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Directions for Improving the Activities of Regional Banks in the Republic of Tatarstan

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ABSTRACT

The **purpose** of this study is to develop tools for assessing the state of regional banks and to justify decisions on the allocation of resources between their business areas by adapting existing methods of banking management to the new economic environment. The authors apply both general **scientific methods** (induction, deduction, analysis, synthesis) and **special methods**: systematic and retrospective analysis of existing developments in bank decisions. The **results** of the application of these methods are the mathematical models describing the functioning of the credit-deposit and transaction of commercial banks of Tatarstan in the past three years from the point of elasticity of actives and liabilities' substitution. In the paper, we systematized the indicators of actives and liabilities of the five largest commercial banks in Tatarstan in 2019–2022, we approved the equations that characterize these actives and liabilities' substitution elasticity in MS Excel. The **conclusion** is that in most cases, there is a unitary elasticity of their mutual substitution, which leads to the conclusion that the Tatarstan banking system is currently in the growth stage of a new life cycle, which began in 2014, after the Russian economy entered new realities due to sanctions pressure. The recommendations were formulated for the banks of Tatarstan in terms of improving the quality of loan portfolios in new conditions: they should improve the methods of making decisions about the loans for companies' business activities which are first created.

Keywords: regional banks; transactional banking; credit and deposit activity; derivative function; management decision-making

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INTRODUCTION

The gaps in the survey of regional banks are largely attributable to the dynamic development of the banking sector, the explosive introduction of digital technologies and services in banking, the emergence of fundamentally new external and internal factors with significant potential and scientific interest for further study. The main factors that have influenced the activities of regional banks over the last 10 years are: consolidation of the banking sector since 2014; accelerated digitization of the economy; significant increase in bank expenditure, including due to the need to invest in the development of financial technologies and regulatory requirements.¹ The directions of the study, which characterize individual components of regional banks, are presented quite widely in the domestic literature. According to the study [1], regional banks are currently being segmented: a greater number of local banks identify priority segments of the banking market. The authors of the paper [2] note that the introduction by the Bank of Russia in 2019 of two types of licenses and division of banks into banks with universal and basic licenses did not lead to a decrease in the concentration in the banking sector, but, on the contrary, only contributed to it. The authors of the study [2–4] proposed to develop proportional regulation mechanisms with a risk-oriented approach as a solution to the problems of concentration of the banking system [5]. Furthermore, the study [6] suggests grouping regional banks based on their financial resilience for improved regulations. In addition, the study [7] confirms and supports the need to construct and develop a

unified regional platform to integrate regional banks' resources and efforts in the context of risks. A number of authors [8–10] propose directions for the development of regional banks in the new reality: improving the role of regional banking and consolidating the category of “regional significant bank” for the most effective of them; introducing a new system of indicators for assessing the systemic significance of regional banks; and forming an attractive investment infrastructure for the region.

The study's goals are:

- 1) development of the scientific and methodological foundations of the activities of regional banks in the Republic of Tatarstan in the conditions of the new reality;
- 2) analysis of quantitative and qualitative aspects of the development of regional banks on the Republic of Tatarstan;
- 3) development of system models — production functions, describing the features of the functioning of the credit and deposit and transaction directions of the business of regional banking in the Republic of Tatarstan in modern conditions;
- 4) development of recommendations for regional banks in the Republic of Tatarstan in terms of the development of individual business areas, taking into account the parameters of production functions describing their functioning.

The scientific novelty of this study is the development of a toolkit to justify decisions on the distribution of resources among regional banks' business areas based on the synthesis of existing methods of assessing their financial condition and the mathematical-modelling apparatus of production functions.

RESULTS

Result 1

In the results of this study, the regional banks are allocated using the approach currently applied by the Bank of Russia, based on the place of registration of the credit institution.

¹ In federal networks: how regional banks survive. ExpertRA. 2020. URL: https://raexpert.ru/researches/banks/fed_banks_2020/?ysclid=lfwr8k252u11418127 (accessed on 28.03.2023). Not a single budget: this is what develops regional banks. RBC. 2021. URL: <https://trends.rbc.ru/trends/innovation/cmrm/60ab9c319a794702c55ee34e> (accessed on 28.03.2023). Does the economy need regional banks. ExpertUral. 2021. URL: <https://expert-ural.com/articles/nuzhny-li-ekonomike-regionalnye-banki.html?ysclid=lfwr8rl1fj758419000> (accessed on 28.03.2023).

Table 1

List of Regional Banks in the Republic of Tatarstan

No.	Title of the bank	Information about the divisions
1	PJSC "AK BARS" BANK	Additional offices – 214
2	LLC Bank "Avers"	Additional offices – 5
3	JSC "TATSOTSBANK"	Additional offices – 39
4	PJSC "AKIBANK"	Additional offices – 7
5	JSCB "Energobank"	Additional offices – 25
6	JSC "Bank Zarechye"	Affiliates – 1 Additional offices – 1
7	LLC "Bank of Kazan"	Additional offices – 11
8	JSC "IK Bank"	Affiliates – 1 Additional offices – 3
9	LLC "Bank 131"	–
10	LLC "AvtoCrediBank"	Additional offices – 1
11	LLC "Kamkombank"	Additional offices – 13
12	LLC "ALTYNBANK"	Additional offices – 5
13	JSC "Avtogradbank"	Affiliates – 1 Additional offices – 18

Source: Compiled by the authors according to the Bank of Russia. URL: <http://www.cbr.ru/statistics/UDStat.aspx? TblID=302-09> (accessed on 15.11.2022).

For a more in-depth study of the questions raised, the authors made a sample of regional banks by region Republic of Tatarstan – a subject of the Russian Federation, which is part of the Volga Federal District. This sample is supported by the fact that this region presently has the most regional banks registered; additionally, according to the rating agency "Expert RA",² regional banks of the Republic of Tatarstan rank first in the rating of the financial sustainability of regional banking systems. The list of regional banks per region is presented in *Table 1*.

In the Republic of Tatarstan, as at 01.11.2022, there are 59 credit organizations.

² Analysis Expert RA: official website of the rating agency "Expert RA". Moscow. URL: https://raexpert.ru/researches/banks/fed_banks_2020/ (accessed on 05.04.2023).

The volume of payments made through credit institutions located in the territory of Tatarstan, for the first half of 2022 is 4851.3 bln rubles (for comparison, in the first half of 2021 amounted to 3854.8 bln rubles).³ Detailed status of funds of clients of Tatarstan banks for the last 3 years is presented in *Fig. 1*.

The volume of deposits opened in the regional banks of the entity increased by 34% by the end of 2022 compared to 2019 and amounted to 381 966 mln rubles. It's important to note that by the end of 2020, the population and legal entities in Tatarstan had given their savings to regional banks: the proportion of

³ Databases of the Bank of Russia: official website of the Central Bank of the Russian Federation. URL: <http://www.cbr.ru/statistics/UDStat.aspx? TblID=302-09> (accessed on 15.11.2022).

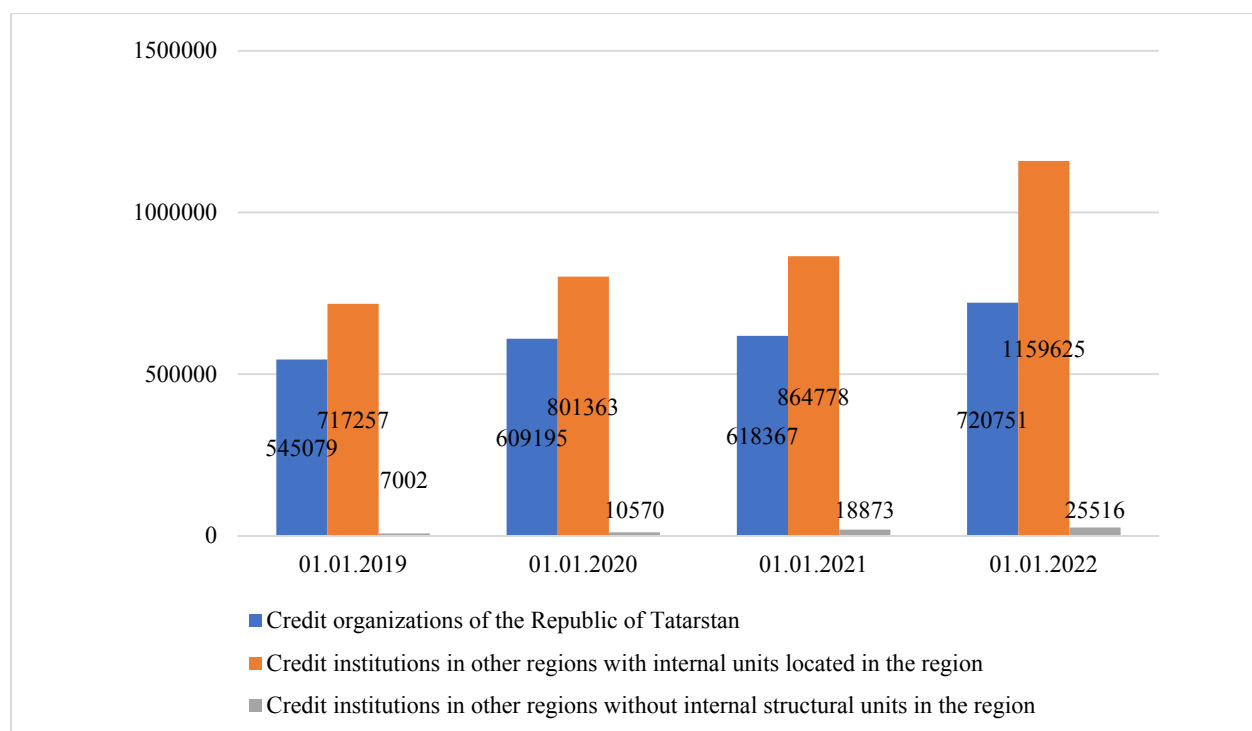


Fig. 1. Funds of Non-Credit Clients Placed in Credit Institutions, Mln Rubles

Source: Compiled by the authors according to the Bank of Russia. URL: <http://www.cbr.ru/statistics/UDStat.aspx?TbIID=302-09> (accessed on 15.11.2022).

deposits opened in the Republic's regional bank was 77.5% (291 926 mln rubles), while the proportion of open deposits in credit institutions in other regions with structural units in the entity was 22.5% (84 699 mln rubles). However, by the end of 2022, the situation is different: the share of deposits opened in regional banks has decreased to 62.6%. Fears, mistrust of monetary policy due to the spread of false information about an approaching market default, insufficient financial literacy of the population [11], and doubts about the financial resilience of regional banks and increased confidence in large banks (as the practice of recovery and state assistance during crises to larger and systemically significant banks is widespread) may all be contributing factors.

According to Fig. 2, the volume of loans granted to small and medium-sized enterprises (further — SMEs) in Tatarstan increased by 34% in October 2022 compared to the same period in 2019, to 240 365 mln rubles, while outstanding debt decreased by 38% to

9778 mln rubles in October 2022, compared to the same period last year.

The decrease in outstanding debt on loans granted to SMEs (SMEs) in Tatarstan is due, on the one hand, to the growth of gross regional product (further — GRP). For the reporting year 2021 it amounted to 3.4 trillion rubles, which is 3.8% more than in the analyzed period (GRP per capita was 862.4 thousand rubles). On the other hand, the reduction of unemployment by 1.0 p.p. — to 2.6%.

Consider transaction income of regional banks of Tatarstan (TOP-5 by size of assets).

According to Fig. 3, PJSC "AK BARS" BANK accounts for the highest volume of transaction business revenue, with a growth rate of 11% in the last year and 87% in the past 5 years. However, according to Table 2, the share of transaction income in the bank's total income is insignificant and is only 1.74% by the beginning of 2022. At the same time, in the last five years, the share has increased slightly: from 1.47 to 1.74%. The JSC "TATSOTSBANK" is interesting from a point of analysis. Since

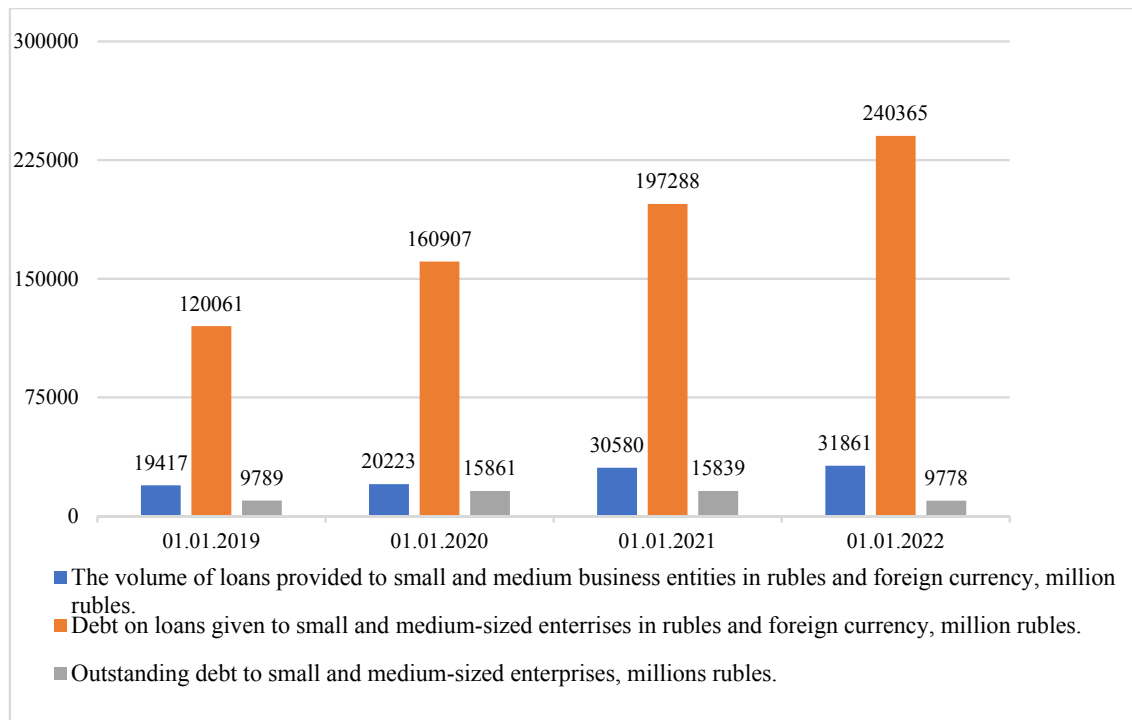


Fig. 2. Loans Granted to Small and Medium-Sized Businesses in the Republic of Tatarstan for 2019–2022, Mln Rubles

Source: Compiled by the authors according to the Bank of Russia. URL: <http://www.cbr.ru/statistics/UDStat.aspx?TbIID=302-09> (accessed on 15.11.2022).

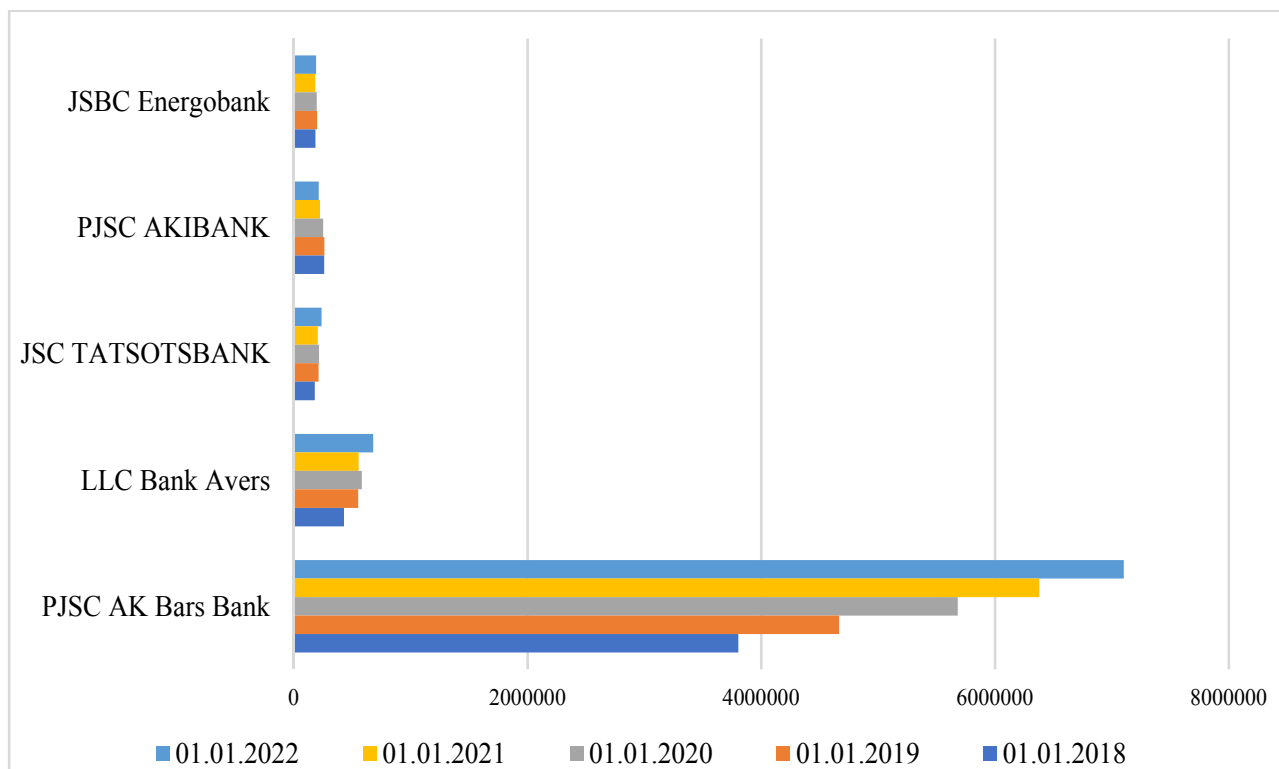


Fig. 3. Transaction Income of the Analyzed Banks, 2018–2022, Million Rubles

Source: Compiled by the authors according to the SPARK database. URL: <http://www.spark-interfax.ru/> (accessed on 13.12.2022).

Table 2

The Share of Transactional Business Revenues in Total Revenues of the Analyzed Banks, 2018–2022, %

Title of the bank in Tatarstan	01.01.2018	01.01.2019	01.01.2020	01.01.2021	01.01.2022
PJSC "AK BARS" BANK	1.47	1.91	2.46	1.24	1.74
LLC Bank "Avers"	0.45	0.57	1.11	0.82	1.06
JSC "TATSOTSBANK"	4.18	5.53	5.75	4.61	5.29
PJSC "AKIBANK"	2.93	3.06	3.54	2.75	3.31
JSCB "Energobank"	1.05	1.17	1.17	0.94	0.97

Source: Compiled by the authors according to the SPARK database. URL: <http://www.spark-interfax.ru/> (accessed on 13.12.2022).

2018 the bank has gradually increased the share of transaction revenue in total revenue and at the end of 2022 is 5.29%, with the rate of growth of transactional revenue for the last year was 16% (237 502 mln rubles).

The transaction banking business, due in particular to significant investments in IT-technology, developed mainly with large banks. However, given the recent shifts in the economy, particularly the fact that many universally licensed banks confront sanctions (for example, PJSC VTB Bank has been subject to sanctions since 2014), transaction banking business will grow rapidly in smaller banks, particularly regional banks.

Result 2

The paper identified the relationship of the indicators of the banking sector of Tatarstan with the change of phases of its life cycle as a system through models with constant elasticity of substitution (further — CES). The details are presented in works [12–14], в in this article it is adapted to describe the processes of the activities of regional banks in modern conditions.

The following methodology is implemented for the analysis:

1. The economic systems modeled are two areas of business of the regional banks of Tatarstan — credit-deposit and transaction.

2. The factor of large development in the system of credit and deposit business of banks is funds attracted for deposits, because banks develop a fundamental possibility to increase the volume of lending transactions at their expense. Money presented in the form of loans is a factor of intensive development of the business system in question, because in the course of their placement banks improve their technology of conducting borrowing transactions, forcing the invested money units to create new interest income.

3. In the transaction business system, money provided in the form of loans are relocated to the place of the factor of extensive development, and instead of the factor of intensive development, the funds are placed on client settlement accounts. The issuance of a loan by the bank to the client is accompanied by the opening of an account to which the credit funds are credited, i.e. recently issued loans in the system of bank transaction business serve as a beginning point for large-scale expansion.

4. For both modeled banking business systems, the quantitative characteristics

Table 3

Quantitative Characteristics of the Credit and Deposit Business System of Regional Banks of Tatarstan in 2019–2022

Annual period	Percent incomes (system's total product)		Sum of the loans (intensive development's factor)		Sum of the deposits (extensive development's factor)	
	Ab. value, thous. rub.	Log. value	Ab. value, thous. rub.	Log. value	Ab. value, thous. rub.	Log. value
2019	104 151 836	18.4614	120 061 000	18.6035	285 658 000	19.4703
2020	99 537 290	18.4160	160 907 000	18.8963	291 926 000	19.4920
2021	81 397 973	18.2149	197 288 000	19.1002	352 195 000	19.6797
2022	81 111 649	18.2113	240 365 000	19.2977	381 966 000	19.7608

Source: Author's calculations.

of the factors of extensive and intensive development selected in the previous paragraph, as well as the products of system activity, are analysed for the period 2019–2022. Their logarithmed values are calculated, and in the application MS Excel with the help of the function *Data* — *Data Analysis* — *Regression* the coefficients for equations of the type (1) describing the functioning of the credit-deposit and transaction business systems of regional banks of the Republic of Tatarstan in the current state are computed.

Basic data for calculating coefficients of the credit and deposit business model of regional banks of Tatarstan are presented in Table 3.

The result of the calculations obtained coefficients for the function describing the system of credit and deposit business of regional banks of Tatarstan:

$$\ln(P) = -1.22 * \ln(F_{\text{exten}}) + 2.12 * \ln(F_{\text{inten}}). \quad (1)$$

The conclusions that follow can be derived from knowledge of the model coefficients:

1) the ratio of the relationship of the amount of interest income (product of the system's work) with the value of the deposits attracted (extensive development factor) has

a negative value. This suggests that further consolidation of these factors will result in a decline in the resulting indicator, i.e. banks will simply be unable to profitably place new cash attracted to deposits, reducing their business's profitability. The goal of the Republic of Tatarstan's regional banks at the moment is to make effective use of the funds attracted for deposits at this time without further expansion;

2) the ratio of the relationship between interest income and the amount of loans granted (intense growth factor) is positive. This confirms the previous paragraph's conclusion that it is now important to Tatarstan's regional banks to build up their credit portfolios and improve their quality using the funds already pulled up for deposits. Only in this way will they be able to increase interest income;

3) the aggregate elasticity indicator of the mutual substitution of the two types of components in the credit and deposit business system is $2.12 - 1.22 = 0.9$, which is close enough to 1 to be considered significant. That is, deposits and loans as factors of the development of the modeled system for its normal development must maintain the

Table 4

**Quantitative Characteristics of the Transactional Business System of Regional Banks
of Tatarstan in 2019–2022**

Year	Transactional incomes (system's total product)		Sum of money on the clients' accounts (intensive development's factor)		Sum of loans (extensive development's factor)	
	Ab. value, thous. rub.	Log. value	Ab. value, thous. rub.	Log. value	Ab. value, thous. rub.	Log. value
2019	5 887 989	15.5884	545 079 000	20.1164	120 061 000	18.6035
2020	6 925 814	15.7508	609 195 000	20.2276	160 907 000	18.8963
2021	7 547 068	15.8367	618 367 000	20.2426	197 288 000	19.1002
2022	8 422 447	15.9464	720 751 000	20.3958	240 365 000	19.2977

Source: Author's calculations.

current proportional ratio. It also means that, in addition to not having to increase the amount of funds raised on deposits, as stated in the previous two paragraphs, Tatarstan's regional banks must lower this amount, substituting it with cash raised through the issuance of securities.

The general conclusion on the state of the credit and deposit business system of the regional banks of the Republic of Tatarstan is that at present it is at the stage of the life cycle that can be characterized as the completion of the phase of growth with the transition to maturity. At this stage of the development of the system, the scope of the extensive development factor cannot be expanded, but at its current level, the quality of the use of the intensive development factor must be improved.

Applicable to credit and deposit business, this thesis is specified in the form of a recommendation for regional banks of the Republic of Tatarstan to improve their methods of formation and management of credit portfolios in all areas of this work,

such as: a) assess a borrower's solvency; b) activity to secure loans; c) selection of flexible service modes for particularly important borrowers.

In order to build a model of the operation of the transaction business system of regional banks in Tatarstan in 2019–2022, data presented in *Table 4*.

Model for transaction business system of regional banks of the Republic of Tatarstan with specific coefficients:

$$\ln(P) = 0.35 * \ln(F_{\text{exten}}) + 0.45 * \ln(F_{\text{inten}}). \quad (2)$$

Based on the values of the model's coefficients, the following conclusions can be drawn about the current state of the transaction business system of the Republic of Tatarstan's regional banks:

1) the coefficient of the relationship of the amount of transaction income (product of the system) with the value of the loans issued (factor of extensive development) has a positive value. In other words, the increase in the volume of loans expands the scale of

transactions on settlement accounts, which increases transaction revenues;

2) the coefficient of transaction revenue with the amount of funds on the client's account (intense growth factor) is also positive, but greater than the previous factor (0.45 versus 0.35). This is totally rational, given that this component directly influences the system's outcome and previous one does so indirectly through the system;

3) the total constant elasticity of substitution of two types of factors for the transaction business system is equal to 0.8. It is less than the similar indicator in the credit and deposit business system. It also implies that, when compared to the credit and deposit business of these same banks, the factors of extensive and intensive development in the transaction business of the Republic of Tatarstan are less close to the single and closer to zero elasticity of mutual substitution.

Thus, the calculation of coefficients for the mathematical model of transaction business complements the conclusion made earlier on the basis of a similar model for the credit and deposit direction of the work of regional banks of the Republic of Tatarstan. Their current priority is to build up their credit portfolios, as well as to improve their quality in terms of the solvency of borrowers and the security of their liabilities. This factor is equally important for the further progressive development of both areas of business of the regional banks of Tatarstan, as considered in the present study.

The formulated conclusion about the need for regional banks of the Republic of Tatarstan to develop credit operations in the current situation is also confirmed by the general view of *Table 3* presented earlier, which shows that in the previous four years, regional banks of the Republic of Tatarstan used only about 50–70% of the funds attracted for deposits for lending, which partly violates the consistency of active and passive operations.

According to the research conducted on the basis of built mathematical models, both the modeled business directions of the Republic

of Tatarstan's regional banks — credit-deposit and transaction — are now in the growth phase of the life cycle (we are talking about the lifecycle of this system, which began in 2015). In both directions, the elasticity of the mutual substitution of factors is close to the single, but it has not yet moved to the indicators at which it is possible to fully substitute the factors of extensive and intense growth with the possibility of abandoning extensive development in favor of intensive growth.

After all, according to the theory of systems, every system that functions for a long time develops in a spiral, where one life cycle is replaced by a new one, and the next one by a new, etc. With regard to the regional banks of the Republic of Tatarstan, 2014–2016 marked the end of the life cycle of their development, which actually lasted since the beginning of the 1990s, i.e. since the emergence of the banks themselves in Russia as a whole and in each of its regions. The start of the new life cycle of regional banks of the Republic of Tatarstan is linked to three events in 2014–2016:

1) start a sanctions campaign in the West;
2) the previous event required regional banks in the Republic of Tatarstan to restructure their business models, but many regional banking market participants failed to rise to the task. Also, a strong blow to the activities of the regional banks of Tatarstan was that among the “outsiders” were two very large by the standards of the region of the bank — “Tatfondbank” and “Spurt-Bank”. This has led to the transition of the entire system into a bifurcation state, where the vast majority of its qualitative and quantitative characteristics change radically;

3) legal entities registered in the region, forming the corporate segment of the regional banks of Tatarstan, suffered great losses in the wave of crisis caused by the first waves of anti-Russian sanctions, and also began to change their business models, including in terms of the use of all types of banking services:

lending, deposits and settlement and cash services.

In the following years, new negative circumstances have arisen and continue to appear, affecting the movement of regional banks of Tatarstan along the trajectory of a new life cycle — this is the crisis in the context of the coronavirus pandemic in 2020–2021, and a new wave of more severe sanctions. However, the regional banks of Tatarstan, regardless of the wishes of their stakeholders, should move further along this trajectory, and the primary means of ensuring this task should be to build a customer lending practice that is adequate to the new macroeconomic realities and capable of giving a mutually beneficial synergistic effect for both the banks themselves and for their corporate borrowers in the region.

CONCLUSION

The digital transformation of the banking sector of the Russian economy, the current geopolitical situation, and macroeconomic instability takes the study of issues concerning

regional banks to a new level. The importance of the results of the study lies in obtaining a new adaptive model of development for regional banks of the Republic of Tatarstan, ensuring the dynamic adequacy of the methods applied to the changing conditions of functioning of regional banking.

The mathematical models built in the course of the study — the production functions of the transaction and credit-deposit business systems of regional banks — demonstrate their passage through a phase of growth in a new life cycle, the beginning of which is connected with the restructuring of the entire domestic economy since 2014 in connection with the formation of new economic realities due to the strengthening of geopolitical sanctions. In these situations, the priority for the Republic of Tatarstan's regional banks is to improve the practice of lending to corporate clients in order, on the one hand, to adapt to the new macroeconomic conditions, and on the other — to contribute to the restoration in the national economy of the added value creation links most affected by the sanctions pressure.

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