

# Financial Sustainability of the Region after the Pandemic and Factors Affecting Its Characteristics

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**Keywords:** Financial Sustainability, Region, Banking Sector, Pandemic, Evaluation Indicators, Innovation Products, Biometric USB Tokens.

**Abstract:** The article reveals the theoretical essence of the category «financial stability of the region», has detected distinctive features of the financial system in conjunction with the economic growth of the region. In the authors' opinion, the most significant factors influencing the financial stability of the region after the pandemic are highlighted. On the example of the subject of the Russian Federation - the Republic of Bashkortostan, the banking factor and its recovery after the pandemic are considered. The authors cite domestic experience in the development and implementation of banking services for remote customer service in the Republic of Bashkortostan. The pandemic turned out to be the push that activated their internal mechanisms and launched those processes that can no longer be stopped. In connection with the digitalization of the banking sector and the development of digital technologies, society has a natural demand for new and modern banking products and services. The emergence of new banking opportunities for the population and business that meet the needs of the digital world increases the competitiveness of the country's economy in its entirety.

## 1 INTRODUCTION

The purpose of the article is to consider the factors affecting the financial stability of a region after a pandemic using the example of a certain region.

The issues of regional financial stability and the role of state regulation in the processes of financial stability have attracted great attention of the scientific world community, which is reflected in numerous studies of domestic and foreign academic economists.

First of all, two categories should be identified: the first is sustainability and the second is financial.

## 2 RESEARCH METODOLOGY

Methodological approaches are complemented by special methods of economic science: statistics, methods of regression analysis, factor assessment of the main directions of development of the financial system, financial stability. A certain place supposed

to be allocated to mathematical modeling associated with the calculations of the banking factor to identify financial stability.

Consider several definitions of «sustainability» given by the following authors. A. Bryachikhin (Bryachikhin, 1997) defines that «the stability of the region is connected with the restoration of a normal social, economic and political situation in it. For this, it is necessary that the territorial authorities more fully and effectively identify local opportunities, implement the needs, interests and expectations of residents, firmly and consistently protect them from negative influences, including competition, elements and abuse of the wild market».

The author N. Timchuk (Timchuk, 1980) sees the stability of the territorial system in the invariability of its behavior until new goals appear. According to the researcher, in hierarchical territorial systems, subsystems of the lower levels are most susceptible to changes for a number of reasons. At the upper levels, due to diffusion and some mutual smoothing of the

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unstable parameters of the lower structures, a relatively high stability is achieved.

V. Leksin and A. Shvetsov (Leksin and Shvetsov, 1997) proposed an interdisciplinary interpretation of sustainability. They believe that its most important feature is «ong-term preservation of conditions for the reproduction of the potential of the territory in the mode of balance and social orientation».

Now let's look at the category «financial stability» and try to identify the factors that affect it. Today there is no clear interpretation of the category «financial stability of the region» and many are trying to associate it with «financial potential», «financial attractiveness», «inancial condition», «budget», etc.

Author Zenchenko S.V. (Zenchenko, 2008) «Financial sustainability refers to the balance of cash incomes and expenditures of the region and their proportional change under the influence of external and internal factors in order to ensure the powers of the regional government, its socio-economic and political development in the current and long-term conditions».

Another important concept is the economic space of territories, its heterogeneity. Therefore, the authors believe that «when considering economic systems, economic ties, various processes in the economic space, within the framework of regional studies, can seen connection with geographic coordinates. The geographical basis, due to the differences in the geographical size of the units under consideration, requires taking into account not only absolute changes in indicators, but also operating with the concept of density. So, analyzing indicators (total income of the population, production and investment), scientists often correlate their values with the areas of these territories or population in order to bring them into a comparable form (Grishin et al., 2020).

Thus, the concept of «financial stability» can be presented in the form of a comparative characteristic in table 1.

Table 1: Differences between the concepts of «financial stability of the region» and «stability of the regional financial system».

Comparison signs	Financial stability of the region	Stability of the regional financial system
Category content	financial	social-economical
Concept	general economic equilibrium	sustainable development
Subject (sphere)	formation and use of financial resources of the region	systemic signs and structural and functional characteristics of financial relations in the region
An object	financial position of the region (financial resources, their sources, result of use)	integral property of the financial system as a driver of economic growth and development of the region
Subjects of management	Central Bank of the Russian Federation, Ministry of Finance in the region and others	a special body for monitoring and systemic management within the regional Ministry of Economy and Investment Development
Criteria for evaluation	effective functioning and development of local financial subsystems of the region	socio-economic, budgetary and tax, investment, structural and functional
Assessment indicators	quantitative and qualitative indicators of various financial sub-systems (banking, fiscal, insurance, etc.)	arterial indicators of stability of the regional financial system, comparison with threshold values

\*compiled by the author (Zotova, 2015)

As noted by the author A.I. Zotova (Zotova, 2015) the financial system of the region should be considered as a single entity, and not just a union of various (banks, budget) subsystems, albeit interconnected, as their real interaction aimed at effective and sustainable development of the territory in the interests of solving social and economic problems. We fully adhere to the opinion of the author.

Thus, in our opinion, one of the qualitative properties of the financial system of the country and the regions is stability, which in general is interpreted as the ability of the system to maintain its structure under the influence of disturbing factors or return to its previous state after a violation.

### 3 MAIN PART RESEARCH RESULTS

In our opinion the financial stability of the region depends on the following factors:

The tax factor shows the role of budgetary and tax policy in the region. In this factor, on the one hand, there are enterprises, small and medium-sized businesses that generate financial resources, which are the main taxpayers. On the other hand, business entities influence the formation of the financial system of the region and the processes taking place in it, there are government bodies that create a regulatory framework, mechanisms and incentives for the development of financial potential, public-private partnership, the real sector of the economy, including getting rid of tax mechanisms. Improving the efficiency of the functioning of the financial system of the region largely depends on the budgetary system of the region, the volume of fiscal powers of state authorities and local self-government, as well as the efficiency and effectiveness of spending budget funds, including financial.

In support of the above, we present the arguments of the authors (Mol-Gomez-Vazquez et al., 2020) The promotion of a more stable European banking system has become a priority which, not doubt, will bring important benefits to firms. However, bank stability comes with stronger regulations that could harm the access to finance of small and medium-sized enterprises (SMEs), which are highly dependent on bank financing. We provide new evidence on the association between the stability of a country's banking system and SMEs access to finance through the study of borrower discouragement. We analyze 20,207 observations gathered among 16,382 firms operating in the EU-28 during the period 2011-2018. Applying multilevel methodology, our results show that SMEs operating in countries with more stable banking systems are less likely to be discouraged from applying for a loan. Working to achieve a more stable banking system does not seem to harm the access to finance of SMEs.

The investment factor shows the level of investment activity in the region, the role of financial and non-financial organizations in this process. Relative financial self-sufficiency and independence as attributes of the regional financial system are directly related to the system's ability to independently generate the required volumes.

As part of the article, we will consider the investment factor and highlight the banking sector.

The first factor influencing financial stability is the banking sector.

The decrease in the number of commercial banks and the weakening of competitive positions in the regional banking market are signals of the crisis state of the region as an integral developing system.

However, how much effective a bank-supported economic recovery will be depends on the soundness and health of the commercial banks themselves. Losses from loan defaults and increases in risk-weighted assets will deplete banks' capital. The extent will depend on the spread of COVID-19 and the effectiveness of the public health response and mitigation measures.

The crisis which was caused by coronavirus has highlighted the shortcomings of the European Union (EU), which manifested itself after the global financial crisis. It should be highlighted that self-imposed restrictions within the EU have prevented recovery over the past decade. However, the suspension of the Stability and Growth Pact and recent measures by the European Central Bank have broken the shackles. We recommend national governments use the restored sovereignty within the EMU and not wait for common European decisions. In addition, we provide policy suggestions in line with EU's current structure (Ehnts and Paetz, 2020).

Reinders, H. J., Schoenmaker, D., & Van Dijk, M. A. (Reinders et al., 2020). It should be clear that a quick return to pre-COVID-19 policies in the EU would have devastating consequences for economic and political reasons. If governments would try to consolidate their budgets, as they did during the years after the financial crisis, a long-lasting depression is the most likely outcome.

Southern European countries have already been in a bad economic shape before COVID-19. The unemployment rates in 2019 for Spain (14.1%), Italy (10.0%) and Greece (17.3%) were in the double digits, with a recession in Germany looming at the end of the year. In Greece and Italy, real GDP per capita was still lower in 2019 than in 2007. If this countries would be forced to return to austerity measures, they might prefer to leave the Euro. Austerity policy cannot be successful within the next few years for the same reason it has not been successful in the past decade: It exacerbates the economic downturn and the substantial fall in income increases both public deficits and debt-to-GDP ratios (Saez and Zucman, 2020).

According to the review of the banking sector of the Bank of Russia for May 2020, the profit of Russian banks fell to 45.4 billion rubles from 51.2 billion rubles in April and from 218.5 billion rubles in March. At the same time, there was a significant increase in deductions to reserves from 47 billion

rubles to 106.5 billion rubles, which, possibly, was one of the main reasons for the decline in profit. However, it should be noted that the growth of overdue debt was not catastrophic (plus 22 billion rubles only due to the retail sector).

Currently, the situation in the Russian financial sector has begun to improve compared to the beginning of the pandemic. However, the economic downturn, decrease in the income of organizations and the population led to an increase in credit risks. Regulatory measures have facilitated loan restructuring and allowed borrowers to improve their financial position. A significant part of the Bank of Russia's measures in connection with the pandemic was planned for the period from March 1, 2020 to September 30, 2020. At the same time, it is planned that the way out of the emergency situation will be gradual, so that banks adapt and are not forced to reduce lending to the economy.

Compared to the beginning of the pandemic, the liquidity situation in the banking sector has begun to improve. In June and July 2020, the number of citizens' ruble deposits began to increase (Sokolinskaya and Zinov'yeva, 2020).

The volume of highly liquid assets participating in the calculation of the short-term liquidity ratio on the balance sheets of systemically important credit institutions increased from March 1, 2020 to July 1, 2020 by 1.3 trillion rubles and amounted to 8.9 trillion rubles. The Bank of Russia switched to a soft monetary policy, lowering the key rate to 4.25%, as a result of which banks have the opportunity to reduce interest rates on loans, including for small and medium-sized businesses.

The coronavirus pandemic served as a kind of catalyst for the digital transformation of the banking sector. Judging by the experience of recent months, it is digital transformation that sets the vector for the development of their business processes for banks. During the pandemic, many citizens are convinced of the benefits of remote services and plan to use them after it ends.

Consider the banking factor at the regional level of the Republic of Bashkortostan (Bayguzina et al., 2019).

One of the innovations is the calculated economic benefits of implementing multi-factor authentication based on biometric USB tokens. Nevertheless, there are still restrictions and some drawbacks of such systems. Even interfaces of the best Russian Internet banks come up with some absurd solutions with regard to the end user, which is mainly imposed by various severe restrictions of software modules and platforms.

It is essential to present some statistical data in order to make the study verifiable. The paper presents economic benefits from multifactor authentication based on biometric USB-tokens. Initially, it is suggested to introduce such systems only for legal entities since they represent the target group when dealing with cyberattacks due to large sums of money available in accounts. The study of the market of biometric USB-tokens was carried out. According to its results, a solution of ISBC group - ESMART Token GOST - was selected. This represents a cryptographic protection of information with hardware support of Russian cryptographic algorithms based on domestic MIK 51 chip manufactured by JSC NIIME and Mikron Plant.

The group of companies known as Mikron created the entire production chain from design to production of the ultimate product, which allows producing the whole range of high-tech products and solutions aimed at the mass market: RFID chips and tags, SIM cards, transit and bank cards with a chip, protected microchips for social cards and state identification documents. Mikron annually produces more than 400 million RFID tags, 50 million bank chips, 30 million bank cards, more than 5 million chips for the production of biometric passports and electronic documents. Mikron is also the largest Russian exporter of industrial microchips - more than 500 million microchips manufactured by Mikron are annually exported to Europe and South-East Asia for enterprises that produce various electronic equipment. The choice of tokens based on microelectronics produced by Mikron is justified by its ability to provide the necessary volume of production, without purchasing ready-made foreign solutions and technologies. Moreover, it eliminates the need to purchase an expensive license for their production and use, which is especially complicated under sanctions. This token exemplifies how biometrics allows effectively solving different tasks related to information security and protection. The advantages of such tokens include low cost, ability to be used as an electronic signature, and, in comparison with smart cards, there is no need for special readers, the cost of which is several times higher than the cost of USB-Tokens, with the same level of security provided. The secure controller, embedded in ESMART Token GOST, provides protection against attacks such as SPA, DPA, DFA. The intrusion sensors, light, impulse noise, voltage, temperature, as well as hardware integrity control sensors and erasability of EEPROM secure key information to protect against breaking the chip and unauthorized access. EEPROM is an electrically erasable



reprogrammable permanent storage device and one of the types of nonvolatile memory.

Bashsomsnabbank accounts for 5% or from 500 million to 30 billion rubles. This indicator was calculated on the basis of data obtained from Marswebb Internet Banking 2016 concerning the level of penetration of the Internet banking among legal entities and data of Bashkomsnabbank, which indicate approximately 5% (formula 1) of legal entities.

$$(75138/4.5 * 0.35) * 100 = 4.79 \quad (1)$$

where 75138 – number of clients (mln) – legal entities, using remote banking services of Bashkomsnabbank;

4.5 mln – number of registered legal entities in Russia;

0.35 – level of penetration of the Internet banking amongst legal entities in Russia.

Based on the estimates of Group-IB and the Sberbank of Russia for 2018-2019, the legal entities in Russia suffered losses from cyberattacks making from 10 to 400 billion rubles, depending on evaluation as such. Proceeding from this assumption, one assumes that the distribution of cyberattacks in general will coincide with the number of users of the Internet banking and will make from 500 million to 20 billion rubles for Rosselkhozbank.

Table 2: Intended economic effect from introducing USB-tokens ESMART Token GOST with biometrics.

Indicator	Total	Scope of introduction		
		2018	2019	2020
1	2	3	4	5
Number of connected clients	75,138			
USB token ESMART Token GOST/USB, pcs.	80,000	25,000	25,000	30,000
Price per unit of USB token ESMART Token GOST/USB, rubles	-	1,486	1,545	1,607
License value per software unit (for 3 years)	-	1,634	1,699	1,767
Expenses on potential losses (7%)	1,822,371	5,460,000	5,677,770	7,085,941
Total expenses, rubles	2,785,629	8,346,000	8,678,870	108,313,669

\*Developed by the author

The above calculations allow concluding that the share of costs related to the transition of legal entities to the system of multifactor authentication, including biometrics, makes from 55.7% to 1.4% of potential losses on 50 cyberattacks. Therefore, it seems advisable and reasonable to install this system.

In this regard, the development of RBS protection systems is aimed at the maximum possible cost and time associated with attacks. Such strategy excludes those people who cannot afford organizing and implementing attacks due to their poor financial potential. Maintaining the adequate level of information security requires a systematic approach and investments from a particular bank. Otherwise, a bank puts trustworthiness and loyalty of its customers at risk, since the latter ones perceive the Internet banking as a necessary tool of any bank they are dealing with.

At present, in terms of security of individuals, Bashsomsnabbank provides its customers with reliable security of remote banking operations, which is continuously ensured through leading domestic developments

## 4 THE DISCUSSION OF THE RESULTS

Currently, the banking sector is focused on customer focus. All current transformations and innovations, first of all, take place for clients, for the convenience of providing them with services, for increasing their confidence in the banking sector.

The pandemic turned out to be the push that activated their internal mechanisms and launched those processes that can no longer be stopped. In connection with the digitalization of the banking sector and the development of digital technologies, society has a natural demand for new and modern banking products and services. The emergence of new banking opportunities for people and businesses that meet the needs of the digital world increases the competitiveness of the country's economy as a whole.

The rapid development of the banking sector, building ecosystems, digitalization and globalization at all levels of the system are what awaits us in the near future.

The pandemic has become a factor pushing the digitalization of banking services and the transition to online. With the introduction of the self-isolation regime, banks were forced to more actively improve their digital capabilities, although before that this process was quite intense. Back in 2019 (compared to

2018), the number of bank customers who used online services increased by more than one and a half times.

The logical consequence of the pandemic has become the intensification of competition in the development of digital services: the overwhelming majority of banks have taken measures to expand the functionality of mobile applications, which have become the main element of the digital transformation of banking services. The emphasis is placed on the maximum use of innovative technologies, as well as on constant renewal and modernization, which directly affects the competitiveness of the bank. The functionality of applications began to include not only the possibility of remote registration of banking products, but also the receipt of certificates, statements, transaction histories. The quality and usability of apps began to seriously affect the quality of customer service.

## 5 CONCLUSION

According to the results of calculations, it can be concluded that the share of the costs of transferring clients - legal entities to multifactor authentication systems including biometrics - will be from 55.7% to 1.4% of possible losses from 50 hacker attacks. Based on this, we can conclude that the introduction of this system is advisable.

In this regard, the development of RBSprotection systems is aimed at making the cost and time spent on carrying out attacks as high as possible. Such a strategy excludes those for whom the cost of organizing and conducting an attack on the remote banking system is higher than their financial capabilities.

Maintaining a sufficient level of information security requires a systematic approach and investment on the part of the bank, otherwise the bank risks losing the trust and loyalty of its customers, who refer Internet banking to the list of necessary services provided by the bank in which they are served.

In the field of Internet banking security for individuals, to date, Bashkomsnabbank provides high security of operations in the RBS system, ensured by constant improvement of the current system and the use of leading domestic developments.

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