Financial Development of the Russian Federation: Problems of Measurement and Evaluation

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ABSTRACT

Financial development has a significant impact on the restructuring of the economy, long-term economic growth and improvement of the level and quality of life of the population. In this regard, this study aims to address the challenge of adequate measurement and assessment of the level and dynamics of financial development a **relevant** task for public administration. **The goal** of the study is to develop a system of indicators to measure the level and dynamics of financial development of countries. These indicators could improve the effectiveness of public decision-making in the sphere of finance. The research used the methods of systemic, comparative, and matrix analysis. **As a result,** the authors present a matrix system of financial development indicators, which characterizes the levels, dynamics, and interrelationships of financial development in the country as a whole, and in the context of financial market segments and sectors of the economy. This system reflects the real value of financial assets per capita, thereby, providing the scientific novelty of the study and increasing the objectivity of the results of analysis and evaluation. The developed indicators were tested with regard to the Russian Federation for the period of 2013–2021 using statistical data of the System of National Accounts in terms of financial balances. The results made it possible to determine the level and dynamics of financial development of the Russian Federation, to identify the sectors of the economy and financial instruments that contributed most to financial development in 2021; the sectors and instruments that impeded financial development; as well as to determine prospective directions of financial development in the near future. The use of new indicators will improve the comprehensiveness and quality of the analysis of financial development, as well as ensure the adoption of research-based and effective decisions in the design of state strategic documents.
Keywords: financial development; financial development indicators; financial development analysis; financial development strategy

INTRODUCTION

Financial development plays an important role in the economies of countries, as it makes a significant contribution to long-term economic growth, the functioning of relevant institutions and improving the well-being of citizens [1–6]. In addition, financial development creates conditions for the growth of investment and innovation activity of economic entities [7–9]; increases the efficiency of resource markets [10], strengthens financial stability [11–14], causes an increase in entrepreneurial activity [15] and reduces income inequality and poverty [16–17].

In this regard, in recent years there has been an increase in the attention of the public administration of the Russian Federation to the issues of strategic management of the country's financial development. This is evidenced by the development and approval of the Main Directions for the Development of the Financial Market of the Russian Federation for the periods 2016–2018, 2019–2021, 2022–2024, 2023–2025 and 2024–2026. A similar trend is observed in other countries. However, the analysis of the content of strategic documents on financial development of different countries indicates the presence of some shortcomings that reduce their quality. In particular, these documents do not set quantified strategic goals.

The significant increase in the number of strategic documents on the development of the financial sector of countries, as well as the lack of quantitatively expressed strategic goals in most of them, drew the attention of scientists and specialists to the problem of measuring financial development on the basis of an integral indicator that could fully reflect the scale of the country's financial development. In most scientific studies, such integral indicators are proposed to be calculated on the basis of particular indicators characterizing certain aspects of financial development. International financial organizations take a similar approach in measuring the development of financial institutions and financial markets [18, 19].

Analyzing the methods and methods of measuring financial development offered by scientists and specialists from different countries, it should be noted that the sets of private indicators for calculating the integral indicator differ in different studies. This leads to contradictory conclusions from the research results. Discrepancies in conclusions make it difficult to assess the level of financial development in general and hinder the development of effective public policy.

This study is aimed at solving this problem. The purpose of the study is to develop a system of indicators to measure the level and dynamics of financial development of countries, the use of which will improve the effectiveness of government decisions in the field of finance.

This study consists of several sections. The first section includes an overview of current studies related to the measurement of financial development. The second section is a description of a new system of indicators that allows you to assess the level and dynamics of financial development, as well as to form priority areas of financial development in the near future. The third section is devoted to testing the developed indicator system and analyzing the results obtained. The next section contains a discussion of the results of the study. The last section presents the main conclusions.

REVIEW OF THE LITERATURE

According to the analysis of scientific publications, the study of financial development of countries is carried out on the basis of three methodological approaches.

The first methodological approach (quantitative) is based on such traditional indicators of the monetary market as:

• broad cash mass (M2) as a percentage of GDP;

• domestic credit granted by the financial sector as a percentage of GDP;

• real interest rate;

• share of insurance and financial services in GDP;

• net inflow of foreign direct investment as a percentage of GDP;

• market capitalization of companies listed on the stock exchange (percentage of GDP);

• total value of traded shares (percentage of GDP);

• stock market turnover rate (%);

• deposit to GDP ratio;

• credit to GDP ratio [10, 16, 20–24].

In some cases, a structured system of these indicators is used, which is based on the identification of the concepts of "financial development" and "financial sector development". At the same time, the development of the financial sector refers to the development of financial markets and the sector of financial organizations [5, 9, 25–29]. It is important to note that the indicators used in this methodological approach are primary. As a rule, a composite index is calculated on their basis. The main component method is usually used to calculate this index [30].

The advantage of this methodological approach is the availability of a large set of open-access statistics on countries in the world. This allows for long-term timelines and comparative cross-country analysis. At the same time, this approach has disadvantages. As noted by S.B. Eryigit and E. Dulgeroglu [31], generally accepted financial development measures, which do not go beyond the assessment of savings mobilization, are insufficient to assess the financial system and do not allow for the determination of the correct policy regarding the development of the financial sector and its impact on the economy.

The second methodological approach (qualitative) measures the level of financial development based on such qualitative characteristics of the financial sector as the depth, availability and efficiency of the financial market and the sector of financial organizations [15, 17, 19, 32–34], as well as the stability of the financial sector [19, 35]. At the same time, these qualitative characteristics are formed on the basis of aggregation of primary indicators, including those used in the first methodological approach. Thus, the second methodological approach uses a larger number of primary

indicators. However, increasing the number of primary indicators does not mean obtaining more objective results, since in practice researchers do not apply all, but only some of them. In addition, the use of a different set of these indicators can lead to opposite conclusions, as evidenced by the research results [26, 36].

The third methodological approach (systemic) has been formed relatively recently and uses the matrix of financial assets of countries to measure financial development [37]. A feature of this approach is:

• firstly, the use of official data on the amount of financial assets contained in the financial balance sheets of the System of National Accounts (SNA);

• secondly, the application of the algorithm for calculating indicators as the ratio of financial assets to the population of countries;

• thirdly, the complexity of the indicator system, covering the entire range of financial assets (instruments) and sectors of the economy;

• fourthly, the matrix form of the indicator system, allowing to take into account the interrelationship between the elements of the system of indicators.

Summarizing the results of the analysis of publications on the research topic, we can come to the following conclusions:

1. Quantitative and qualitative methodological approaches use primary indicators, which are diverse and grouped according to different criteria. At the same time, the primary indicators do not cover all segments (instruments) of the financial market and are not calculated for all sectors of the economy, but only for the sector of financial corporations. This makes the results of the analysis insufficiently informative;

2. In scientific research, as a rule, the analysis of the financial development of countries is carried out on the basis of the use of different sets of primary indicators. This leads to contradictory conclusions based on their results;

3. The third methodological approach (system) allows eliminating the disadvantages of the first two approaches. At the same time, this approach is based on the use of nominal value of

financial assets. The presence of an inflationary component in the values of financial assets reduces the accuracy in determining the level of financial development and the objectivity of the results of the comparative analysis of countries for this indicator.

All this indicates the need to search for new, more objective and informative indicators of financial development.

METHODOLOGY OF THE RESEARCH

The hypothesis of this study is that an objective and easy-to-use tool for analyzing and assessing the country's financial development is a matrix system of indicators that characterizes the value and dynamics of the real value of financial assets per capita. Its use allows to improve the quality of analysis and assessment of financial development, as well as forms a platform for making scientifically based and effective decisions in the development of the Main Directions of Financial Market Development.

The submitted system of indicators is formed on the basis of the matrix A:

$$A = (a_{ij}). \qquad (1)$$

Matrix A elements are financial assets classified by type of financial instrument (index i) and sector of the economy (index j) (*Table 1*).

The balance sheet data of the System of National Accounts (further — SNA) is used as a basis for the construction of matrix A. According to SNA[1], the matrix (a_{ij}) will have a dimension (8 x 5) and will reflect the distribution of financial assets across 8 types of financial instruments and 5 types of economic sectors.

In order to quantify the overall level of financial development (*IFD*) of countries, the elements of matrix A must be summed up and the resulted value divided by population and inflation rate (consume price index, CPI).

In general, the formula for calculating the level of financial development (*IFD*) as follows:

[1] System of National Accounts — SNA. 2008. European Commission, International Monetary Fund, Organization for Economic Cooperation and Development, United Nations, World Bank. URL: https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf (accessed on 11.05.2023).

$$IFD = (\sum_{i=1}^{8}\sum_{j=1}^{5} a_{ij})/(P \cdot I), \qquad (2)$$

where *IFD* — level of financial development, *P* — population, *I* — inflation (CPI).

The levels of development of individual segments of the financial sector can be calculated on the basis of two vector matrices (*IFD$_i$*, *IFD$_j$*) by formulas:

$$IFD_i = (\sum_{j=1}^{5} a_{ij})/(P \cdot I), i = 1\text{–}8, \qquad (3)$$

$$IFD_j = (\sum_{i=1}^{8} a_{ij})/(P \cdot I), j = 1\text{–}5. \qquad (4)$$

The indicators obtained according to the formulas (2–4) are used to determine the dynamics of financial development both in the country as a whole and in the context of segments (instruments) of the financial market and sectors of the economy. Analysis of the dynamics of indicators will allow to identify sources of growth and containment of financial development of the country and on their basis to determine promising directions of further financial development.

RESULTS

Testing of the proposed matrix system of financial development indicators was carried out in relation to the Russian Federation. Data for empirical research were taken from the information and statistical collection of the Bank of Russia[2].

On the basis of formulas (2–4), the levels and rates of financial development of the Russian Federation were calculated using nominal and real values of financial assets.

Fig. 1 shows the dynamics and trends of nominal and real financial assets per capita in the Russian Federation for the period 2013–2021.

By examining the charts in *Fig. 1*, the following main conclusions can be made:

• firstly, despite the synchronization of change, real per capita financial asset growth

[2] URL: https://cbr.ru/collection/collection/file/42179/sbornik_fa_2022–3_e.pdf (accessed on 11.05.2023).

Matrix Elements (A)

Sectors (*j*) / Instruments (*i*)	Non-financial corporations (1)	Financial corporations (2)	General government (3)	Households and NPISH (4)	Rest of the World (5)
Monetary gold and special rights of borrowing (1)	a_{11}	a_{12}	a_{13}	a_{14}	a_{15}
Cash currency and deposits (2)	a_{21}	a_{22}	a_{23}	a_{24}	a_{25}
Debt securities (3)	a_{31}	a_{32}	a_{33}	a_{34}	a_{35}
Credits and loans (4)	a_{41}	a_{42}	a_{43}	a_{44}	a_{45}
Shares and other forms of equity participation (5)	a_{51}	a_{52}	a_{53}	a_{54}	a_{55}
Insurance and pension reserves (6)	a_{61}	a_{62}	a_{63}	a_{64}	a_{65}
Derivatives and stock options for employees (7)	a_{71}	a_{72}	a_{73}	a_{74}	a_{75}
Account receivable (8)	a_{81}	a_{82}	a_{83}	a_{84}	a_{85}

Source: Authoring based on System of National Accounts. URL: https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf (accessed on 11.05.2023).

rates are lower than per capita nominal financial assets growth rates;

• secondly, despite the identical (descending) nature of trends, the decline in real per capita financial asset growth is slower than that of nominal financial assets growth;

• thirdly, the volatility of real per capita financial asset growth rates is less pronounced than that of nominal financial assets growth rates.

Fig. 2 shows the dynamics of the financial development of the sectors of the Russian economy: financial corporations (FCs), non-financial corporations (NFCs), government administration (G), households and non-profit organizations serving the household (HH&NPSHs), the rest of the world (W) for the period 2013–2021.

Graphical analysis of the dynamics of financial development of sectors of the Russian economy (*Fig. 2*) shows the following:

• firstly, the financial development of sectors of the economy is asynchronous;

• secondly, the following sectors are the drivers of the financial development of the Russian Federation: financial corporations, public administration, households and non-profit organizations serving households;

• thirdly, financial corporations, public administration and the rest of the world are most vulnerable to crisis phenomena;

• fourthly, from the point of view of financial development, the most promising sector of the Russian economy is the household sector and HH&NPSH, because it is less sensitive to crisis phenomena and more responsive to economic recovery.

Fig. 3 shows the dynamics of financial development of the financial corporations sector for the period 2013–2021 across its subsectors: banking system (BS), investment funds (IF), other financial institutions (FI),
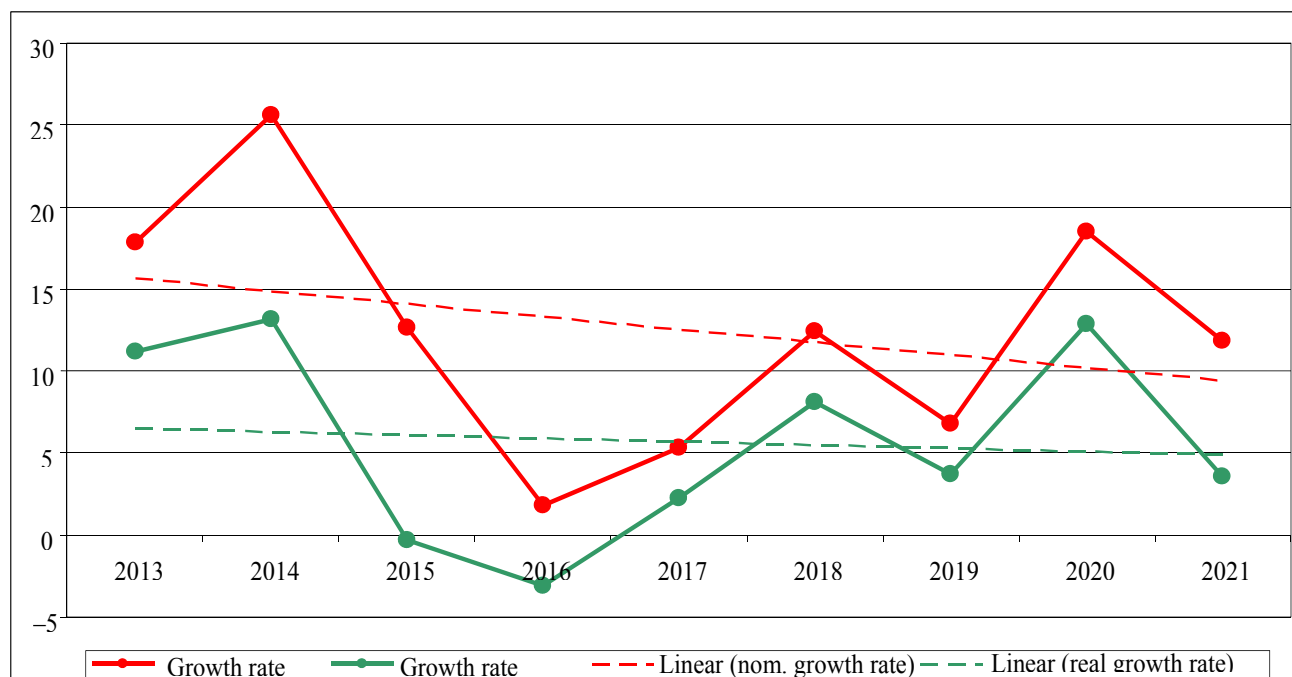
Fig. 1. **Growth Rates of Total Nominal and Real Financial Assets Per Capita in the Russian Federation for the Period 2013–2021, %**

Source: Author's calculations based on data from the Bank of Russia. URL: https://cbr.ru/collection/collection/file/42179/sbornik_fa_2022–3_e.pdf (accessed on 11.05.2023).

Fig. 2. **Growth Rate of Real Financial Assets Per Capita in the Russian Federation by Sector of the Economy for the Period 2013–2021, %**

Source: Author's calculations based on data from the Bank of Russia. URL: https://cbr.ru/collection/collection/file/42179/sbornik_fa_2022–3_e.pdf (accessed on 11.05.2023).
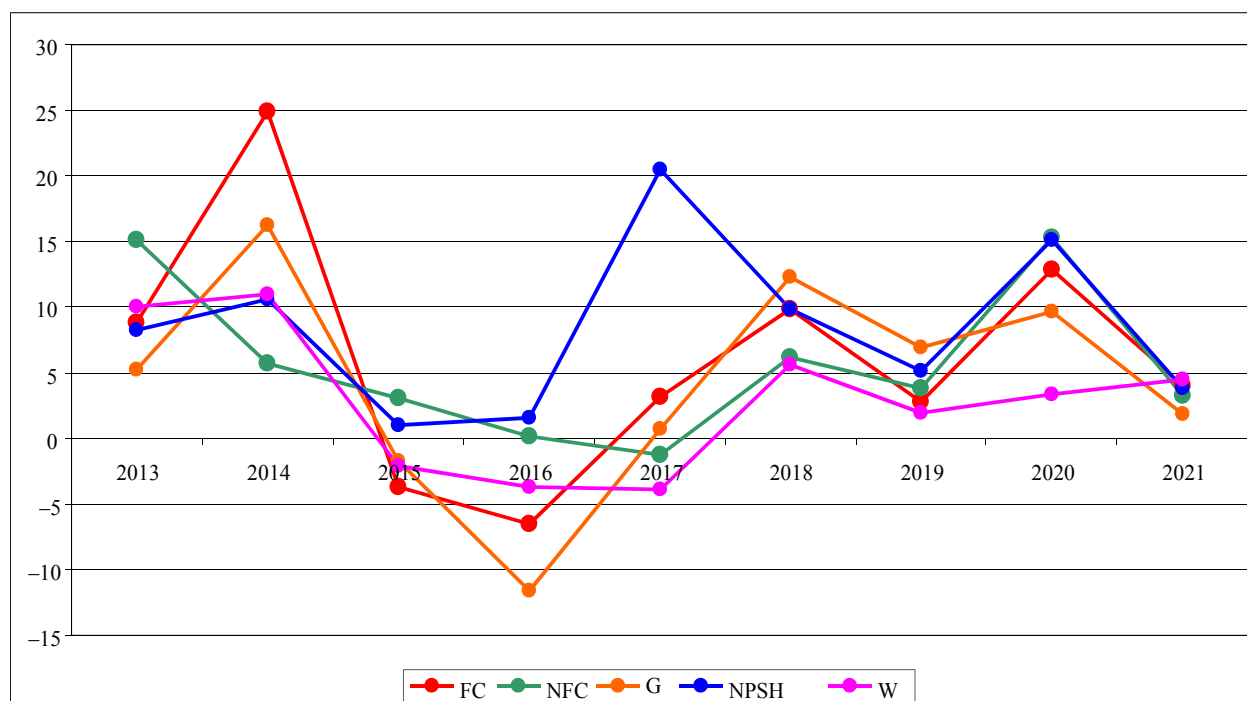
Fig. 3. **Growth Rate of Real Financial Assets Per Capita in the Sector of Financial Corporations of the Russian Federation by Sector of the Economy for the Period 2013–2021, %**

Source: Author's calculations based on data from the Bank of Russia. URL: https://cbr.ru/collection/collection/file/42179/sbornik_fa_2022–3_e.pdf (accessed on 11.05.2023).
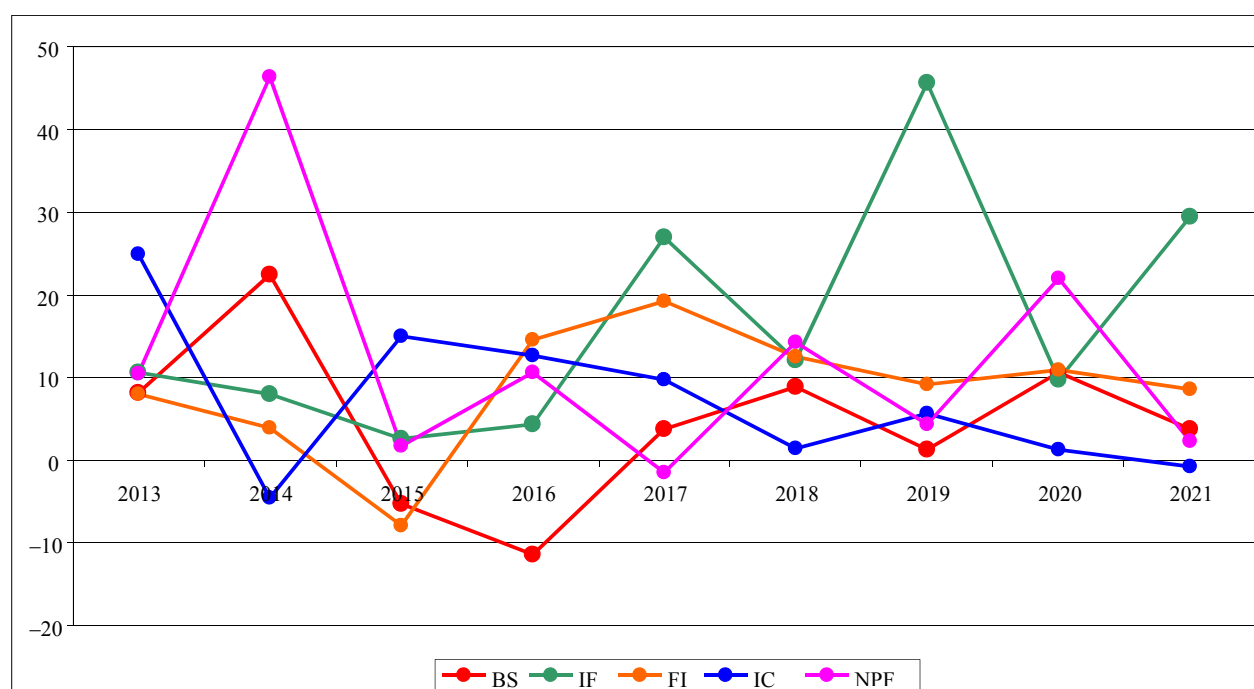
insurance companies (IC), non-governmental pension funds (NPF).

Graphical analysis of financial development of the financial corporation sector (*Fig. 3*) shows the following:

• presence of asynchronous financial development of the banking system, investment funds, other financial institutions, insurance companies and non-governmental pension funds;

• marked asymmetry in the financial development of the banking system and non-governmental pension funds;

• high sensitivity of the banking system and insurance companies to crisis phenomena;

• resilience to crisis phenomena and high growth rates in relatively favorable economic conditions of investment funds.

Based on the formula (2–4) the matrix of indicators of financial development of the Russian Federation in 2021 was calculated. The results of the calculation are presented in *Table 2*.

According to the analysis of *Table 2*, real financial assets per capita in the Russian Federation increased by 3.56% in 2021. This increase was achieved mainly by the "World" sector (4.51%) and the "Financial Corporations" sector (3.98%). In the period under review, instruments such as "Money gold and special rights of borrowing" (10.86%) and "Share and other forms of participation in capital" (6.49%) were most widely used. In addition, the maximum growth rate of financial development was shown by elements of the Matrix, such as "Money gold and special borrowing rights" of the "World" sector (188.73%) and "Accounts receivable" of "Households and NPSHs" sector (45.99%)

At the same time, analysis of *Table 2* data showed that in 2021 in the Russian Federation there was a decrease in the real value of debt securities per capita (–4.42%), insurance and pension reserves per capita (–0.64%). At the same time, the public administration sector (–50.67% and –38.03%, respectively) had the maximum decrease in the value of these financial instruments.

Given that the financial corporations sector is the most important player in the financial market,

Table 2

Matrix of Indicators of Financial Development of the Russian Federation in 2021, %

Sectors/Instruments	NFC	FC	GG	HH & HPISH	Domestic economy totals	RoW	Totals
Monetary gold and special rights of borrowing	0.00	0.88	0.00	0.00	0.88	188.73	10.86
Cash currency and deposits	10.27	14.74	4.43	−1.44	5.79	5.09	5.76
Debt securities	−46.47	−3.27	−50.67	14.21	−4.23	−9.52	−4.42
Credits and loans	−2.18	3.75	11.78	−7.84	3.03	−11.60	2.12
Shares and other forms of equity participation	1.98	10.91	−0.62	6.90	5.68	11.67	6.49
Insurance and pension reserves	21.61	−5.53	−38.03	−0.91	−0.68	3.80	−0.64
Accounts receivable	5.72	−5.37	7.41	45.99	3.33	11.35	3.42
Total financial assets	3.22	3.98	1.82	3.78	3.04	4.51	3.56

Source: Author's calculations based on data from the Bank of Russia. URL: https://cbr.ru/collection/collection/file/42179/sbornik_fa_2022–3_e.pdf (accessed on 11.05.2023).

the study calculated a matrix of indicators of its financial development in 2021 (*Table 3*).

The analysis of *Table 3* shows that investment funds (29.36%) and insurance companies (8.50%) were the most active among the institutional units. Loans and loans provided by insurance companies (134.61%) and shares and other forms of participation in capital by investment funds (47.19%) and insurance companies (30.64%) contributed the most to the financial development of the financial corporation sector. Among the instruments of the financial market, the most demanded were "Cash and deposits" (14.74%). At the same time, investment funds (19.38%) and other financial institutions (18.95%) primarily shaped the demand for these instruments.

Analysis of the data presented in *Table 3* also showed that non-governmental pension funds (−0.80%) had a negative impact on the financial development of the financial corporation sector, and that insurance and pension reserves (−5.53%) were the least demanded financial instruments by the finance corporations sector.

In general, the analysis of *Table 2* and *Table 3* data allowed identifying threats to the further financial development of the Russian Federation in the form of negative growth rates of individual elements of the Matrix of financial development indicators. The desire to address these threats, i.e. to ensure a positive dynamic of these elements, can be seen as promising directions of financial development in the near future. Based on this assumption, the role of priority directions in the further financial development of the Russian economy are claimed:

• growth of investment in debt securities — mainly from the non-financial corporate sector;

• to increase financial assets of the public administration sector mainly in the form of investments in debt securities, insurance and pension reserves;

• to increase the activity of financial corporations in the use of such an instrument as insurance and pension reserves.

DISCUSSION

As a result of the study, a system of indicators was developed to measure the financial development of countries, which is a modification of a similar indicator system proposed in previous studies

Matrix of Indicators of Financial Development of the Sector of Financial Corporations of the Russian Federation in 2021, %

Sectors/Instruments	BS	IF	FI	IC	NPF	Totals
Monetary gold and special rights of borrowing	0.88	0.00	0.00	0.00	0.00	0.88
Cash currency and deposits	14.90	19.38	18.95	2.49	−17.74	14.74
Debt securities	−4.88	−4.08	1.34	10.18	2.14	−3.27
Credits and loans	4.61	11.38	−1.66	134.61	0.00	3.75
Shares and other forms of equity participation	2.97	47.19	9.00	30.64	−7.04	10.91
Insurance and pension reserves	−17.05	0.00	−27.70	8.36	0.00	−5.53
Accounts receivable	−2.19	26.20	−7.50	−4.41	−17.37	−5.37
Total financial assets	3.84	29.36	2.28	8.50	−0.80	3.98

Source: Author's calculations based on data from the Bank of Russia. URL: https://cbr.ru/collection/collection/file/42179/sbornik_fa_2022–3_e.pdf (accessed on 11.05.2023).

Note: BS — bank system; IF — investment funds; FI — financial institutions; IC — insurance companies; NPF — non-state pension funds.

[37]. The essence of this modification is to replace the nominal value of financial assets with their real value, as well as to use the dynamics of the real value of financial assets, both across the country as a whole and across financial market segments and sectors of the economy. The advantage of the modified system of indicators is that it improves the objectivity of the results of the analysis and evaluation of the level of financial development.

In assessing the significance of the study, it is necessary to pay attention to the following. In the study, the consumer price index was used as an indicator of inflation. With all the advantages of this indicator (data availability and weekly update), it does not fully characterize the overall inflation rate in the country. There is therefore a need to use a more accurate price growth indicator that takes account of the inflation rate for a wider range of goods and services, or to develop a new specific indicator. Furthermore, the feature of the study is to analyze the dynamics of financial development of only one country. Equally, interesting results, we believe, can be obtained from analyzing the dynamic ranks of real per capita financial assets

in other countries. We consider that this direction is promising in terms of further research and use of their results for cross-country comparisons.

CONCLUSION

The purpose of the study was to develop a system of indicators to measure the level and dynamics of financial development of countries, the use of which will increase the effectiveness of government decisions in the field of finance.

The results of the study developed a matrix system of indicators to measure the level and dynamics of financial development of countries. The developed matrix system of indicators reflects the real value of financial assets per capita, which distinguishes it from previous studies and increases the objectivity of the results of analysis and evaluation.

The developed indicator system was tested on data for the Russian Federation for the period 2013–2021. The results of the testing allowed us to identify features of the dynamics of financial development of the Russian Federation, as well as asynchrony and asymmetry in financial development segments of the financial market

and sectors of the economy. The results showed that in the Russian Federation in 2021, compared to 2020, real financial assets per capita grew by 3.56%, mainly due to the sectors "World" (4.51%) and "Financial Corporations" (3.98%), as well as the active use of instruments such as "Money gold and special rights of borrowing" (10.86%) and "Shares and other forms of participation in capital" (6.49%). At the same time, the deterrent effect of financial development was most evident in relation to debt securities per capita (−4.42%) and insurance and pension reserves per capita (−0.64%). The public administration had the greatest reduction in the cost of these financial instruments.

An analysis of the financial development of the financial corporation sector showed that among the institutional units, investment funds (29.36%) and insurance companies (8.50%) demonstrated the financial activity. Among the financial market instruments, "Cash currency and deposits" (14.74%) were the most demanded. Furthermore, non-governmental pension funds (−0.80%) had a negative impact on the financial development of the financial corporation sector, while insurance and pension reserves (−5.53%) were the least demanded financial instruments by the financial corporation sector.

The results of the testing also allowed us to determine the prospective directions for further financial development of the Russian Federation:

• growth of investment in debt securities — mainly from the non-financial corporate sector;

• increase in the financial assets of the public administration sector, mainly in the form of investments in debt securities, insurance and pension reserves;

• increase the activity of financial corporations in the use of such instrument as insurance and pension reserves.

In general, testing of the developed indicator system confirmed that its use would improve the complexity and quality of analysis and evaluation of financial development, as well as ensure the adoption of scientifically based and effective decisions in the development of government strategic documents.

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