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Russia's Payment System in the New Geopolitical and Economic Conditions: Problems and Prospects

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Abstract. Taking into account an unprecedented number and quality of packages of external restrictive measures introduced against the financial and real sectors of the Russian economy, the mechanism for ensuring sustainable development of the national economy obviously needs comprehensive adjustment, from the point of view of updating priorities, and from the standpoint of monitoring the level of compliance and adaptation to the emerging challenges. Among the most sensitive restrictions, as envisioned by their initiators, are measures against the Russian financial sector, primarily the payment system and infrastructure. The article presents the results of analyzing the effectiveness of the national payment system in modern conditions. We highlight emerging trends in the activities of payment agents and payment system operators and substantiate promising directions for the development of the national payment infrastructure. The aim of the study is to determine the degree of influence of current challenges and threats on the efficiency and effectiveness of the national payment system. The novelty of the research

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is associated with the influence of unique external conditions that affect the functioning of the object of research. The set of indicators proposed in the work to assess the effectiveness of the national payment system allows for the system-wide integration of the most important aspects of the changes taking place in the infrastructure of payment systems. The results of the analysis confirm the need for the Bank of Russia to take and implement preventive decisions and introduce infrastructural changes to the operation of the national payment system in the context of escalating external restrictions. The conclusions of the study contain specific measures aimed at improving approaches to determining the effectiveness of the national payment system operators. Our key recommendation is to increase attention to the issues of priority development of payment turnover based on the implementation of innovation technologies and products, comprehensive infrastructure renovation, countering risks and threats in the policy of the Bank of Russia.

Key words: national payment system, efficiency of functioning of the payment system, payment infrastructure.

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Introduction

The payment system plays a decisive role in ensuring a reliable, uninterrupted, technological and efficient flow of money and financial flows in the economy in the context of enormous, in fact, unprecedented challenges and diverse impacts of trade restrictions and financial restraints on the national economy. It is obvious that participants of the payment market are forced to carry out activities in a state of permanent monitoring, technological and institutional transformation, system regulation, adaptation of economic entities to the changes, occurring in the national economic mechanism and in the external geo-economic and political contour (Orlov, 2022). For the purposes of monitoring, a set of indicators is needed, which would allow tracking institutional infrastructure changes, occurring in the national payment system (hereinafter – the NPS). Under conditions of growing threats, when an unprecedented number of multidirectional restrictions are acting on the economy and financial system of the Russian Federation, it is extremely important to choose the right priorities, to set the accents, to determine the ways for development of the NPS, and to develop monitoring mechanisms that help to permanently monitor the effectiveness of the decisions made and the transformations implemented.

At a time of financial, information, technological, material, human and other resource restrictions, the largest companies and banks with a developed customer base have to rely on the implementation of the most modern organizational and technological systems, the development of production links, implemented in the form of ecosystem projects, offering an expanded list of various project solutions, including offers for the development and implementation of the specified transformation in order to maintain competitiveness. As a consequence, in some segments of the payment system of the RF at the moment there is a high level of concentration according to international criteria, as a result of

which several leading players (Sber, VTB, Tinkoff, Yandex, MTS) occupy a dominant position. In addition, in the NPS for obvious, quite objective reasons, the requirements for ensuring economic, primarily information, security have increased repeatedly.

Currently, the participants of the payment market have recorded a number of very significant challenges, listed below, in relation to ensuring the performance and efficiency of the payment infrastructure:

– expansion of opportunities for settlements in digital currencies, requiring the implementation of institutional changes, transformation and additional technological adjustments in the work of the national payment system;

– achievement by the "Mir" payment system of a unique, in fact monopolistic, position on the national market of payment systems;

– refusal of a number of foreign market participants to cooperate with the "Mir" payment system due to the fear of secondary sanctions from the USA, which makes it extremely difficult for Russians to make payments in foreign countries;

– updating the requirements and protocols of the pan-European payment system, which complicates the communication of Russian counterparties in payments with Western partners (De Portu, 2022).

The aim of the work is to study the issues of improving the efficiency of the national payment system in the face of modern challenges and threats.

The objectives of the study are to analyze the dynamics of changes in the quantitative parameters of the operation of payment infrastructure used to monitor the state of the NPS, to identify trends in the functioning of the national payment system, to develop priority proposals aimed at developing the NPS, the implementation of effective innovative approaches to successfully counteract modern challenges and threats.

The scientific novelty of the results is to develop a system of indicators to determine the level of the NPS efficiency to make management decisions to improve the payment infrastructure in the unique conditions that have a significant impact on the functioning of the object of research.

Literature review

Theoretical approaches to determining the effectiveness of the NPS are presented in the publications of Russian and foreign economists, such as E.P. Bondarovich, V.V. Kuznetsov, E.S. Ulanov, N.A. Markova, K.A. Prozorovskii, S.V. Vorontsova, O.M. Korobeinikova, L.V. Popova, E.S. Shemet, R.M. Kadraliev, etc. These authors mainly use approaches based on the comparison of macroeconomic indicators, on the analysis of financial stability parameters and financial performance of payment system participants (operators) based on the assessment of innovativeness of technologies used (digitalization factor), but also approaches based on risk assessment.

The developed methods for assessing the performance of payment systems are proposed to include indicators of NPS operators' financial stability and financial results of their activities (Bondarovich, Zhilkina, 2019; De Portu, 2022), speed and volume of funds circulating in the NPS, methodological support, development of private sector payments (Bondarovich, 2019; Bondarovich, 2021; Markova, Prozorovskii, 2020; Ulanova, 2020; Ulanova, Popkov, 2020), the level of payment transactions digitalization, and also to use for these purposes the digitalization coefficient, which characterizes the degree of penetration of electronic technologies in the process of payment transactions, defined as the proportion of the transactions volume performed electronically to the total volume of performed transactions (Vorontsova, 2020; Kadraliev, 2017; Korobeinikova, 2012; Kuznetsov, 2020; Popova et al. , 2017). With the development of digital settlements, some of these

indicators are losing their importance; the stability and "seamlessness" of payments, reducing their cost by reducing the number of intermediaries come first on this criterion.

Foreign experts Mukesh Srivastava, Sandhya Sinha and Rakesh Pratap Singh studied approaches to assessing the performance of Internet payment systems (Srivastava et al., 2023). In Russia these payment systems are an integral part of the NPS. Risto Gogoski analyzed the development of payment systems in international settlements, revealed the key components of the effective work of payment operators (Gogoski, 2012). Scientists have described the prospects for improving the national payment system on the example of China, identified the priority elements of infrastructure to maintain performance in order to ensure efficiency at a competitive level in comparison with international payment systems operating in the world market (Liu Shao Xiong, 2023; Li, 2021; Mu, Lee, 2017; Zhu Xuefeng, 2015).

Experience in the development of European and Asian payment systems is difficult to correlate with the current conditions of the Russian NPS, as a similar experience of forced autarchy of the payment system have only a few countries in the world, not comparable in the scale of the served economy, such as Iran and North Korea.

The acceleration of ongoing changes is reflected in the large number of various innovative ideas and proposals, discussed in the professional banking community in a very wide range of functioning of the payment sphere, from the adjustment of the NPS development strategy targets to the introduction of the digital ruble[1].

A special place in the discussion is taken by the introduction of regulations, such as Open Banking in relation to the Russian market, and also the use of the standard ISO 20022 integrated into domestic realities for the national payment instrument faster payment system (FPS). Transition to new international standards in payments, such as ISO 20022, allows us to use only financial messages in a transaction, which helps to reduce the duration of funds transfer processes to a few seconds; to clear transactions without waiting for the time cut-off[2].

Despite the existence of a significant number of publications containing diverse thematic reviews on the results of the payment systems performance, the current challenges and threats require significantly more attention to studying the issues, and also to finding solutions related to the improvement of the NPS efficiency evaluation methodology and identifying promising areas for its development.

Methods

The methodological basis of the study consisted of formal logic, methods of historical, statistical and comparative analysis, systematization, classification, grouping, content analysis, economic-statistical and economic-mathematical methods, graph theory, etc.

Results of the study

Payment systems are a mechanism for processing and conducting monetary settlements, serving the movement of gross domestic product in the national economy. It should be noted that the predominant part of settlements (about 80% of all payments) is made in noncash form. In this case, the value and dynamics of the indicator are,

[1] Strategy for the development of the national payment system for 2021–2023. (2021). Central Bank of the RF. Moscow. Available at: https://www.cbr.ru/Content/Document/File/120210/strategy_ nps_2021-2023.pdf

[2] Concept of implementation of open API on the financial market of the Central Bank of the RF, 2023, ISO 20022 Message Definitions Universal financial industry message scheme 2021.

according to experts, a key indicator of changes in the level of confidence of payment agents in the national payment system. Summarizing the results of the analysis, when developing a methodology for assessing the effectiveness of the NPS functioning, we propose to use the following indicators as a priority:

– dynamics of changes in the share of the noncash component in the structure of the money supply (M2 aggregate);

– dynamics of the money transfer volume through the NPS in relation to the dynamics of the country's GDP indicator values;

– indicators dynamics of the NPS use by paying agents and assessment of emerging trends.

As a separate direction, the task of determining the impact of external challenges and threats to the stability of the indicators dynamics that characterize the effectiveness of the NPS is formulated.

In the dynamic series of indicators presented in *Table 1*, there are quite significant changes in the structure of money supply in the period from January 1, 2020 to January 1, 2023, the amplitude and duration of which are determined by the impact of, respectively, the pandemic and geopolitical events that occurred during the specified time frame. External challenges triggered a short-term decline in the share of noncash settlements from 81.3% to 75.12%. At the same time, the return to the initial level was recorded already as of January 01, 2023 (the value of the indicator amounted to 81.26%), which evidences the stability of the NPS and effective management of activities.

According to E.S. Ulanova (Ulanova, 2020), the value of the NPS efficiency factor should be calculated as the ratio of the quantitative value of the volume of all transactions in the NPS for the analyzed period of time to the value of the

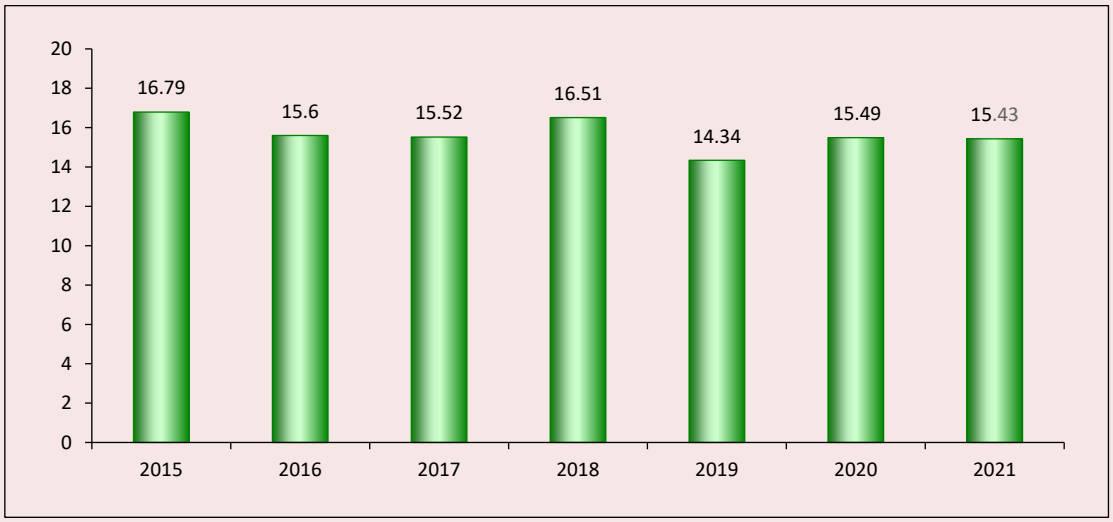
Table 1. Money supply structure, %

Money supply (M2)	January 1, 2018	January 1, 2019	January 1, 2020	January 1, 2021	January 1, 2022	January 1, 2023
Cash in circulation	19.9	19.8	18.7	21.4	24.88	18.73
Noncash funds	80.1	80.2	81.3	78.6	75.12	81.26
According to: Money supply (national definition). Central Bank of Russian Federation. 2023. Available at: https://www.cbr.ru/statistics/ms/ (accessed: March 5, 2023).						

Table 2. Calculation of the NPS efficiency coefficient (CNP_s)

Year	Volume of money transfers through the Bank of Russia payment system, billion rubles	Volume of GDP, billion rubles	NPS efficiency coefficient, turnovers per year	Chain growth rates of C_{NPS}
2022	X	151 455.6	X	X
2021	2 018 178.6	130 800.0	15.43	1.00
2020	1 657 584.7	106 967.5	15.49	1.08
2019	1 566 461.4	109 241.5	14.34	0.87
2018	1 715 133.0	103 861.7	16.51	1.06
2017	1 440 878.1	92 843.0	15.52	0.99
2016	1 340 034.2	85 880.6	15.60	0.93
2015	1 356 543.2	80 804.3	16.79	–
According to: Money supply (national definition). Central Bank of Russian Federation. 2023. Available at: https://www.cbr.ru/statistics/ms/ (accessed: March 5, 2023); Rosstat presents the first estimate of GDP for 2022. Federal State Statistics Service. Available at: rosstat.gov.ru/folder/313/document/198546#~:text=Номинальный%20объем%20ВВП%20в%202022,дефлятор%20–%20114%2C3%25 (accessed: March 9, 2023).				

Figure 1. Dynamics of the NPS efficiency coefficient, turnovers per year



Source: own compilation.

gross domestic product indicator. The analysis of settlements in this work is based solely on noncash turnover, because its speed in modern conditions is many times greater than cash circulation, in addition, more complex management models are used for cash circulation *(Tab. 2)*.

The dynamics of the NPS efficiency coefficient *(Fig. 1)* is characterized by a slowdown in the turnover of financial resources of paying agents. According to E.S. Ulanova, "the coefficient allows us to estimate how many times the NPS of the country could provide the reproduction cycle equal to the size of GDP. In a general economic sense, the indicator allows us to analyze the ability of the NPS to provide the volume of gross domestic product produced in the country with payments, and the higher the coefficient, the more accelerated the turnover of financial resources involved in the production of GDP" (Ulanova, 2020).

Based on these results, the conclusion is that the NPS efficiency coefficient, despite the fact that there is no stable growth dynamics in periods of increasing external threats, nevertheless has the ability to accelerate recovery. As follows from the given data, after the events of 2014 the recovery of the coefficient value to the level of one occurred within two years; after 2019 the recovery took about a year and subsequently the indicator value did not reach the unit level (see Tab. 2). Thus, the timing for the recovery the dynamics of the rate of change in the efficiency factor in the period after the introduction of sanctions in 2022 was in the minimum time range (from one to two years).

During the analyzed period, significant infrastructural changes were introduced in the work of the NPS, the evaluation of the effectiveness of the transformations is presented in the form of data comparison on the dynamics of payments and the number of participants in the payment system.

To achieve comparability of data, the following indicators were selected for use *(Tab. 3)*:

– number and volume of money transfers per one credit institution – the NPS operator;

– number and volume of money transfers per customer – the NPS payment agent.

Table 3. Estimated performance indicators of the NPS infrastructure and its forecast values for 2022 and 2023

Indicator	2015	2016	2017	2018	2019	2020	2021	2022 forecast	2023 forecast
Number of money transfers per operator, million units	1.625	1.934	2.271	2.726	3.185	3.643	6.224	7.385	9.315
Volume of money transfers per NPS operator, billion rubles	1403.8	1745.1	2085.8	2763.5	2836.4	3281.7	4464.7	4512.5	4977.1
Number of money transfers per one customer, million units	0.334	0.397	0.496	0.655	0.794	0.905	1.743	1,809	2,33
Volume of money transfers per customer, billion rubles	288.99	358.11	455.14	663.75	706.71	815.42	1278.11	1242.87	1390.50

According to: Statistics of the national payment system. Central Bank of Russian Federation. 2023; Money supply (national definition). Central Bank of Russian Federation. 2023. Available at: https://www.cbr.ru/PSystem/statistics/ (accessed: March 9, 2023).

The forecast of the estimated indicators is based on the use of trend models *(Fig. 2–5)*. The high degree of reliability of the obtained statistical dependencies is a criterion for stability and growth of the NPS efficiency, and the increasing rate of growth, even if they are adjusted due to the adverse effects of external and internal threats, maintains a positive trend.

Significant increase in the number of money transfer operations in relation to the number of credit institutions, defined in the trend, indicates the sustainability and effectiveness of the institutional mechanisms of the NPS.

Based on the analysis of the data in Table 3, we conclude that there is a downward trend in the number of the NPS operators, caused by the reduction in the total number of payment systems and credit institutions due to the decision taken by the regulator (according to the Central Bank of the RF, there was a two-fold decrease in the indicator

Figure 2. Trend of the number of money transfers per the NPS operator, million units

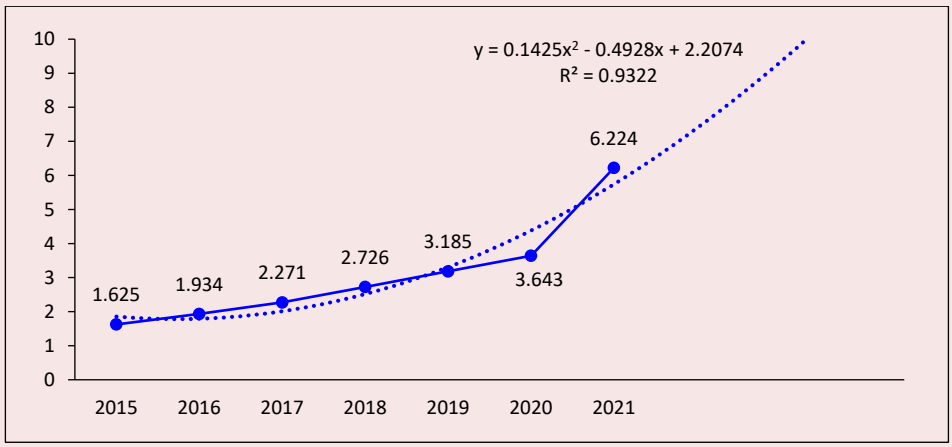


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Figure 3. Trend in the volume of money transfers per the NPS operator, billion rubles

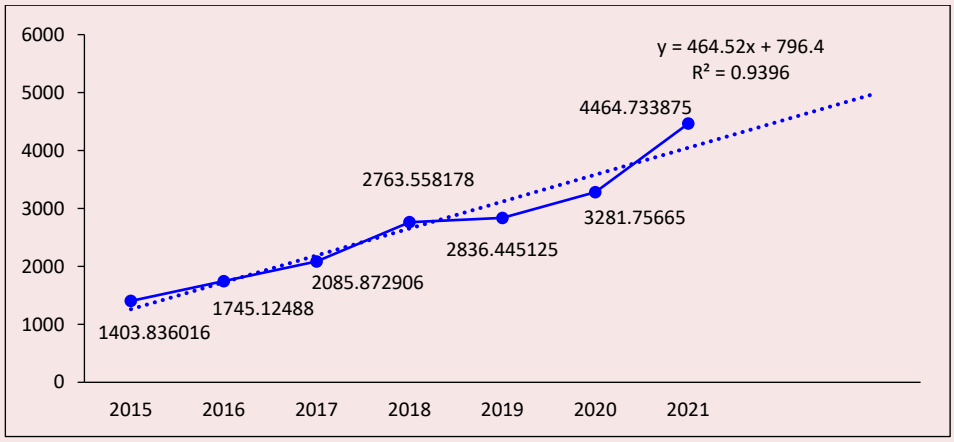

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Figure 4. Trend in the number of money transfers per customer, million units

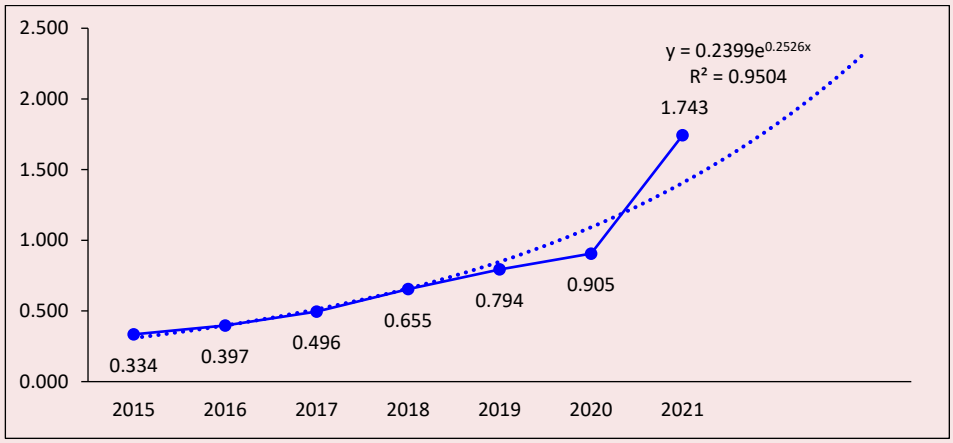

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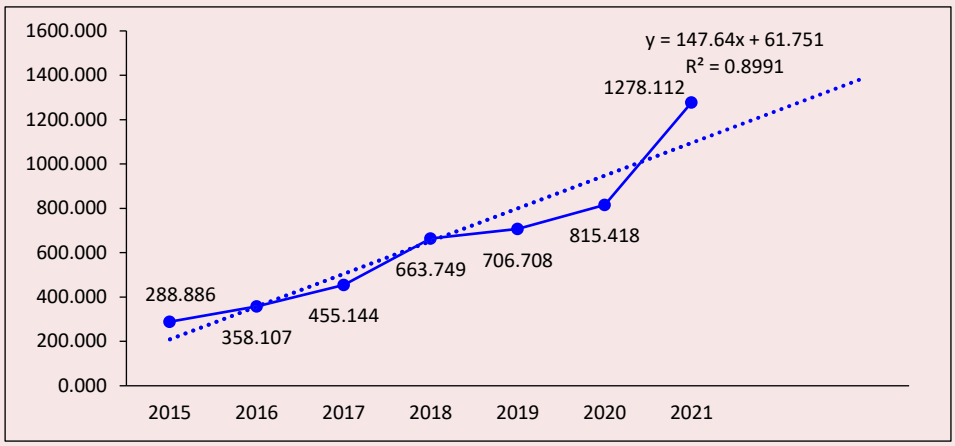
Figure 5. Trend in the volume of money transfers per customer, billion rubles



Source: own compilation.

during the study period), and the outpacing growth of the number of transfers of payment agents (according to the Central Bank of the RF, there was a four-fold increase during the period under study).

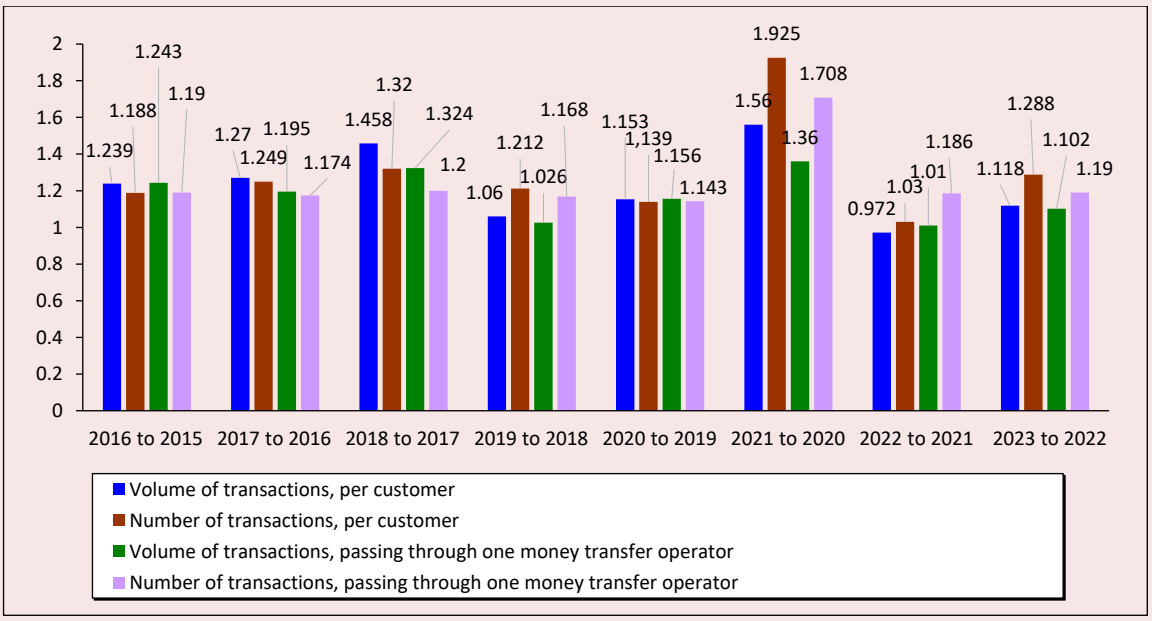
The level of workload of the NPS operators in these conditions remains the same and even grows, which is confirmed by the data of the trend model built (see Fig. 2, 3) and the forecast calculations made on the basis of the model.

We should note that the line of quantitative characteristics is described and obeys the exponential dependence, and the trend, corresponding to the dynamics of changes in volume indicators, is described by a linear function. Thus, the results of the analysis allow us to state the formation and gradual development of the trend of slowing cash turnover. The dynamics of the growth rates of the above estimated indicators *(Tab. 4)* confirm the above trend.

Table 4. Growth rate of the estimated performance indicators of the NPS infrastructure, shares of unit

Name/period	2016 to 2015	2017 to 2016	2018 to 2017	2019 to 2018	2020 to 2019	2021 to 2020	2022 to 2021 (forecast)	2023 to 2022 (forecast)
Growth rate of money transfers per the NPS operator	1.243	1.195	1.324	1.026	1.156	1.360	1.010	1.102
Growth rate of the number of money transfers per the NPS operator	1.190	1.174	1.200	1.168	1.143	1.708	1.186	1.190
Growth rate of money transfers volume per customer	1.239	1.270	1.458	1.06	1.153	1.56	0.972	1.118
Growth rate of money transfers number per customer	1.188	1.249	1.320	1.212	1.139	1.925	1.03	1.288
According to: Statistics of the national payment system. Central Bank of Russian Federation. 2023. Money supply (national definition). Central Bank of Russian Federation. 2023. Available at: https://www.cbr.ru/PSystem/statistics/ (accessed: March 9, 2023).								

Figure 6. Chain rates of change in the estimated performance indicators of the NPS infrastructure



Source: own compilation.

The data presented in *Figure 6* shows, that significant increases in the efficiency of operators and payment agents were observed in 2021. Until 2021, the number and volume of money transfers varied almost equally. During the crisis periods, including the period starting from 2021, in the short-term forecast, the quantitative values of payment transactions outstripped the volume indicators.

Summarizing the above, let us cite the opinion of D. Tut (Tut, 2023), who recorded a significant increase in the intensity of online payments in the "pandemic" years and the "post-pandemic" period, which confirms the validity of our conclusions regarding the anomalous changes that have occurred, expressed in a sharp increase in the number of transactions made by customer.

Conclusion

Based on the results of the analysis of the NPS functioning efficiency, we concluded that the current situation due to increased geopolitical pressure on the Russian Federation and financial constraints has not practically affected the dynamics of key performance indicators of the NPS: both the system as a whole and individual operators and payment agents. This fact indicates, that the anti-crisis measures taken by the Bank of Russia to regulate the market of payment services were quite effective and maintain a positive impact on the positive trend in the development of the Russian NPS in the forecast period of time.

Under the conditions of increasing external restrictions, the national payment system in general successfully adapts to the current situation, acquires additional qualities and is characterized by stable share of noncash money turnover in the structure of payments and settlements; growing load on the NPS operators; stable growth of quantitative and volume characteristics of customer payments; accelerated development of national payment instruments (for example, the "Mir" payment card), which has a positive effect on the country's economy.

Analysis and forecasts of the state of the NPS infrastructure revealed a number of negative moments: the slowdown of the turnover of financial resources of payment agents; lack of necessary conditions for market competition among the existing payment systems.

We suggest the following solutions to overcome the negative trends.

1. Implementation of measures to strengthen the confidence of payment agents in the national noncash payment instruments, expanding the list of national payment instruments – payment cards, improvement and development of the NPS services using distributed ledger technology (smart contracts, marking payments). Also accelerating the introduction and use of digital ruble, including the implementation of settlements in public finance, which will increase the targeting of targeted budget payments, simplify the procedure for administration and calculation of smart contracts for private businesses and payments of the population, which contributes to the efficiency of cross-border payments and settlements through further integration with similar digital currency platforms of other countries' central banks[3].

For the successful implementation of the digital ruble project, the functioning of the former payment systems is not necessary, because as a technology for the implementation of the digital ruble is supposed to use open bank APIs and distributed ledgers, which implies the distribution of a trusted environment among the connected operators. The creation of the digital ruble infrastructure will increase the

[3] Decentralized Finance. (2022). Central Bank of the RF. Moscow; The Concept of the Digital Ruble. (2021). Central Bank of the RF. Available at: https://www.cbr.ru/Content/Document/File/120075/concept_08042021.pdf

smoothness and reliability of the payment system and reduce the number of intermediary operators in the payment chain. In the context of the above, the structure of the national payment system must be largely transformed. Since the activities of retail payment systems are carried out in a highly competitive market, as a consequence, there may be a real threat of reducing the share of operators in the payment services market, which stimulates the improvement of quality and reduce the cost of services for end consumers – individuals and legal entities. The NPS operators will continue to perform the function of storing and processing information, tariffing transactions and in the case of the introduction of digital ruble.

2. To maintain the level of competition in the payment services market, the relevant systems of Sberbank, VTB and other major payment agents should support the promotion of innovative payment services and technologies. Overcoming the monopoly position of the "Mir" payment system is one of the key strategic problems, the solution of which will help to increase the effectiveness of the NPS.

To overcome monopolistic trends in the financial market, it is necessary to increase the number of payment systems operating within the NPS. In the context of the above, the Central Bank of the Russian Federation must take the necessary measures to stabilize the financial market, promote the registration of newly introduced payment systems, and develop existing services, which in the future will lead to the emergence and increase the number of systems – competitors of the "Mir" payment system.

3. In order to maintain high rates of development, the "Mir" payment system should be reoriented to the segment of economic agents with high- and middle-income levels. One of the directions of creating innovative payment instruments is to improve the services of investment orientation, capable to attract additional financial resources to the national economy.

References

Bondarovich E.P. (2019). The Bank of Russia and the payment system. In: *Finansovyi neofuturizm – 100 let teorii i praktiki upravleniya: mat-ly 9-i mezhdunar. nauch.-prakt. konf.* [Financial Neofuturism – 100 Years of Management Theory and Practice: Proceedings of the 9th International Scientific and Practical Conference]. Moscow: State University of Management. Available at: https://www.elibrary.ru/item.asp?id=42470493&ysclid=lff51ie341854848596 (accessed: January 23, 2023, in Russian).

Bondarovich E.P. (2021). Development of national segments of payment systems. In: *Sbornik statei VIII Vserossiiskoi nauchnoi konferentsii. K 90-letiyu akademika RAN D.S. L'vova* [Proceedings of the 8th All-Russian Scientific Conference. To the 90th anniversary of RAS academician D.S. Lvov]. Available at: https://elibrary.ru/item.asp?id=48709742 (accessed: January 23, 2023, in Russian).

Bondarovich E.P., Zhilkina A.N. (2019). Financial stability as a basis for economic growth (on the example of payment system operators, finance and trade organizations). *Ekonomika i predprinimatel'stvo=Journal of Economy and Entrepreneurship*, 107. Available at: https://www.elibrary.ru/item.asp?id=41199444&ysclid=lff52dxifj117786583 (accessed: January 23, 2023, in Russian).

De Portu T. (2022). New trends in retail payments: How technological changes are reshaping the payments system. Introducing a proposal for a new pan-European instant payment system. *Latin American Journal of Central Banking*, 3(4). DOI: https://doi.org/10.1016/j.latcb.2022.100075 (accessed: January 23, 2023).

Gogoski R. (2012). Payment system in economy – present end future tendencies. *Procedia – Social and Behavioral Sciences,* 44, 436–445. DOI: https://doi.org/10.1016/j.sbspro.2012.05.048 (accessed: March 23, 2023).

Kadraliev R.M. (2017). The role of the national payment system in the country's economy and the current state of the Russian national payment system. In: *Aktual'nye voprosy sovremennoi ekonomicheskoi nauki: mat-ly VII*

mezhdunarodnoi nauchnoi konferentsii [Current Issues of Modern Economic Science: Proceedings of the 7th International Scientific Conference]. Astrakhan: Astrakhan State University. Available at: https://elibrary.ru/item.asp?id=32552068 (accessed: March 23, 2023, in Russian).

Korobeinikova O.M. (2012). Russia's attempts to set up a nationwide payment system for financial institutions. *Ekonomika i upravleniye=Economics and Management*, 11(85), 118–124. Available at: https://www.elibrary.ru/item.asp?id=18206925 (accessed: March 19, 2023, in Russian).

Kuznetsov V.V. (2020). Competitiveness of the payment card segment in the national payment system under conditions of digitalization. *Bankovskoe delo*, 2, 37–41. Available at: https://www.elibrary.ru/item.asp?id=42377853&ysclid=lff4xculni270214622 (accessed: January 23, 2023, in Russian).

Li S. (2021). Research on the design of electronic payment system of financial company. In: *2nd International Conference on E-Commerce and Internet Technology (ECIT)*. DOI: 10.1109/ECIT52743.2021.00027 (accessed: March 23, 2023)

Liu Shao Xiong, Tuyatsetseg Badarch (2023). Research on designs of modern payment system in China. *American Journal of Computer Science and Technology*, 6(1), 10–19. DOI: https://www.sciencepublishinggroup.com/journal/paperinfo?journalid=303&doi=10.11648/j.ajcst.20230601.12 (accessed: March 23, 2023).

Markova N.A., Prozorovskii K.A. (2020). Tendencies of development and improvement of national payment system of the Russian Federation. In: *Sbornik trudov konferentsii problemy ispol'zovaniya i innovatsionnogo razvitiya vnutrennikh vodnykh putei v basseinakh velikikh rek* [Proceedings of the Conference on the Problems of Use and Innovative Development of Inland Waterways in the Great River Basins]. Available at: https://www.elibrary.ru/item.asp?id=44631720 (accessed: February 28, 2023, in Russian).

Mu H.-L., Lee Y.-C. (2017). Examining the influencing factors of third-party mobile payment adoption: A comparative study of Alipay and WeChat Pay. *The Journal of Information Systems*, 26(4), 247–284. DOI: https://doi.org/10.5859/KAIS.2017.26.4.247 (accessed: March 23, 2023).

Orlov S.N. (2022). Russia and global challenges: Trends, regulation and adaptation of the national economy. *Nauchnye trudy Vol'nogo ekonomicheskogo obshchestva Rossii=Scientific Works of the Free Economic Society of Russia*, 236, 121–148. DOI: 10.38197/2072–2060-2022-236-4-121-148 (in Russian).

Popova L.V., Korobeinikova O.M., Korobeinikov D.A., Shemet E.S. (2017). The evolution of payment systems in Russia. *Finansy i kredit=Finance and Credit*, 23(24), 1396–1409. Available at: https://cyberleninka.ru/article/n/evolyutsiya-platezhnyh-sistem-v-rossii/viewer (accessed: March 23, 2023, in Russian).

Srivastava M., Sandhya S., Rakesh P.S. (2023). Perception towards e-payment system: Impact and considerations. *Journal of Emerging Technologies and Innovative Research*, 9(6), 782–789. DOI: researchgate.net/publication/368654746_Perception_Towards_E-Payment_System_Impact_and_Considerations (accessed: March 23, 2023).

Tut D. (2023). Fintech and the COVID-19 pandemic: Evidence from electronic payment system. *Emerging Markets Review*, 54. DOI: https://doi.org/10.1016/j.ememar.2023.100999 (accessed: March 23, 2023).

Ulanova E.S. (2020). Progressive payment systems: Concept, requirements, trends. *Azimut nauchnykh issledovanii: ekonomika i upravlenie=Azimuth of Scientific Research: Economics and Administration*, 8, 3(28). Available at: https://cyberleninka.ru/article/n/sovremennye-platezhnye-sistemy-ponyatie-trebovaniya-tendentsii (accessed: February 12, 2023, in Russian).

Ulanova E.S. Popkov S.Yu. (2020). Principles and strategy as tools for sustainable development of the national payment system. *Problemy ekonomicheskoi i yuridicheskoi praktiki=Economic Problems and Legal Practice*, 16(5), 96–100. Available at: https://www.elibrary.ru/item.asp?id=44212632&ysclid=lff54bu5vj184451402 (accessed: February 12, 2023, in Russian).

Vorontsova S.V. (2020). The national payment system as a key element of the monetary policy of the state. *Vestnik Moskovskogo gumanitarno-ekonomicheskogo instituta=Vestnik MHEI*, 1, 84–92. Available at: https://www.elibrary.ru/item.asp?id=42661806 (accessed: March 15, 2023, in Russian).

Zhu Guofeng (2015). *Design and Implementation of Electronic Commercial Draft Management Information System*. Fujian: Xiamen University (accessed: March 23, 2023).

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