduction, five chapters, general conclusions and recommendations, bibliography of 477 titles, 5 annexes, 288 pages of basic text, 93 figures and 21 tables. The obtained results are published in 29 scientific papers.

Keywords: financial system, financial infrastructure; international monetary system, complex systems theory, international financial architecture, fintech, digital currencies.

The aim of the research is to elucidate the potential areas to be exploited for the financial system of the Republic of Moldova by theoretical-methodological substantiation of the dominant development of the architecture of the international monetary system and determining their impact on the configuration of the national financial system.

The objectives of the study: analysis of the financial system of the Republic of Moldova from the perspective of the international financial architecture; benchmarking the efficiency of banking systems; elucidating the global challenges of the international financial monetary system; determining the external position of the Republic of Moldova in the face of the challenges of the international monetary system; investigating the impact of changes in the international monetary system on the financial architecture of the Republic of Moldova; arguing the priorities for the development of the financial system in the Republic of Moldova under the impact of global challenges.

The research's novelty and scientific originality consists of substantiating a set of theoretical provisions on the international monetary system from the perspective of complex systems theory, which catalyzes systemic changes, significant and sustainable, and comes with an integrated impetus for replication and adaptation to national financial systems.

The main results: elaboration of an algorithm for analyzing the evolution of the international financial monetary system under the incidence of system crises; drawing up the configuration of the national financial architecture; elaboration of the methodological framework for evaluating the perspective of the development of the national financial systems; comparison of the banking systems of the signatory countries of the Association Agreements with the European Union through the non-parametric DEA method; identifying challenges in the international financial monetary system; determining the impact of the challenges of the international financial monetary system on the financial system of the Republic of Moldova.

Theoretical significance: the nonlinearity and complexity that characterize the international monetary system and the presence of many feedbacks cause the complex nature of the world-financial phenomenon and generate numerous synergistic effects, changing the qualitative aspects of the functioning of national financial systems.

The paper's applicative value are focused on: applying factor analysis to identify critical factors that can influence the level of financial infrastructure development and determine potential areas to capitalize; arguing the need to monitor the level of financial complexity, which conventionally can be determined through the KAOPEN index; justification for determining the channels through which external vulnerabilities are transmitted in the national financial system; implementation of nonparametric methods for evaluating the efficiency of the banking system or a banking entity; recommendations for adjusting the procedure for determining the official exchange rate.

Implementation of scientific results: the results obtained in the research activity were reflected in 1 monograph published in the country; 2 collective monographs published in the country; 11 publications in scientific journals published abroad; 4 articles in journals from the National Register of profile journals; 4 publications in materials of international conferences; 7 articles in the works of scientific events included in the Register of materials published based on scientific events organized in the Republic of Moldova. The results of the project were disseminated in 10 international scientific forums and an international round table.

LOPOTENCO Viorica

**RESHAPING OF THE FINANCIAL SYSTEM OF THE
REPUBLIC OF MOLDOVA IN THE CONTEXT OF THE
NEW INTERNATIONAL FINANCIAL ARCHITECTURE**

522.01 FINANCE

Summary of the doctor habilitat thesis in economics

Approved to print: 26.11.21

Offset print.

Printing sheets 3.43

Paper size 60x84 1/16

Circulation 20 iss.

Order no. 44

ASEM Publishing-Printing Service
Chişinau, 59 Mitropolit Bănulescu-Bodoni, str., MD-2005
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