Bank of Russia
## The Central Bank of the Russian Federation
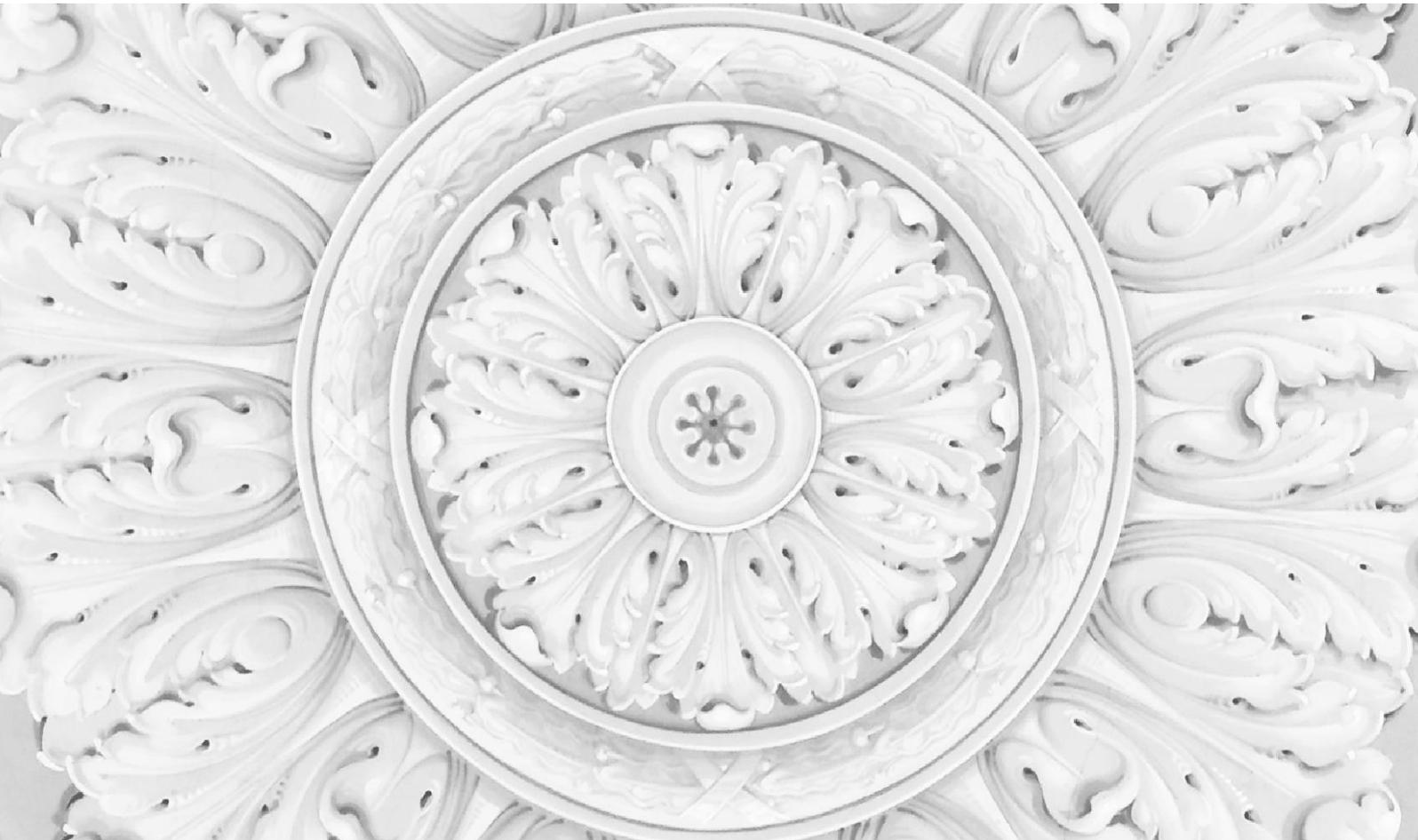
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The 2008–2017 Decade in the Russian Banking Sector: Trends and Factors

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Summary

The report examines changes in the Russian banking sector over the period of 2008–2017 and the impact of these changes on the stability of banks and interbank competition. It identifies specific aspects of banks in different clusters and analyses the main business models. The report outlines challenges currently faced by the banking system.

The study is aimed at:

1. Analysing the current state and evolution of the Russian banking sector in 2008–2017 in the context of global trends
2. Identifying changes in the business models of banks over the past decade
3. Exploring trends in concentration and competition in the Russian banking sector
4. Studying the issues of efficiency and stability, including in the context of banking sector rehabilitation policy

The study used the following methods to achieve these objectives:

- econometric tools for calculating the competition indicators
- statistical methods for calculating the indicators of concentration, stability, profitability, availability of banking services, etc.
- cluster analysis
- artificial experiment methods (difference-in-difference) to compare dynamics of indicators in healthy and troubled banks (banks with revoked licences and banks undergoing resolution).

Key conclusions of the report:

- Despite all the difficulties, the decade under review was marked with the development and strengthening of the Russian banking sector. This period saw overall improvement in the quality of management and conservatism in banks' commercial policies. This contributed to higher operational efficiency in banking.
- The banking sector's assets grew at a fast pace, both in absolute and relative terms. By 2015, they had reached nearly 100% of the Russian Federation's GDP and the banking sector's share (as % of GDP) in a number of developed countries. Deceleration in the growth of Russian banking sector assets, which began after the 2008–2009 crisis, is in line with the global trend.
- When compared internationally in terms of the banking sector's concentration, Russia stands at the lower "mid" level. Both a certain increase in the level of concentration and a decline in the number of structural banking units per 100,000 people correspond to global trends and were not accompanied by a general deterioration in the availability of banking services to households and the economy at the regional level. At the same time, the issue of access to banking services in some regions still needs to be addressed.
- A universal business model remains dominant the Russian banking sector. The increase in share of retail banks' assets fell on the periods of retail lending boom. However, while back in 2011–2013 this was accompanied by a growing number of retail banks, there was no shift in 2014–2017 from a universal to retail banking model.
- Following its decline in the crisis period, the stability of the Russian banking sector subsequently recovered. Greater stability in the Russian banking sector in 2016–2017 can be seen in such indicators as the share of overdue debt and the Z-score of stability.
- Among notable changes in the structure of banking balance sheets over the discussed period was declining dollarisation of both deposits and loans to households and non-financial organisations. This was accompanied by significantly reduced reliance of banks on funds provided by non-residents.
- The share of captive credit institutions in banking sector assets steadily declined, especially in 2014–2017. Lower absolute and relative weight of captive credit institutions contributed to stability in the banking sector, more fair interbank competition, and better quality of banking services.
- Analysis of balance sheet indicators in banks with revoked licences and banks undergoing resolution reflects the results of the Bank of Russia's policy of banking sector rehabilitation, including through supervisory assessments that are more conservative and through more rapid response to banks' operational deficiencies.

In this decade, banks and their customers will have to further adjust to an environment of sustainably low inflation and real positive interest rates. Banks will face new fintech-related challenges. A separate challenge will be the state's gradual withdrawal from the capital of banks.

ОГЛАВЛЕНИЕ

1. KEY TRENDS

1.1. Banking Sector Size

The rapid growth in assets in the Russian banking sector observed in the 2000s gave way to the more moderate growth paces of the 2010s. The average annual growth rate slowed from 34.6% YOY in 2000–2009 to 14.7% YOY in 2010–2017.[1] Moreover, since the mid-2010s the sector has posted single-digit growth rates. Relative to GDP, Russian banking sector assets increased from 60.5% in 2008 to 99.5% in 2015. By the end of 2017, this figure declined to 92.5%, (Chart 1) partly due to the negative effect of currency revaluation[2].

In terms of the banking assets to GDP ratio, Russia's indicators are generally in line with those of developing countries and some developed countries. The slowdown in sector growth observed in the 2010s was not specific only to Russia. According to the report by the Committee on the Global Financial System (CGFS, hereinafter, "the Committee")[3], some developed and developing countries also experienced a slowdown in the banking sector after the 2008 global financial crisis. Its median growth rate among Committee member countries[4] fell from the annual average of 12% in 2003–2007 to 4% in 2008–2016.

Chart 1. Key indicators of banking sector, % of GDP

Loans to non-financial organizations   Loans to households   Assets (RHS)
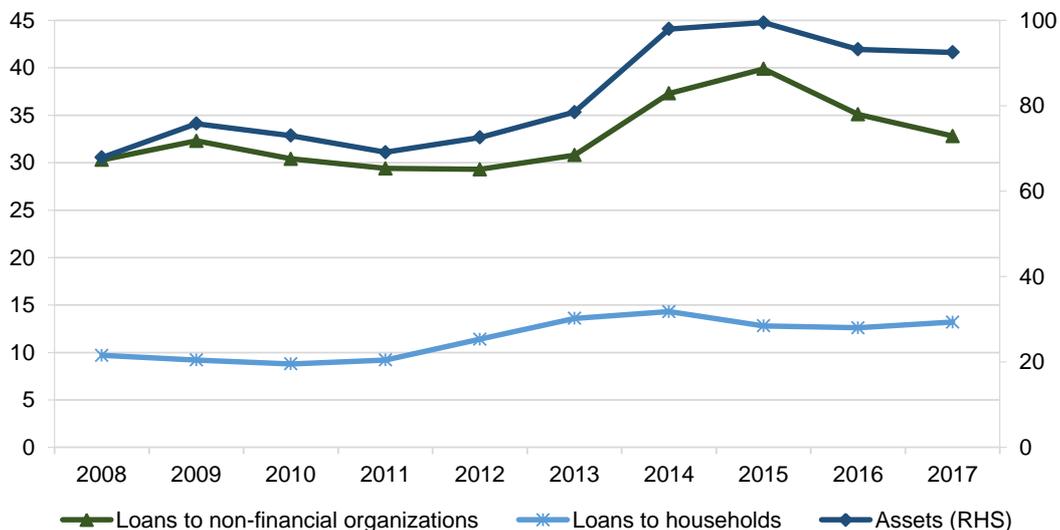
Source: Bank of Russia calculations.[5]

The share of assets held by Russian state-controlled banks increased significantly in 2008–2017. Excluding banks under financial rehabilitation and non-bank credit institutions, it

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[1] In some periods, asset growth was greatly affected by currency revaluation. Once the impact of exchange rate revaluation is excluded, growth in banking sector assets slowed from 34.1% YOY in 2000–2009 to 12.3% in 2010–2017.
[2] If the RUB/USD exchange rate had remained at the level of late 2015, banking sector assets would have amounted to 98% of GDP at the end of 2017.
[3] Committee on the Global Financial System. (2018). Structural changes in banking after the crisis. CGFS Papers, No. 60. Retrieved from: www.bis.org/publ/cgfs60.pdf.
[4] The euro area countries, Sweden, Switzerland, the UK, the USA, Australia, Canada, Japan, Brazil, China, Hong Kong, India, Mexico, Korea, Singapore.
[5] Statistical data for all charts contained in this report will be published on the Bank of Russia website.

increased from 40.2% in early 2008 to 58.5% at the end of 2017 (Chart 2). The share of assets held by banks undergoing financial rehabilitation (including the share of assets held by the banks undergoing rehabilitation through the Banking Sector Consolidation Fund (BSCF)) grew from 3.8% to 12.2%, and amounted to 5.9% at the end of 2017. This growth was accompanied by a declining share of assets held by banks of other forms of ownership, where the most noticeable decline from 41.5% to 17.5% was observed in large and medium-sized private banks (Chart 2).

Chart 2. Structure of banking sector assets, by credit institution cluster, % (at year end)
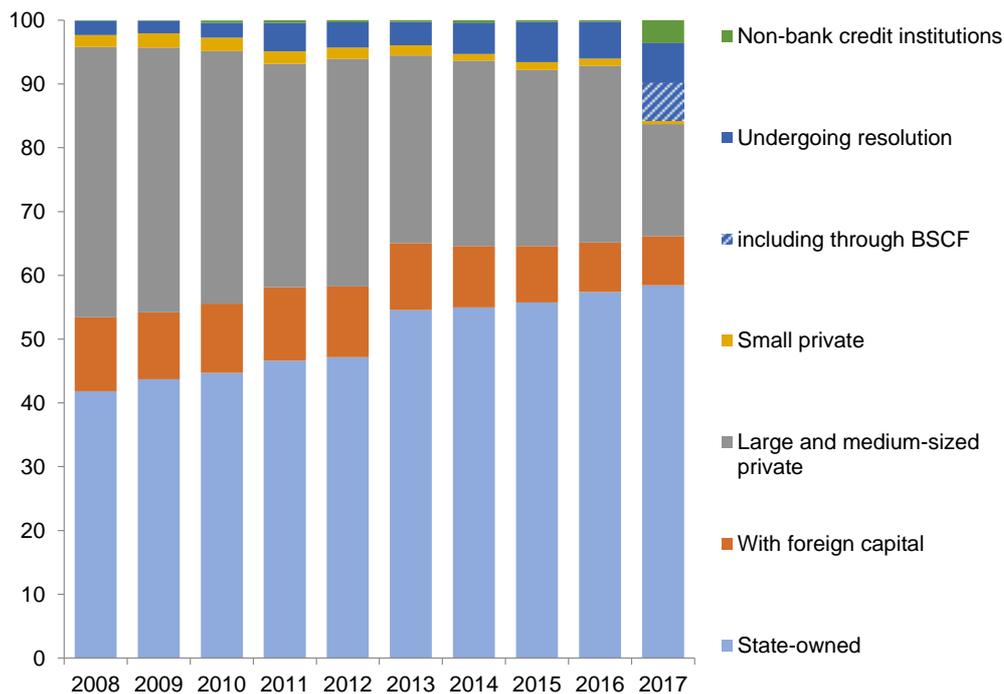

Source: Bank of Russia calculations.

Formally, the decline in the share of assets held by large and medium private banks in the total assets of the banking sector is associated with the banking sector rehabilitation policy implemented by the Bank of Russia since 2013 Q4. It resulted in withdrawal from the market or the application of financial rehabilitation procedures to banks unable to ensure their own stability (Chart 3). Almost all these banks provided unreliable financial statements, significantly overestimating the real value of their assets. Therefore, the value of banking assets indicated in the financial statements prior to the rehabilitation policy implemented by the Bank of Russia does not reflect the real situation. In turn, the banking supervision measures taken by the Bank of Russia since 2013 Q4 allowed it to gradually bring the balance sheet valuation of assets to their real value. The same observations apply to the reduction in assets held by small private banks in 2013–2017.

Chart 3. Structure of existing credit institutions (number of institutions at the beginning of the year)
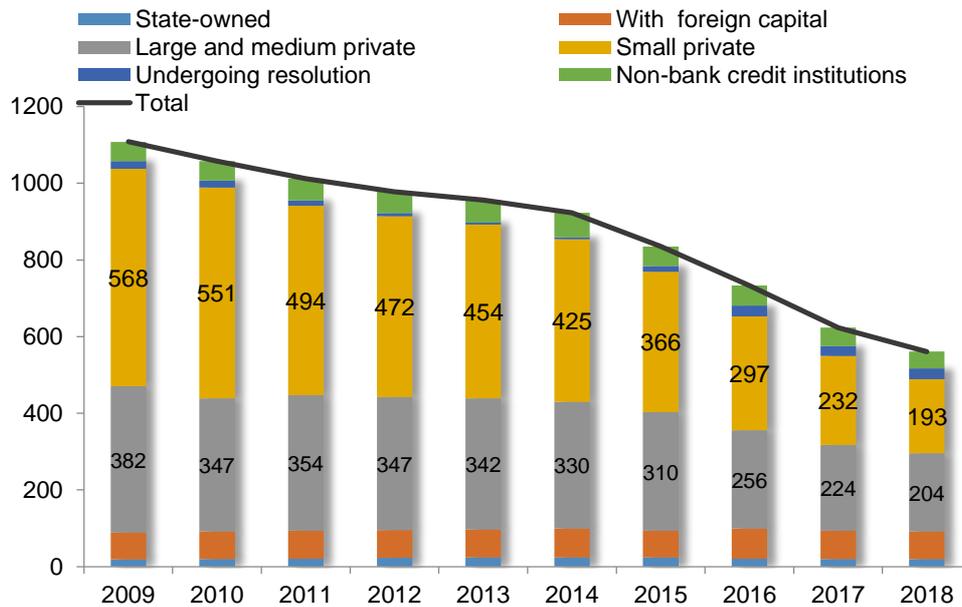
Source: Bank of Russia calculations.

A universal business model of banks (cluster remains dominant in the Russian banking sector, both in terms of assets and the number of banks (Chart 4, Chart 5).

Chart 4. Banking sector assets, by business model, %
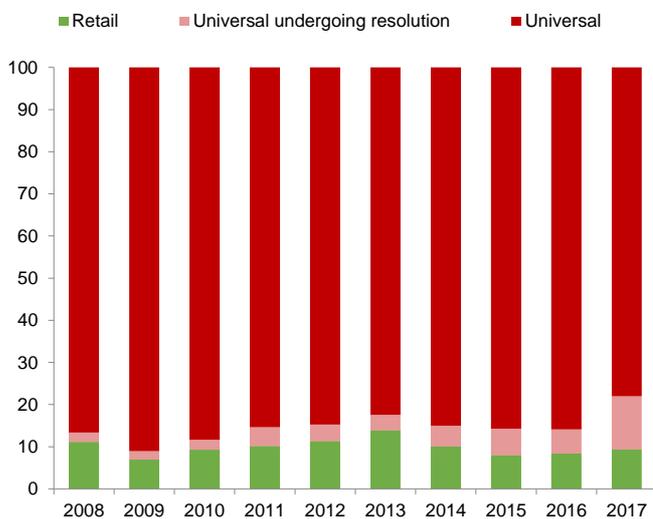
Source: Bank of Russia calculations.

Chart 5. Number of banks, by business model, %
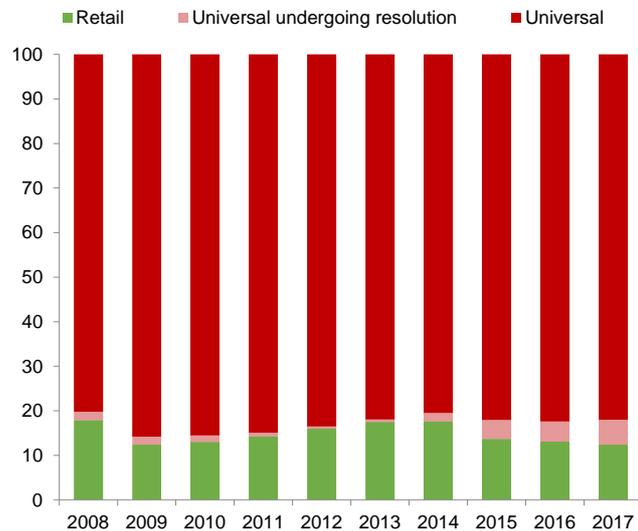
Source: Bank of Russia calculations.

Growth in the share of retail banks' assets fell on the periods of retail lending boom. In 2011–2013, this boom was accompanied by a relative increase in the number of retail banks, that is, some banks changed their model to a retail one. No such model changes were observed in 2014–2017. As shown below, Sberbank PJSC (hereinafter, "Sberbank") made a significant

contribution to the growth of retail lending. According to our definition, it belongs to banks with a universal business model.

The ratio of household loans and non-financial organisations' loans to GDP had been growing over the past decade despite the crisis. In the beginning of 2008, this ratio increased, respectively, from 8.9% to 13.2% of GDP and from 28% to 32.8% of GDP (Chart 1).

The decline in loans to non-financial organisations from 40% of GDP in 2015 to 32.8% of GDP in 2017 reflects the impact of several factors:

- More issues of traditional and exchange-traded corporate bonds (Chart 6). This allowed companies to attract funds at rates lower than loan interest rates (Chart 7).

Chart 6. Dynamics of the debt component of non-financial organisations, trillion rubles
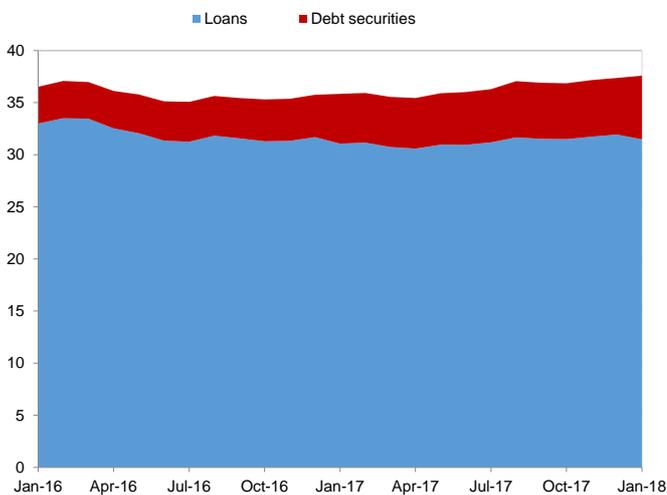
Chart 7. Rates for various funding instruments, %
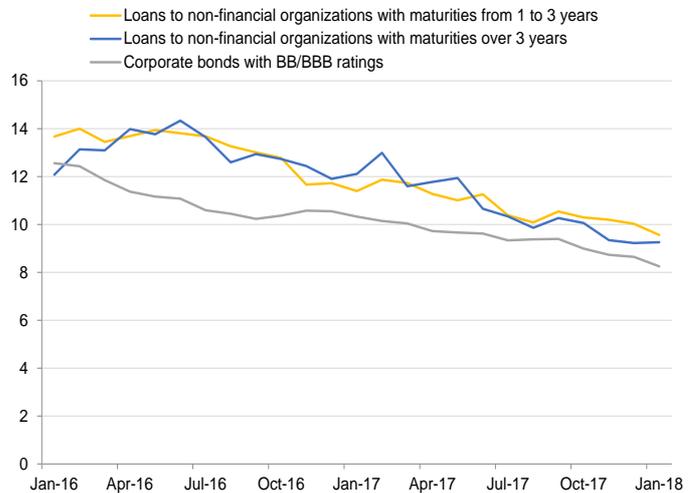
Source: Bank of Russia calculations.   *Source: Bank of Russia calculations.*

- The negative impact of currency revaluation. As the ruble strengthened against the dollar by 12% in 2016 and 6.1% in 2017, the currency component of the loan portfolio negatively contributed to growth. With the impact of currency revaluation excluded, the amount of lending would have been 37.2% of GDP in 2016 and 35.4% of GDP in 2017.

- Low quality of loans in banks with revoked licences and banks undergoing financial rehabilitation. Some of these loans are sold at auction and transferred to other banks. However, a significant part of these loans can be sold only at a major discount. In addition, a substantial part of such loans was nominal in nature, which essentially made them impossible to sell. The real scale of the decline in loans to non-financial organisations relative to GDP is more modest once these loans are taken into account. For example, the portfolio of loans to non-financial organisations issued by banks that have continued to operate into the years after the discussed decade and that are not undergoing resolution amounted to 32.2% of GDP at the end of 2015, 30.1% of GDP at the end of 2016, and 29.6% of GDP at the end of 2017.

- Banks pursue a more cautious and balanced lending policy aimed at development, while maintaining an acceptable level of risk. The easing of lending terms for large enterprises and SMEs[6], which began in mid-2016, is less pronounced than in the post-crisis recovery in 2009–2010.

Therefore, the 2015–2017 decline in lending relative to GDP had various causes, which were mostly of an objective nature. The study did not reveal any circumstances indicating that the banks have less interest in lending to corporate clients. Moreover, according to some experts, long-term forecasts for the size and structure of the Russian financial market bode well for further growth in lending relative to GDP[7].

On the Optimum in the Development of the Financial Sector

More finance is definitely not always better.

Cecchetti and Kharroubi (2012)

The widely held view of obvious benefits arising from financial sector development is that this development helps sustain investment activity, effectively distribute production factors, and improve the management of risks borne by economic agents. These circumstances, in turn, stimulate higher and sustained growth rates consistent with the economy's potential. Nevertheless, any depth of the financial sector that is excessive from the standpoint of economic and institutional development of a given country may, on the contrary, emerge as a financial destabilisation factor, carrying the risk of "financial bubbles" reducing financial system stability, raising uncertainty, and increasing economic growth volatility and macroeconomic destabilisation. Is there an optimal depth of financial sector development that contributes equally to achieving maximum economic growth and sustaining macroeconomic stability?

A review of existing empirical studies from a country perspective does not provide a clear answer with regard to the effectiveness of expanding bank lending for economic growth (growth effectiveness). Based on data for several dozen countries and 10-year observations, Bezemer et al. (2014) concluded that there is a stable positive relationship between credit flows (lending growth rates) and GDP, *on the one hand*, and the absence of a significant positive impact made by the total volume of loans (as a value describing "the stock") to non-financial organisations on GDP growth, *on the other hand*. Levine (2005) notes that the correlations between lending and GDP growth were positive until the late 1990s, after which the relationship significantly weakened or disappeared (largely due to the inclusion of global financial and economic crises into the sample under study).

A significant number of empirical studies (Shen and Lee, 2006; Arcand et al., 2012;

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[6] Changes in the Bank Lending Policy, a quarterly survey of the Bank of Russia

[7] See, for example: Мамонов М. Долгосрочное прогнозирование размера и структуры финансового сектора России // Серия докладов Банка России об экономических исследованиях. 2017 №20 (Mamonov, M. (2017). Long-Term Forecasting of the Size and Structure of the Russian Financial Sector. The Bank of Russia's Working Paper Series, No. 20).

Cecchetti and Kharroubi, 2012) also show that it is possible to explicitly identify the threshold value for the loan-to-GDP ratio, an excess of which negatively affects economic growth (the *too much finance* effect). One study argues that, once bank lending has reached 80–100% of GDP, any further deepening of the credit market ceases to accelerate long-term economic growth and begins to slow it down, adding to its volatility (Easterly et al., 2000).

Chart 8. Model estimates of loan-to-GDP ratio equilibrium in Russia*
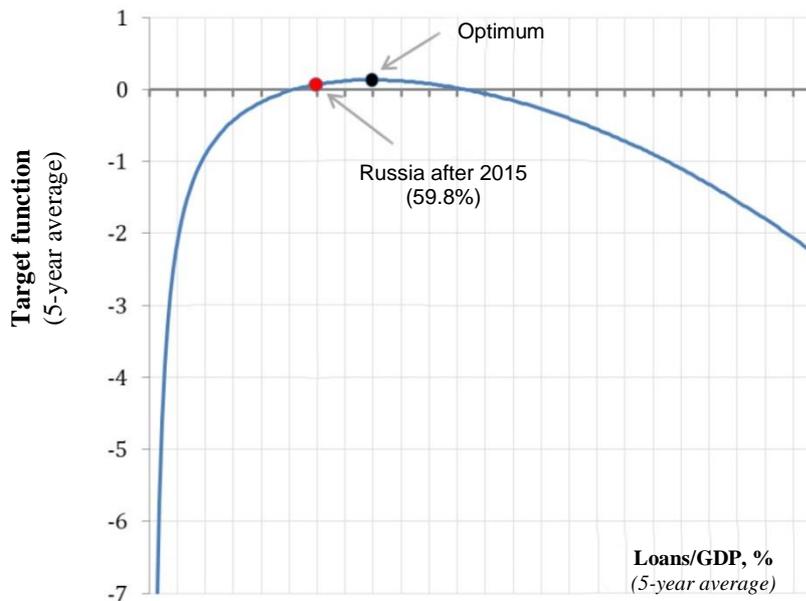

Source: M. Mamonov (2017).

* Note: The target function means the value of the regulator's utility function. In general, it can be defined as a function describing the preferences of the central bank as an independent economic agent, which secures the optimal, according to a certain set of criteria, state of the economy – of all is possible states.

The results of an empirical study based on Russian data conducted by the Centre for Macroeconomic Analysis and Short-Term Forecasting (CMASF) with the support of the Bank of Russia indicate the existence of arguments in favour of the hypothesis that there is an optimal depth of different segments in the financial sector, which maximises the cumulative macroeconomic effect from their development. According to these results, the above non-linear relationships that generate *the too much finance effect* are found not only for the bank loan-to-GDP ratio, but also for other possible indicators of financial development (domestic corporate bonds, external long-term corporate debt, stock market capitalisation, insurance sector assets, and independent pension funds). At the same time, according to the same estimates, the loan-to-GDP ratio is currently below the equilibrium level from the standpoint of the concept of the regulator's target function presented in the aforementioned paper by M. Mamonov (2017).

Chart 9. Lending to the private non-financial sector in 2016, % of GDP
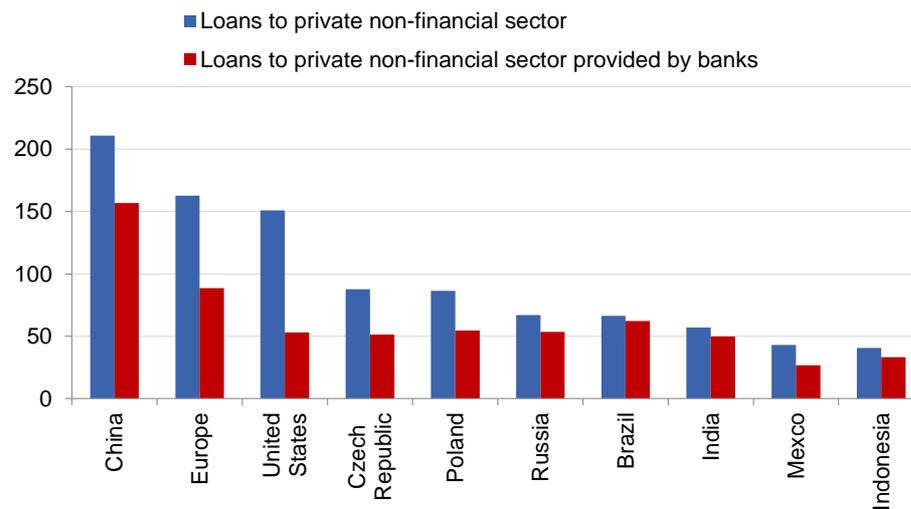
Sources: IMF, the World Bank.

Studies on identifying the risks to financial stability present the loan-to-GDP ratio as a key indicator describing the credit burden in the economy. At the same time, Drehmann and Juselius (2012) showed that the *debt service ratio* (hereinafter, "DSR") is also a very effective leading indicator. DSR is defined as the flow of payments on accumulated debt, including both the repayment of principal and payment of interest, relative to current income[8] (see Donets and Ponomarenko, 2015[9]).

To a large extent DSR analysis can explain significant and persistent differences between the level of loan-to-GDP ratio in emerging and developed markets. The latter have a long history of steadily low inflation and mature financial systems and, accordingly, significantly lower nominal interest rates and, therefore, significant credit horizons. This makes it natural for them to maintain relatively high loan-to-GDP levels. At the same time, according to estimates, the level of current debt burden as described by DSR is fairly typical amid the levels observed in emerging markets.

Chart 10. Loan-to-GDP ratio in Russia, developed and emerging markets (median values and ranges based on 25th and 75th percentiles, %), % to GDP

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[8] The report "Assessing the Risks of Individual Borrowers Based on Debt Burden Indicators" published on the Bank of Russia website presented proposals for calculating and using the indicators of debt burden in Russia for analytical purposes and for the purposes of macroprudential regulation. The Bank of Russia is developing the draft ordinance on risk ratio buffers for certain asset types and characteristics of asset types subject to setting risk ratio buffers, including for the purpose of macroprudential regulation.
[9] http://www.cbr.ru/analytics/ppc/Consultation_Paper_170221.pdf
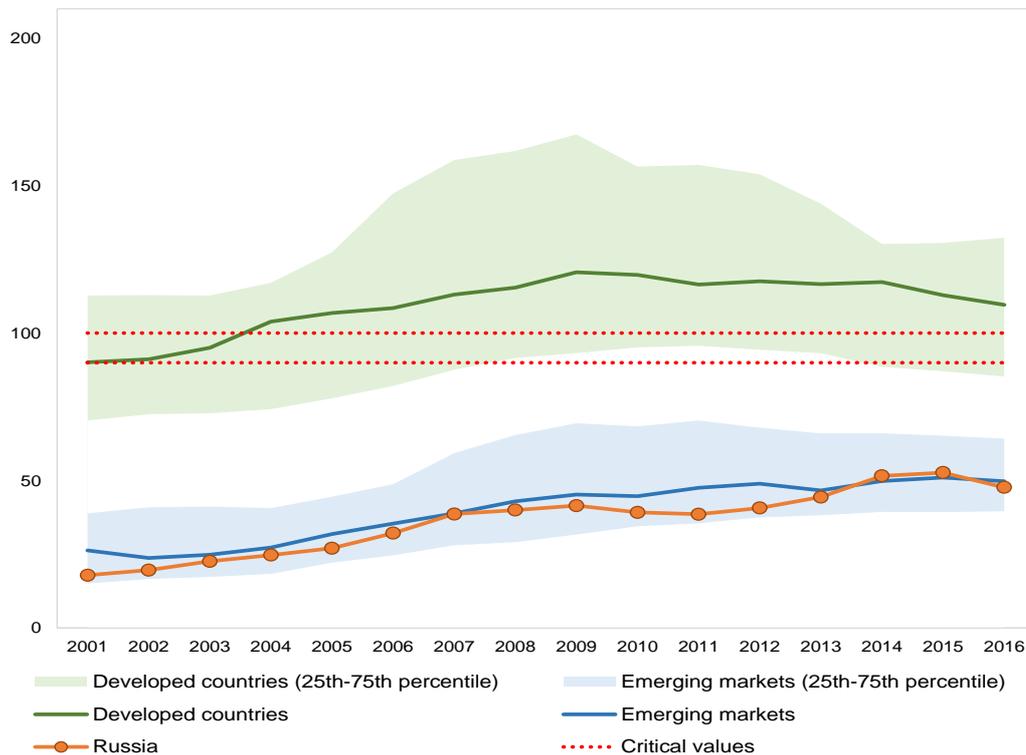
Source: IMF, Bank of Russia calculations.

References:

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Availability of Banking Services

The number of banks' internal structural units (hereinafter, "branches") per 100,000 people, which traditionally indicates the availability of banking services, is gradually declining in Russia. While there were on average 27.1 bank branches per 100,000 people in 2010, this figure for the end of 2017 was 23.1 (Chart 11). This trend, as well as the number of bank branches per 100,000 people, is in line with similar dynamics in developed countries.

The decline in the number of bank branches was not associated with the twofold decrease in the number of banks over the past decade. Most banks with revoked licences had no extensive branch network. Existing banks have streamlined their branch network, helped in part by remote banking technologies and increased competition from non-bank organisations. For example, while the total number of bank branches decreased from 37,800 to 33,300, Sberbank's reduced from 19,100 to 14,600.

Chart 11. Share of regions of the Russian Federation (y-axis) with a specific number of bank branches per 100,000 people (x-axis)
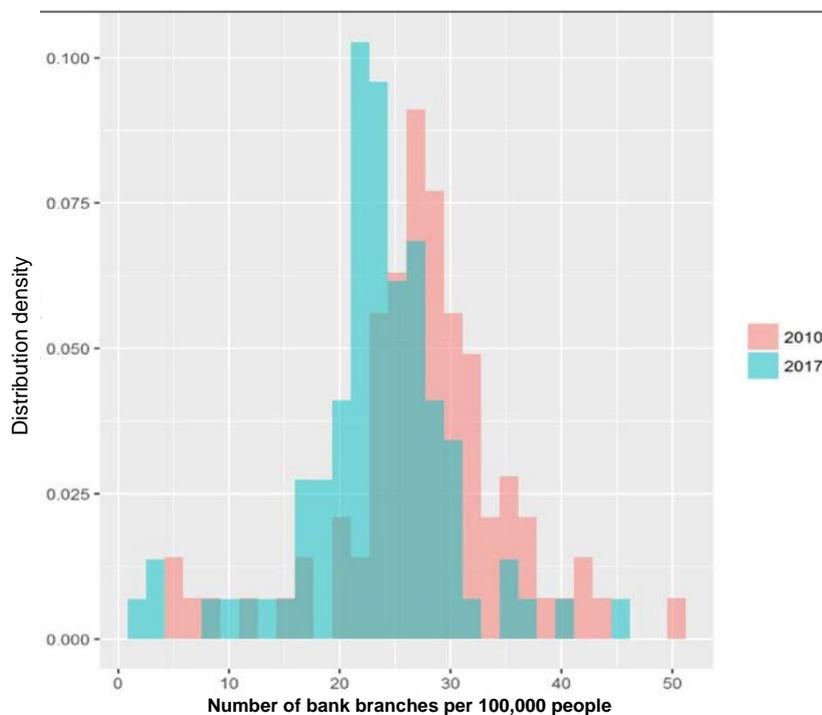

Source: Bank of Russia calculations.

The indicator of bank branch availability cannot comprehensively represent the extent of availability to economic agents of banking services. A broader index for the availability of banking

services, which takes into account the saturation of the real economy (non-financial sector and households) with loans, as well as savings behaviour intensity, indicates the stability of the median indicator for 2008–2017, despite the reduction in the number of bank branches, and the trend towards some convergence of these indicators between Russia's regions. (Chart 12).

However, this indicator does not fully describe the availability of banking services, either. With overall positive dynamics at the regional level, there may arise problems with access to financial services, in particular, in remote and sparsely populated areas. In economics there is the first-best equilibrium concept. This is a situation that delivers maximum utility to participants on the demand side and maximum profit/minimum costs to participants on the supply side, on the back of market mechanisms. With regard to financial inclusion, the first-best equilibrium can be observed when banks find it beneficial to establish their physical branches in locations where this driven by the task of ensuring appropriate financial inclusion. However, this is not always achievable, for example, when public requirements for the presence of a bank do not match the bank's desire to maintain a branch due to its low profitability/high costs. This case calls for another solution.

Chart 12. Integral indicator for the availability of banking services * (by Russian regions)
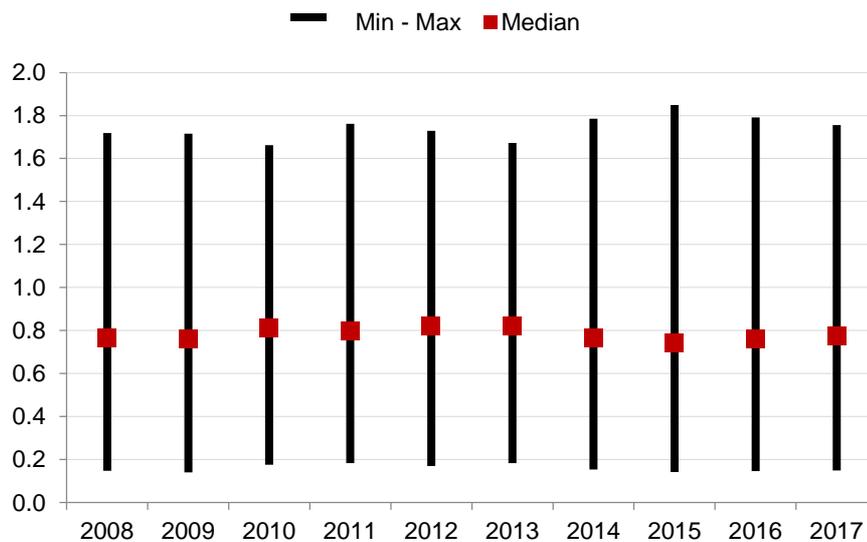
The average geometric value of the region's provision with loans (loans to non-financial organisations and households to the region's GRP) and savings behaviour intensity of households in the region (household deposits to the average per capita income and the region's average population).

Source: Bank of Russia calculations.

In some countries, the problem of access to banking services in remote and sparsely populated areas is being addressed by the requirement that important credit institutions open and maintain physical service branches in such regions. It is advisable to study the introduction of such requirements in Russia, for example, with regard to banks with state participation. In addition, the easing of regulatory requirements for basic licence banks during the transition to proportionate regulation may to some extent facilitate the cost-effectiveness of their operations in small population centres.

1.2. Structure of Assets and Liabilities

1.2.1. Structure of Assets

The structure of Russian banking sector assets in 2011–2017, after sharp changes in 2008–2010, was virtually unchanged. The share of loan portfolios fluctuated somewhat but held at around 70% of assets, and investments in securities amounted to about 15% of assets (Chart 13). Compared to other countries, banks in Russia rely more on lending and to a much lesser extent on investments in securities.

Chart 13. Dynamics of key indicators of the structure of assets, %
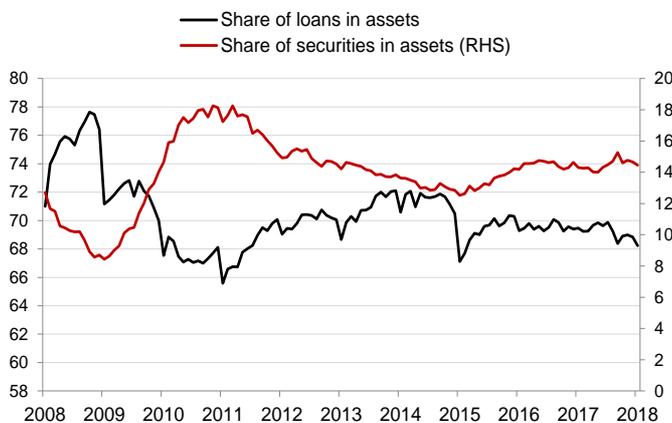
Chart 14. Dynamics of key indicators of the loan portfolio structure, %

Source: Bank of Russia calculations.
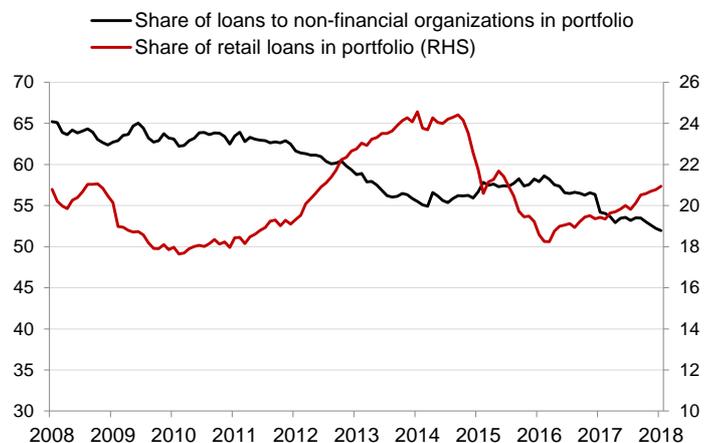
Source: Bank of Russia calculations.

An important trend in the structure of bank assets during the period under review was the declining dollarisation of loans provided to households and non-financial organisations. This was the result of prudential/macroprudential regulation[10], as well as the deliberate policy of banks and their customers to reduce risks amid the transition to a free floating ruble (Chart 16, Chart 20). A similar trend was observed with respect to the structure of liabilities, where the dollarisation of household and corporate deposits declined in 2008–2017 (Chart 27, Chart 29). The decline in dollarisation was accompanied by a significant reduction in banks' reliance on non-resident-provided funds. The Bank of Russia estimates that non-residents' share in liabilities dropped from more than 21% at the beginning of 2008 to about 5% at the end of 2017.

Loan Portfolio

In the period under review, the loan portfolio structure was characterised primarily by a decline in the share of corporate lending from 65% to 52% (Chart 14). This decrease affected almost all clusters, except for universal state-owned banks. In 2015–2017, this cluster showed a

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[10] Devaluation of key balance sheet items of Russian banks was occurring amid increasing regulatory requirements in respect of credit operations in the foreign currency, introduction of higher risk ratios, and required reserve ratios with regard to foreign currency liabilities.

gradual increase in the share of loans to non-financial organisations. As a result, this indicator returned to its 2008 level (Chart 15).

Chart 15. Dynamics of the share of loans to non-financial organisations in assets, by credit institution cluster (at year end), %
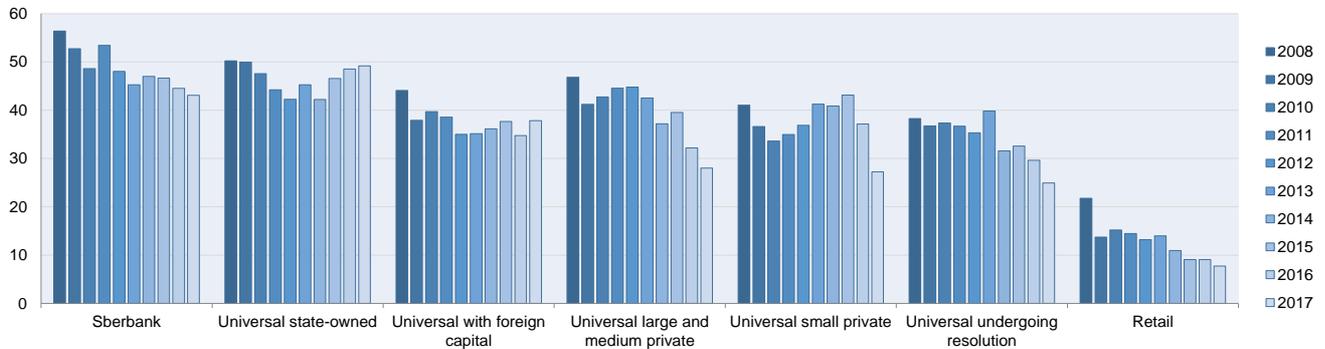
Source: Bank of Russia calculations.

At the end of 2017, the dollarisation of loans to non-financial organisations (at the current exchange rate) in the overall banking sector did not change compared to 2008. When adjusted for exchange rate revaluation, it decreased in the clusters of universal state-owned banks, universal small private banks, and retail banks, and slightly increased in the other banks (Chart 16). At the same time, in 2015–2017, all clusters demonstrated declining dollarisation, both with or without currency revaluation of loans. Notably, the highest share of foreign currency loans is issued by banks with foreign capital (more than 50%) and Sberbank (more than 35%).

Chart 16. Dynamics of the dollarisation of loans to non-financial organisations, by credit institution cluster (at year end), %
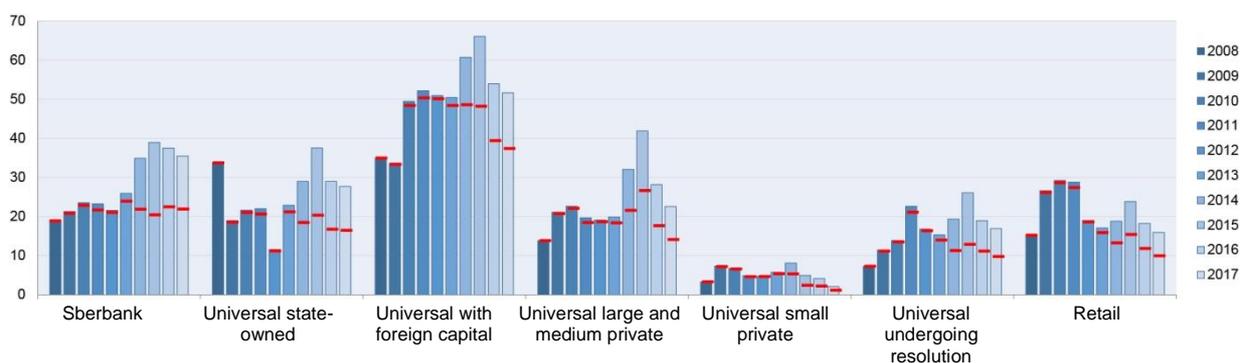
▬ *- adjusted for exchange rate changes (exchange rate as of 01.01.2009)*

Source: Bank of Russia calculations.

In terms of corporate loan portfolio distribution by clusters, we should note a stable and significant role played by Sberbank and, since 2013, other universal state-owned banks (Chart 17). As a result, the share of universal state-owned banks increased from 12.5% at the beginning of 2008 to 33.7% at the end of 2017, which is only slightly less than Sberbank' share (35.1%).

Chart 17. Distribution of loans to non-financial organisations, by credit institution cluster, trillion rubles (at year end)
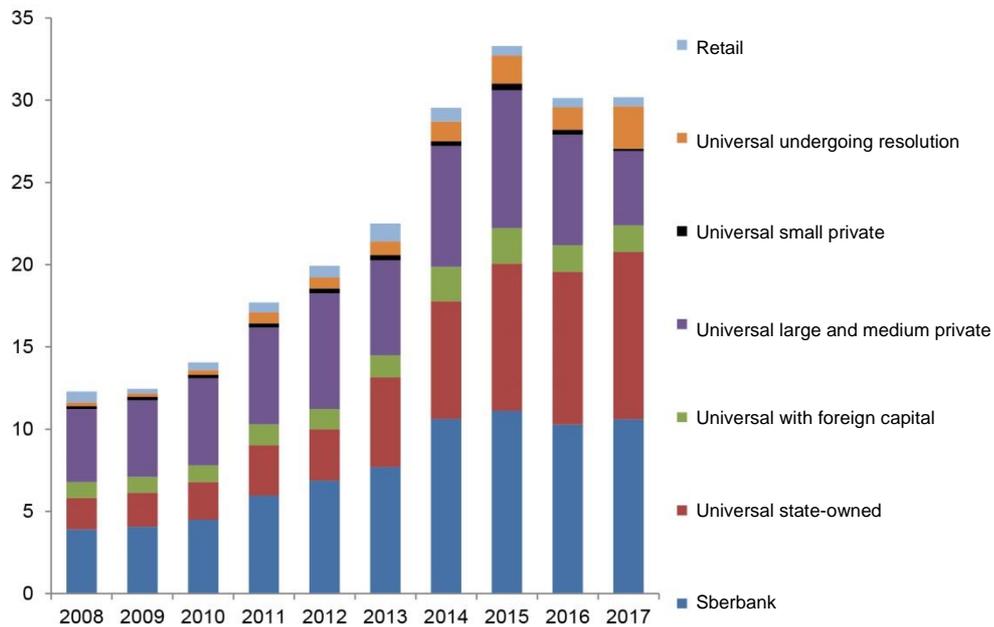
Source: Bank of Russia calculations.

Chart 18. Contribution by various clusters of credit institutions to growth of the corporate loan portfolio, pp
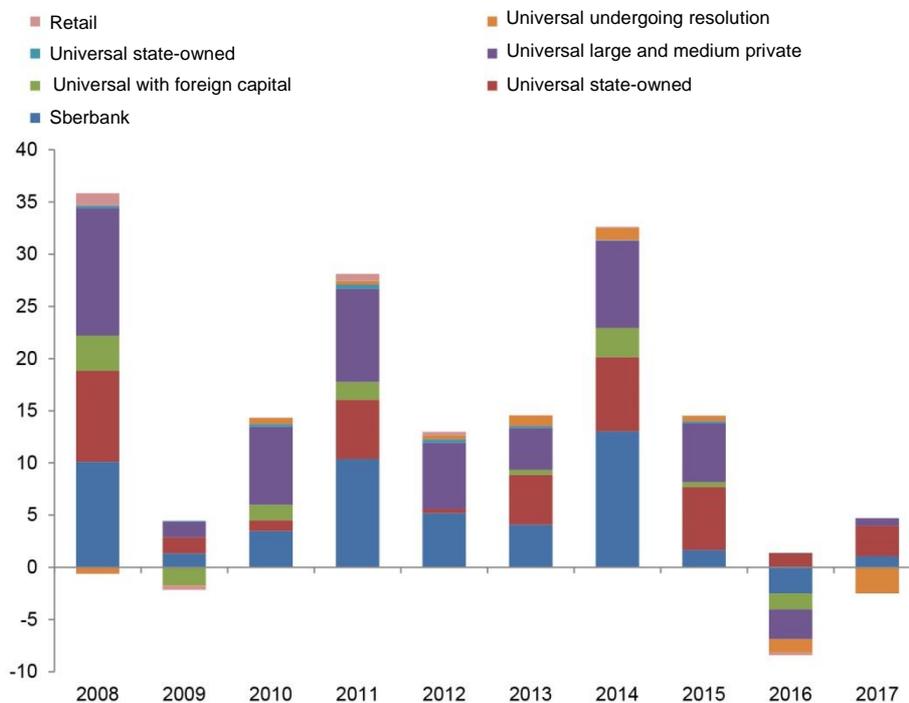
Source: Bank of Russia calculations.

These two clusters, along with universal large and medium private banks, generated most growth in lending to non-financial organisations during the period under review (Chart 18). For Sberbank, this was not the case in 2015–2017, and for the cluster of universal large and medium

private banks, 2016–2017, when, among other things, several major players moved to the cluster of banks undergoing resolution.

Following the retail lending boom of 2011–2013, the share of lending to households exceeded 24% of the loan portfolio. It declined during the economic recession and resumed growth in 2016–2017 (Chart 14). The same dynamics were typical for most clusters of banks, especially those specializing in this type of lending, such as Sberbank and retail banks (Chart 19). In other clusters, the share of lending to households dropped below 10% in recent years.

Chart 19. Dynamics of the share of household loans in assets, by credit institution cluster (at year end), %
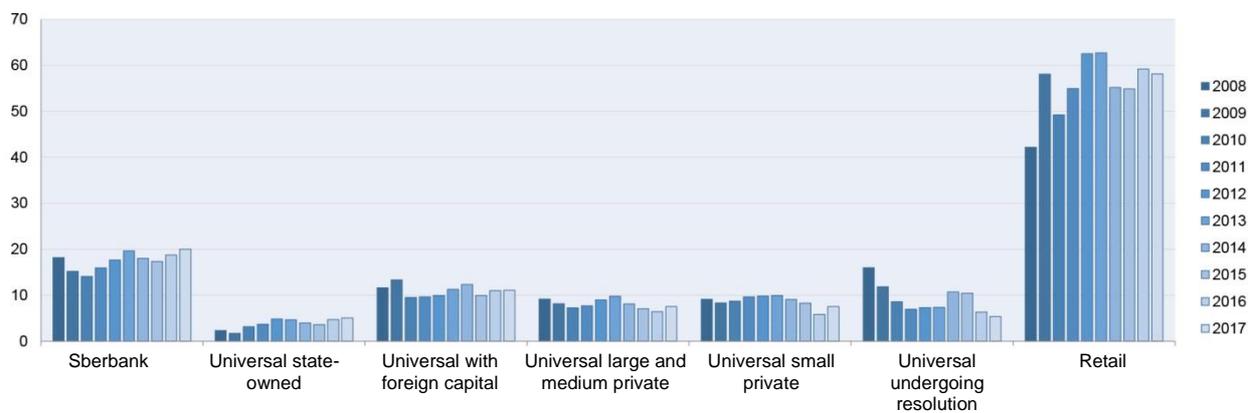
Source: Bank of Russia calculations.

In 2008–2017, the de facto dollarisation of household loans and dollarisation including the effect of currency revaluation significantly decreased in all clusters (Chart 20).

Chart 20. Dynamics of dollarisation of household loans, by credit institution cluster (at year end), %
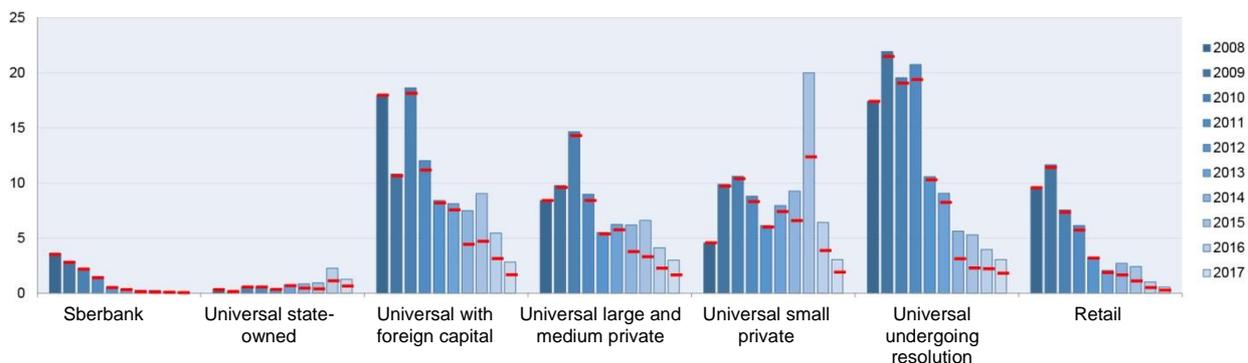
▬ *- adjusted for exchange rate changes (exchange rate as of 01.01.2009)*
*Source: Bank of Russia calculations.*

As expected, Sberbank and retail banks accounted for most of the retail loan portfolio. In recent years, universal state-owned banks have also been actively increasing their retail lending. Their share in the total retail lending rose from 2.3% at the beginning of the period under review to

about 9% by the end of that period, but it remains below the share of universal large and medium private banks (10%), whose retail portfolio grew in 2010–2014 and 2016–2017 (Chart 21).

Chart 21. Distribution of household loans, by credit institution cluster, trillion rubles (at year end)
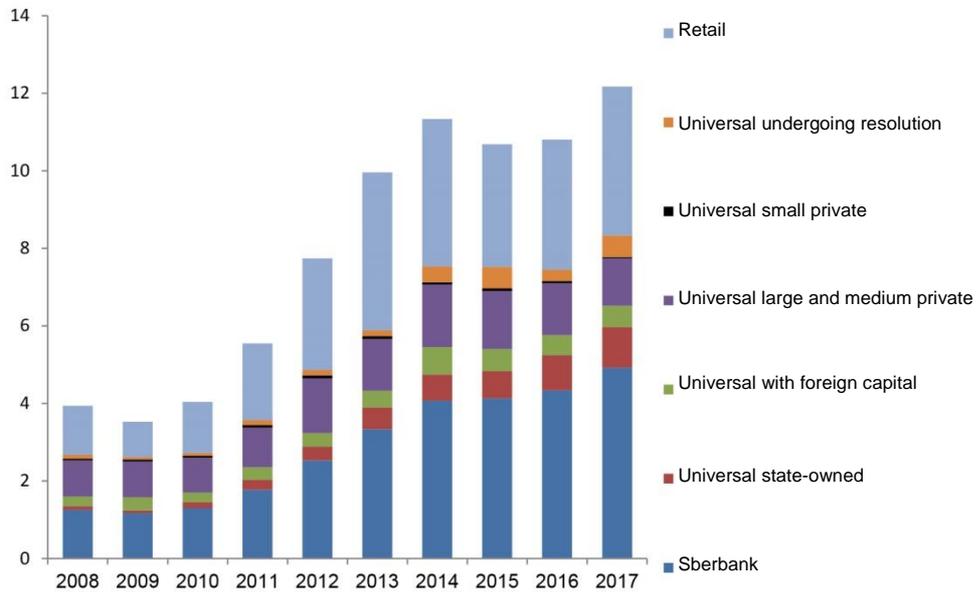
Source: Bank of Russia calculations.

Chart 22. Contribution by various clusters of credit institutions to growth in the retail loan portfolio, pp
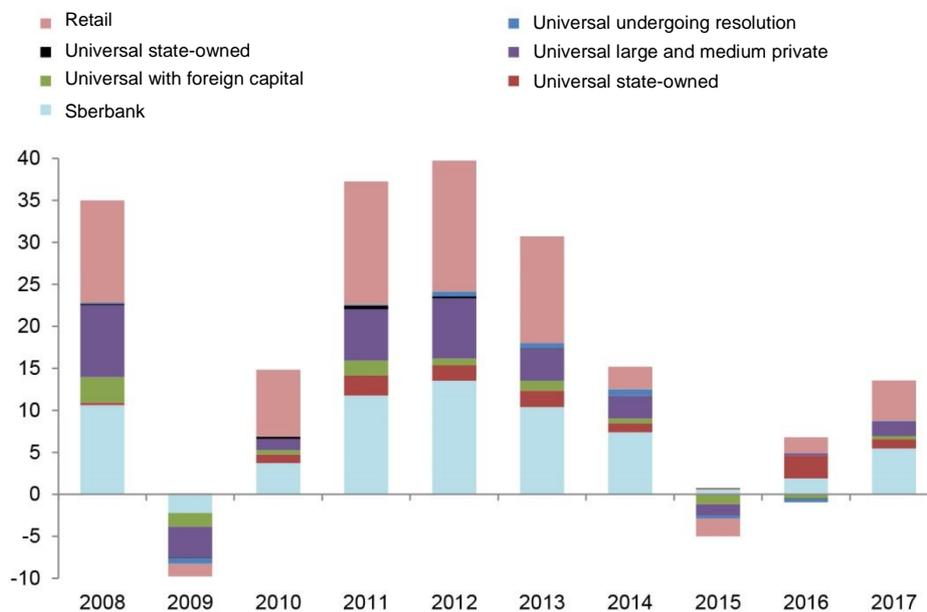
Source: Bank of Russia calculations.

In 2008–2017, growth in retail lending was generated primarily by three clusters: Sberbank, universal large and medium private banks, and retail banks. The contribution by Sberbank and retail banks was comparable throughout the entire period (Chart 22).

Securities Portfolio

The share of securities in assets of banks undergoing resolution (about 25%) nearly always exceeded the indicators of other clusters. The value remains high, even without excluding Otkritie Financial Corporation PJSC, whose business model, among other things, involved active participation in securities transactions. After increasing in 2008–2010, the share of securities in assets in other clusters fluctuated around a conditional median, of which value varies across clusters but generally stays in the range from 6% to 19% (Chart 23). This indicates that most banks in the past decade were little or only moderately interested in financial investment opportunities.

Chart 23. Dynamics of the share of securities in bank assets, by credit institution cluster (at year end), %
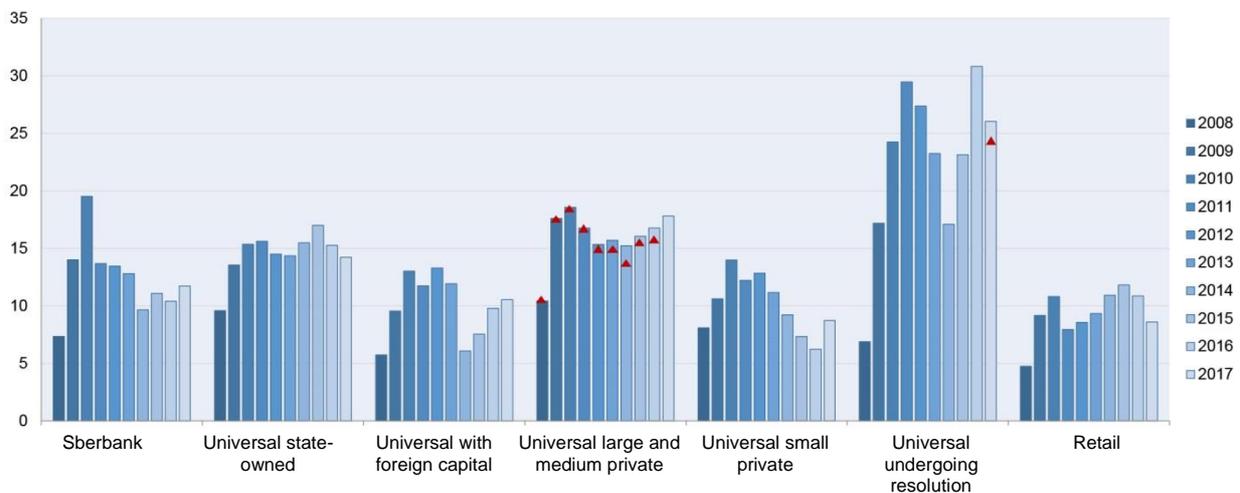
▲ - share in the cluster, excluding Otkritie Financial Corporation PJSC.

Source: Bank of Russia calculations.

1.2.2. Structure of Liabilities

For the banking sector, the main sources of liabilities continue to be household deposits, as well as deposits and funds of organisations held in settlement accounts. Over the period under review, the share of the former in the liabilities of banks increased from 25% to 30%, despite the two past crises when the share of household deposits temporarily decreased. Also, the decline in the share of deposits was caused, among other things, by statistical effects associated with the banking sector's increased dependence on the Bank of Russia's funds in periods of a structural liquidity deficit. The share of deposits and funds in settlement and other accounts of legal entities continues to account for about 30% of liabilities. As a result, by the end of the last decade, the main market (retail and wholesale) sources of the banking sector's liabilities have become equal to each other when it comes to the banking sector as a whole. However, there remain differences across bank clusters.

Deposits and Funds of Organisations in Settlement and Other Accounts

In 2008–2017, the deposits of legal entities and funds of organisations in settlement and other accounts generated a significant share of funding for Sberbank and the clusters of universal state-owned banks, universal large and medium private banks, as well as universal banks with foreign capital (Chart 25, Chart 26).

Chart 24. Distribution of deposits made by legal entities and funds of organisations held in settlement and other accounts, by credit institution cluster, trillion rubles (at year end)
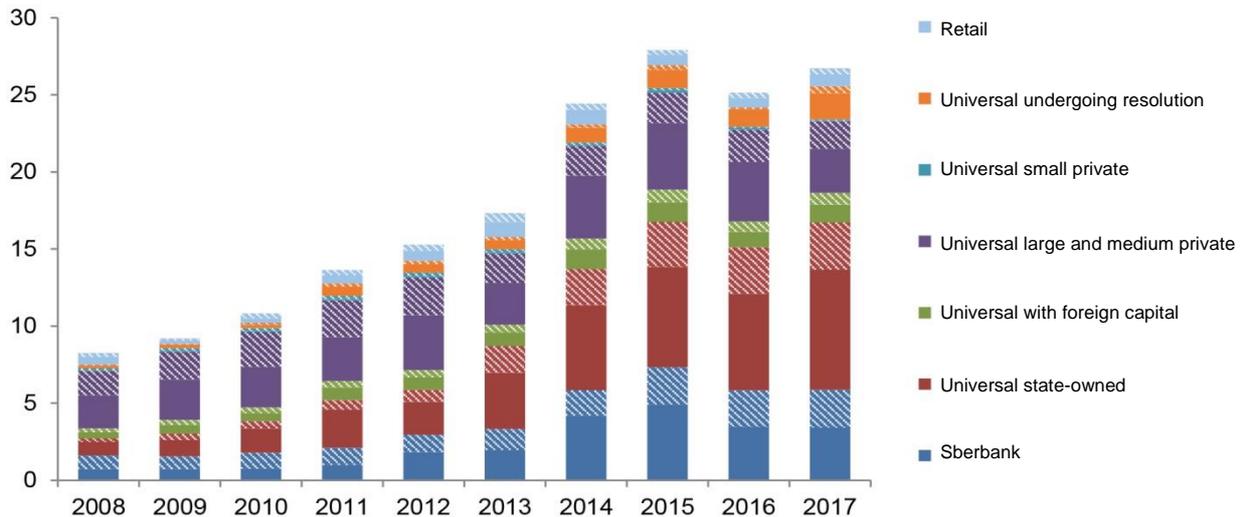
Source: Bank of Russia calculations.

* Note: The amount of deposits made by legal entities is highlighted with a solid colour, while the amount of funds held in settlement and other accounts is shaded.

In recent years, there has been a trend towards the outflow of funds held by legal entities from universal small private banks and, to some extent, from universal large and medium private banks to universal state-owned banks and banks with foreign capital (Chart 25, Chart 26). This trend involves not only relative but also absolute values. In 2016–2017, the nominal amount of deposits made by legal entities decreased in both clusters of private banks. Nominal amounts could be affected by the transition of several banks to the category of credit institutions undergoing resolution. Sberbank also benefited from the 2014–2015 transfer of legal entities' funds. However, it switched to retail funding in 2016–2017 (Chart 28).

Chart 25. Dynamics of the share of legal entities' deposits, by credit institution cluster (at year end), %
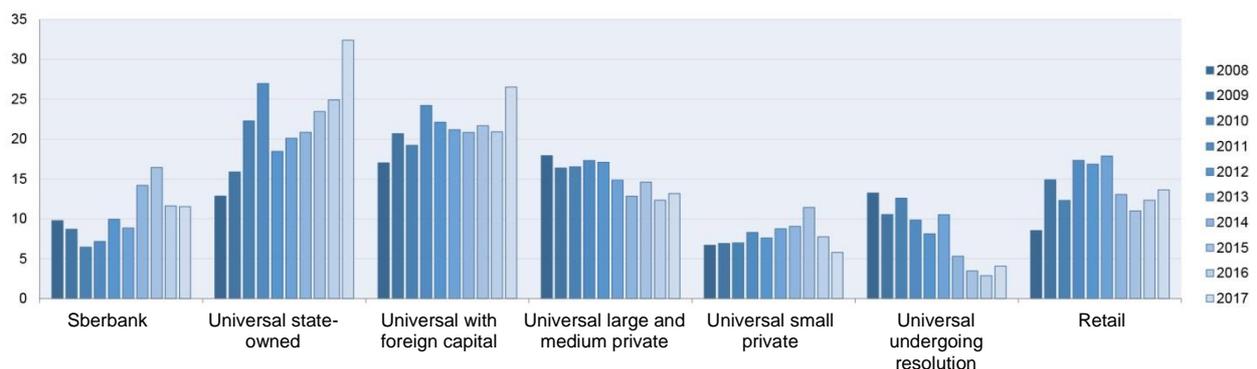
Source: Bank of Russia calculations.

Chart 26. Dynamics of the share of funds held by organisations in settlement and other accounts, by credit institution cluster (at year end), %
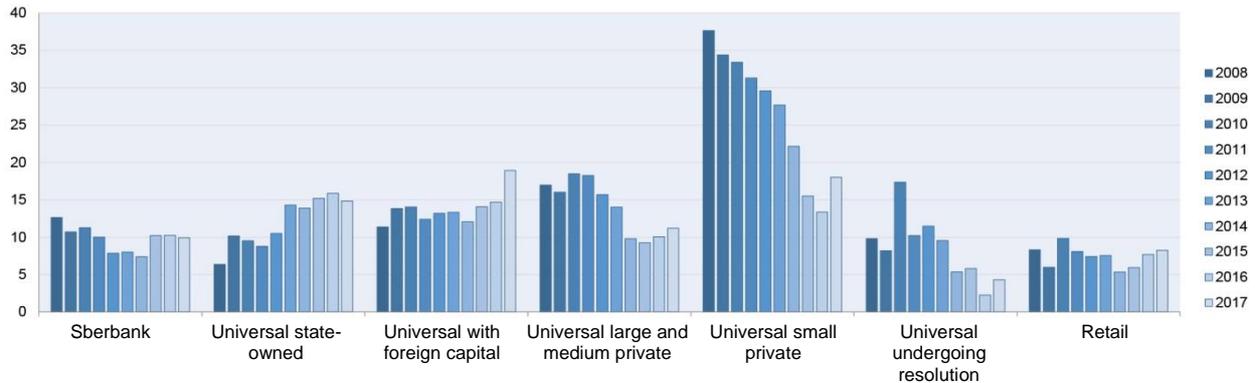
Source: Bank of Russia calculations.

The dynamics of de factor dollarisation of legal entities' deposits in 2008–2017 largely reflect the impact of exchange rate fluctuations (Chart 27). Dollarisation, after taking into account the effect of exchange rate revaluation for this type of liabilities, decreased across most credit institution clusters and remained high only in Sberbank.

Chart 27. Dynamics of the dollarisation of legal entities' deposits, by credit institution cluster (at year end), %
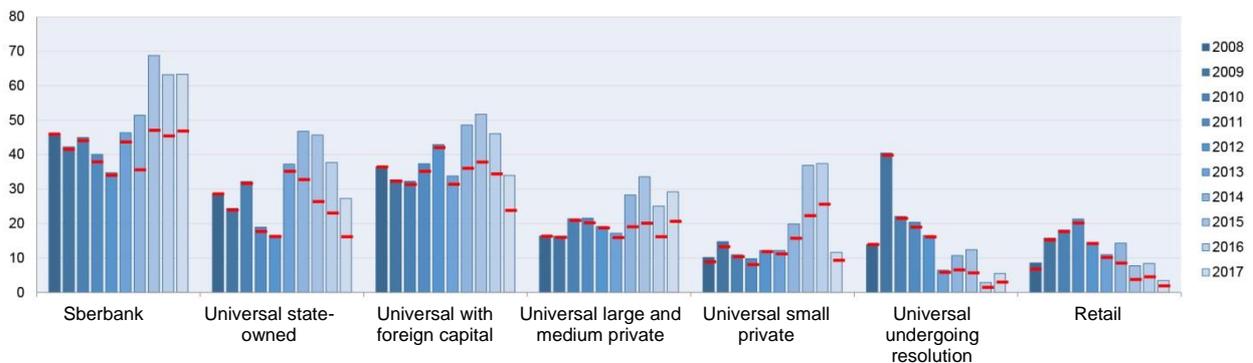
− *- adjusted for exchange rate changes (exchange rate as of 01.01.2009)*

Source: Bank of Russia calculations.

Household Deposits

In 2008–2017, the share of household deposits in sources of funding increased across most clusters. The highest share is held by banks with higher shares of household loans in their assets: Sberbank and retail banks (Chart 28). In 2008–2017, up to half of all household deposits were held in Sberbank and about 15% in retail banks (Chart 30).

Chart 28. Dynamics of the share of household deposits in bank liabilities, by credit institution cluster (at year end), %
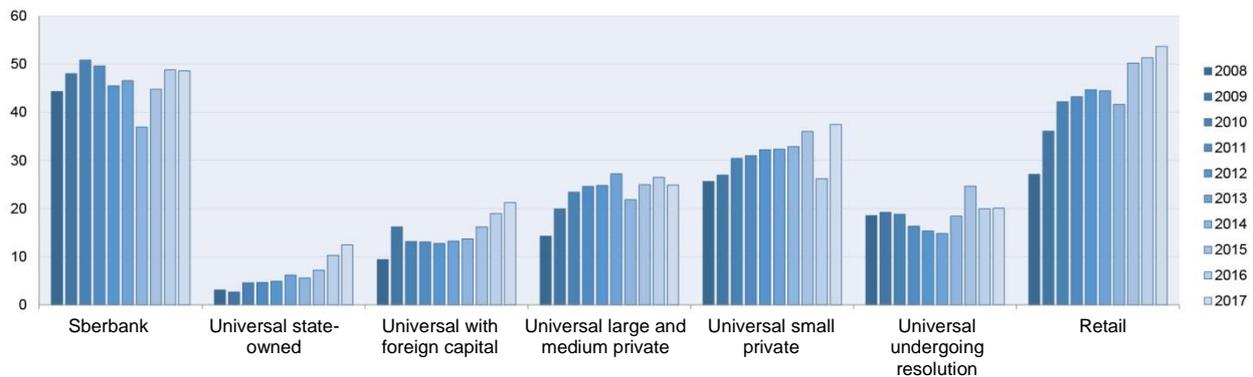
Source: Bank of Russia calculations.

Chart 29. Dynamics of the dollarisation of household deposits, by credit institution cluster (at year end), %
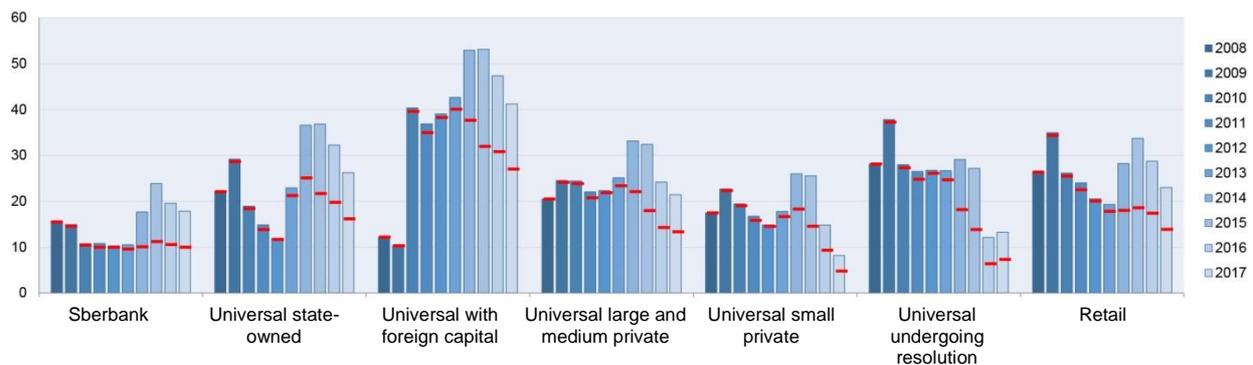
▬ *- adjusted for exchange rate changes (exchange rate as of 01.01.2009)*

Source: Bank of Russia calculations.

Dollarisation of household deposits (adjusted for the effect of exchange rate revaluation) decreased in 2008–2017 in all clusters, except for universal credit institutions with foreign capital (Chart 29). This cluster continues to be the leader by share of household foreign currency deposits in the total amount of deposits.

In recent years, universal state-owned banks have also increasingly relied on household deposits as an important source of funding. Their share in the total amount of household deposits increased from 2% in early 2008 to nearly 10% by the end of 2017, which was generally in line with the dynamics of growing activities by banks of this cluster in the retail lending market (Chart 30). In 2017, the share of banks undergoing resolution has significantly increased in the total amount of household deposits. This was due to the transition of several large private banks to that cluster.

Chart 30. Distribution of household deposits, by credit institution cluster, trillion rubles (at year end)
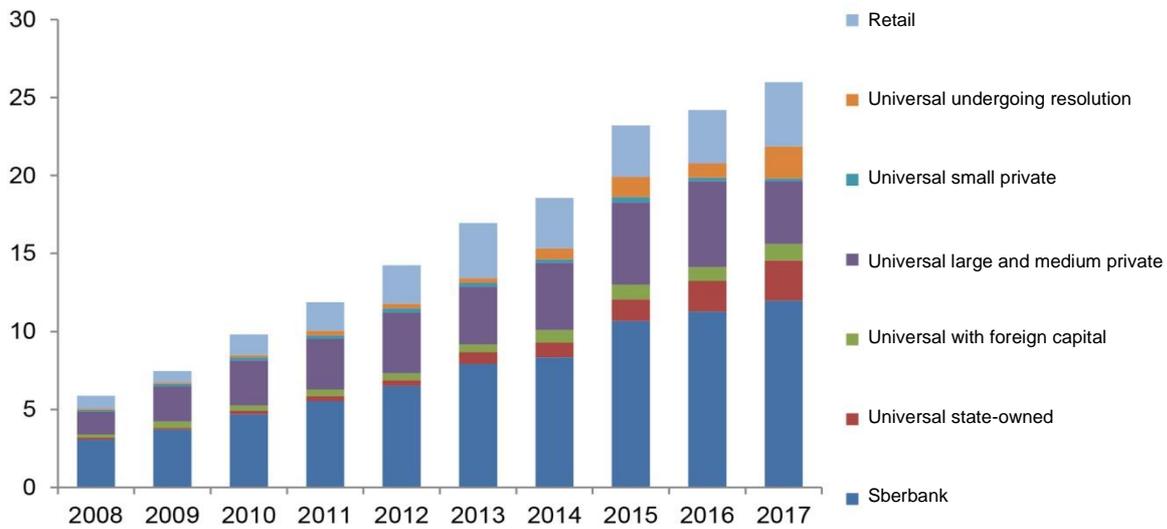
Source: Bank of Russia calculations.

<u>*Bank of Russia funds*</u>

The Bank of Russia's liquidity instruments were an important source of funding in 2008–2009 and 2012–2016, when the sector experienced structural ruble-denominated liquidity deficit. In these periods, the main liquidity outflow factor was the Bank of Russia's sales of foreign exchange, intended to support the ruble exchange rate and limit its volatility. The increased amount of cash in circulation and accumulation of deposits made by sovereign funds to accounts in the Bank of Russia in the period between the two crises have also contributed to lower banking sector liquidity.

Bank of Russia instruments accounted for 12% of liabilities both during the acute phase of the 2009 crisis and at the beginning of 2015. In 2009–2010 and early 2015, the spending of resources previously accumulated by sovereign funds reduced the need for credit institutions to raise money from the Bank of Russia. In recent years, the sources of liquidity inflow to the banking sector included another important factor: the provision of funds to credit institutions undergoing financial rehabilitation. As a result, at the beginning of 2017, the banking sector had a structural liquidity surplus. Despite the fact that the inflow of funds from operations in the Russian budget system and from provision of funds to troubled banks went only to a limited number of credit institutions, these funds were subsequently distributed across the banking sector. By the end of 2017, all clusters, except for banks undergoing resolution, became net creditors of the Bank of Russia by placing some of their assets as deposits with the regulator (Chart 31). This operation was used most actively by universal small private banks. Apparently, in the context of positive real interest rates, their investments in Bank of Russia deposits became a good (and a risk-free) alternative to lending to non-financial organisations and households. At the same time, the current situation can hardly be considered optimal when we take into account the mission of credit

institutions to provide financial support to development processes of the real economy. This is confirmed by the problem of finding an effective business model for small private banks, as our analysis found.

Chart 31. Net position* on operations with the Bank of Russia, % of assets

(+/- – lender/borrower)
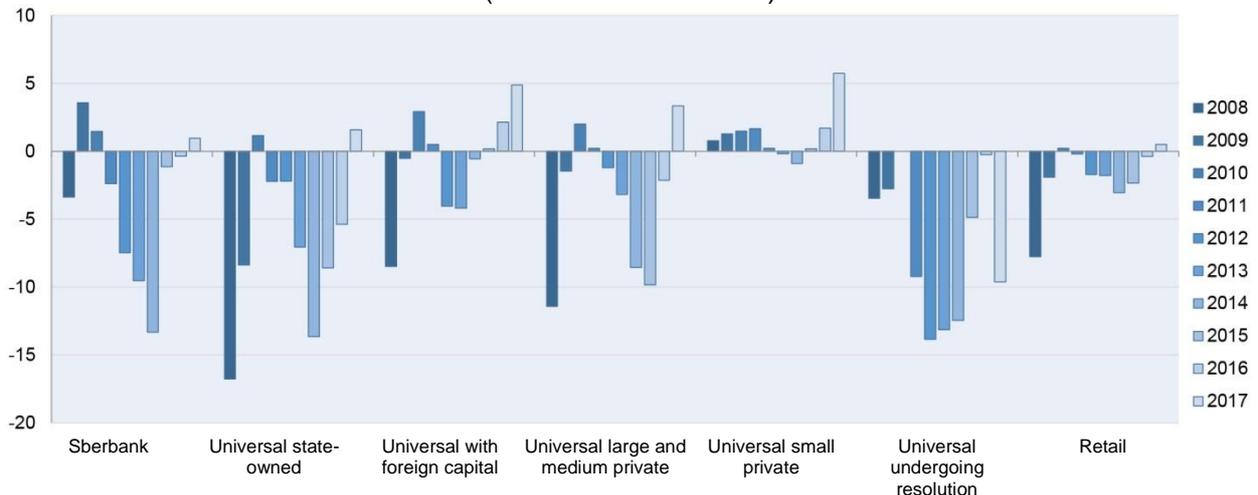
Note: In the Sberbank cluster, the net position on operations with the Bank of Russia was adjusted for the relevant amount of subordinated loan initially issued in 2008 for 500 billion rubles. There was no adjustment for an additional amount of debt to the Bank of Russia owed by banks undergoing resolution due to the new mechanism of liquidity provision (BSCF instead of DIA), as it affects only the cluster of banks undergoing resolution.

Source: Bank of Russia calculations.

1.3. Concentration and Competition

One of the Bank of Russia's priorities is to develop competition in the banking services market. The Bank of Russia's efforts to rehabilitate the banking sector, having been made on a system-wide basis since 2013 Q4, have reduced the number of operating banks over the past decade by more than half – from 1,092 at the beginning of 2008 to 517 at the end of 2017 (Chart 32). The withdrawal of non-viable banks from the market resulted in a higher concentration of the banking sector, measured both by the share of assets held by the five largest banks in the total assets of the sector (from 42 to 55.8%) and by the Herfindahl-Hirschman Index[11] (from 829 to 1,108) (Chart 33).

Meanwhile, international comparisons indicate a medium level of banking sector concentration in Russia. Moreover, in the last decade, the trend towards growth in the banking

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[11] Competition in the banking sector is often described using the Herfindahl-Hirschman Index (HHI) for such key indicators as assets, deposits, and loans provided to non-financial organisations. An index value of less than 1,000 corresponds to a low level of concentration, that from 1,000 – to 1,800 to a mid-level of concentration, and over 1,800 – to a high level of concentration. According to this index, concentration in the Russian banking sector is generally at the "lower mid" level.

sector's concentration was also typical for banking sectors of the euro area and the United States[12].

Chart 32. Dynamics of the number of banks
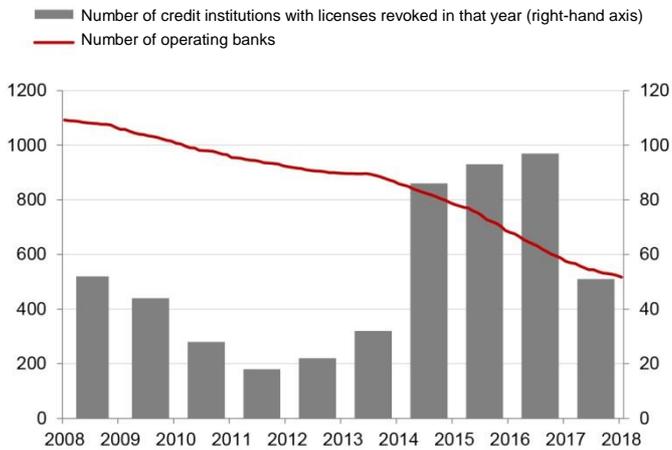
- Number of credit institutions with licenses revoked in that year (right-hand axis)
- Number of operating banks

Chart 33. Dynamics of concentration indicators

- Share of Top 5 banks in the assets, % — HHI (right-hand axis)
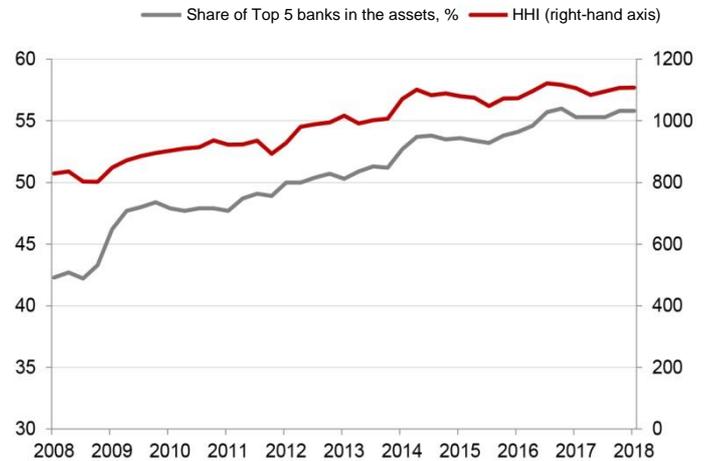
Source: Bank of Russia calculations.   *Source: Bank of Russia calculations.*

In academic literature, there is no consensus as to whether the market structure is a defining factor for the conduct of banks. One hypothesis (the structure-conduct-performance paradigm, Mason, 1939) suggests that the market structure determines the conduct, so a higher concentration increases the market power of banks (and reduces competition), which, at the extreme, allows them to generate monopoly profits and logically should lead to lower efficiency of banking activities. The alternative hypothesis (efficient structure paradigm, Demsetz, 1973) states that the market structure is an effect of conduct, so a larger market share is the result of relevant efforts leading to higher efficiency of activities. In general, it appears that from the standpoint of developing and strengthening the banking system, the banking sector's increasing concentration cannot be conclusively interpreted as a negative trend. A comprehensive analysis of the situation is needed to assess its quality and its most likely effects.

Chart 34. Operational efficiency and concentration of the banking sector*

$y = -0.0099x + 1.0717$
$R^2 = 0.4542$
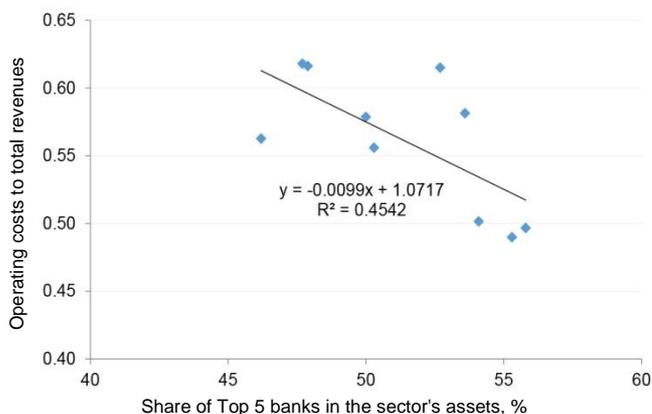
Chart 35. Return on assets and concentration of the banking sector

$y = -0.0939x + 6.2623$
$R^2 = 0.2001$

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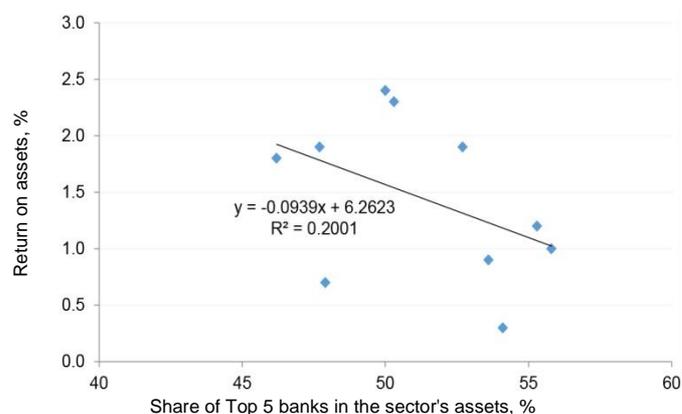
[12] Committee on the Global Financial System. (2018). Structural changes in banking after the crisis. CGFS Papers, No. 60. Retrieved from: www.bis.org/publ/cgfs60.pdf.

* See footnote 13.

** Revenues and operating costs of banks are cleared of the impact of currency and precious metals revaluation.

Growth in the concentration of the Russian banking sector in 2008–2017 was mainly driven by the policy of banking sector rehabilitation, i.e., a non-market factor. In this case, the increased concentration of the banking sector was accompanied by higher efficiency of its operating activities (Chart 34)[13]. One possible explanation for this could be the fact that the banks withdrawn from the market in the course of banking sector rehabilitation policy evidently lacked operational efficiency. Another explanation could be a critical number of healthy banks realising an objective need for cost optimisation due to a general economic environment, tighter competition in the sector, and regulatory requirements. At the same time, the increasing concentration was accompanied by declining return on assets (Chart 35). However, it is difficult to explain this by a cause-and-effect relationship between the two phenomena. Several factors could underlie the decline in return on assets (ROA). First of all, these are the processes affecting the overall state of the economy and the banking business environment. It also includes a trend towards less risky behaviour of banks (see below), as well as a structural slowdown of the Russian economy, which may also cause a decline in returns[14].

Given the limitations of structural indicators as measures of competition, it would be appropriate to use other generally accepted indicators.

- The Lerner index determines the extent of market power as the ratio of the monopoly premium in the product price to the price of that product. The index ranges from 0 to 1, and the higher its value, the higher the market power of the bank.

- The Boone indicator assesses to what extent cost reduction (efficiency improvement) can increase the market power of the bank, including its market share or profitability. If the effect is negative, then more efficient banks can improve their market position and, therefore, the system is more competitive.

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[13] Since April 1, 2016, credit institutions submit reporting form 0409102 under the new classification of expense items, which is why the composition of the operating expense indicator for 2016 and 2017 differs from the same indicator for 2009–2015. Without considering the last two observations, the negative correlation between concentration (share of the top 5 banks in the assets) and the operational efficiency indicator persists, but its significance is lost for the lack of observations. We additionally assessed bank performance by the share of general administrative costs in total revenues (adjusted for currency revaluation). In this case, we ensured the comparability of the indicator between 2009–2015 and 2016–2017, and also obtained a negative correlation which indicates that the increased concentration of the banking sector was accompanied by higher operational efficiency (similar to the *cost-to-income* measure).

[14] Fereirra C. (2013). Bank performance and economic growth: evidence from Granger panel causality estimations. WP 21/2013/DE/UECE. Retrieved from: http://pascal.iseg.utl.pt/~depeco/wp/wp212013.pdf.

Both indicators declined by the end of the period under study, which may indicate increased competition in the sector during the conduct of Bank of Russia supervisory policy (Chart 36, Chart 37)[15].

Chart 36. Dynamics of the Boone indicator (at year end)
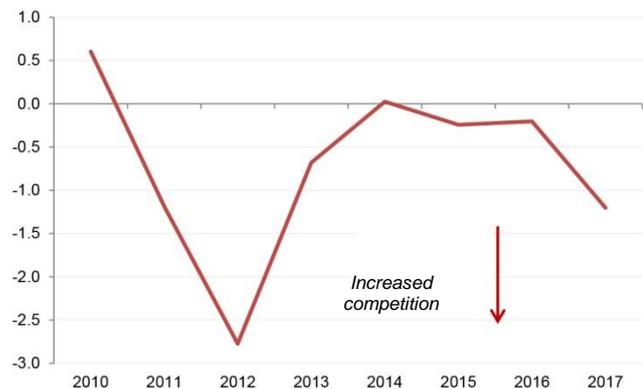
Source: Bank of Russia calculations.

Chart 37. Dynamics of the Lerner index (at year end)
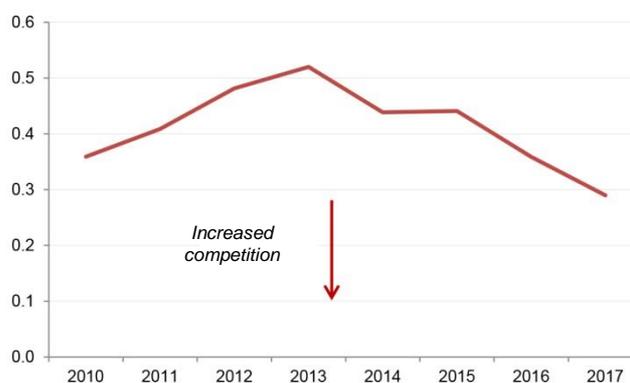
Source: Bank of Russia calculations.

Therefore, with an overall positive long-term impact on the efficiency and stability of the banking system, the more active supervision policy may result in declined competition in the short term, and this reduction is mostly nominal in nature. As banking sector rehabilitation moves forward, this formal effect disappears, and the gains from increased confidence in the banking sector exceed short-term losses. Ultimately, real competition in the banking sector strengthens, and the distribution of "market power" becomes more balanced and more reflective of banks' business model efficiency[16].

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[15] No explanation has so far been found for the sharp decline in the Boone indicator between 2011 and 2012. Inadequate data quality and/or deficiencies in the proposed methodology may have played a negative role.

[16] A similar result was obtained under the theoretical model presented by Ponomarenko and Sinyakov (2018). Impact of Banking Supervision on Banking System Structure: Conclusion from Agent-Based Modeling. Russian Journal of Money and Finance, v. 77, No. 1, pp. 26–50.

The calculation of both indicators requires us to assess marginal costs. To calculate them, we used the derivative from the cost function of Russian banks specified in the translogarithmic form and estimated by the generalised method of moments with fixed individual and time effects for the i-th bank in t-quarter:

$$log(TC_{it}) = \alpha_0 + \sum_j \beta_j \log X_{ijt} + \sum_j \gamma_{jk} \log X_{ijt} \log X_{ikt} + \sum_t \delta_t d_t + u_{it}$$

$$MC_{it}^l = \frac{\partial TC_{it}}{\partial X_{it}^l}$$

Where l is the loan portfolio, d_t are fixed time effects, u_{it} is the regression error, X_{it} is an explanatory variable from the following three groups of factors:

1) The bank product, e.g. the loan portfolio, investments in securities, and other services;
2) Factor prices, such as personnel costs, deposit rate (funding price), and other factors (proxy, including non-interest expenditure to fixed assets);
3) Control variables, e.g., the share of capital in the bank's liabilities.

Next, to calculate the Boone indicator, we estimated the equation describing the dependence of the bank's share in the lending market on the level of its marginal costs by using the generalised method of moments:

$$log(market\ share_{it}) = \alpha + \beta * \log(MC_{it}) + u_{it}$$

As the price for calculating the Lerner index, we used the bank's weighted average rate on issued loans indicated in the reporting form 0409128.

Measuring Competition with Regional Data

Competition dynamics for the deposit market were also analysed based on Sberbank's share in new deposits across regions and based on the level of Sberbank's average weighted interest rate in a region, considered separately for household and corporate deposits. We tested the hypothesis that, in the regions where Sberbank's share is higher, its deposit rate (with other things being equal) will be lower due to less intense competition in the regional market.

This was indeed observed in 2009. It is possible that Sberbank's higher market share was a factor limiting competition in a particular region and allowed Sberbank to set relatively low deposit rates (Chart 38, Chart 41). The corresponding coefficient was statistically significant in 2009. However, in the years following the period under review, this dependence weakened[17] (Chart 40, Chart 43). Also, in the crisis period of 2014–2015, the negative relationship between Sberbank's share in new deposits and the interest rate level disappeared in the retail deposit segment (Chart 39) and significantly weakened in the corporate deposit segment (Chart 42). Overall, such dynamics may indicate increased competition in the deposit market.

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[17] Lower variation in rates between the regions where Sberbank was present in 2017 compared to 2014 may be related to the unification of deposit rates under Sberbank's new management.

Chart 38. Dependence of Sberbank rates on household deposits on the bank's share in the region

2009

y = -0.0229x + 8.6787
R² = 0.1407
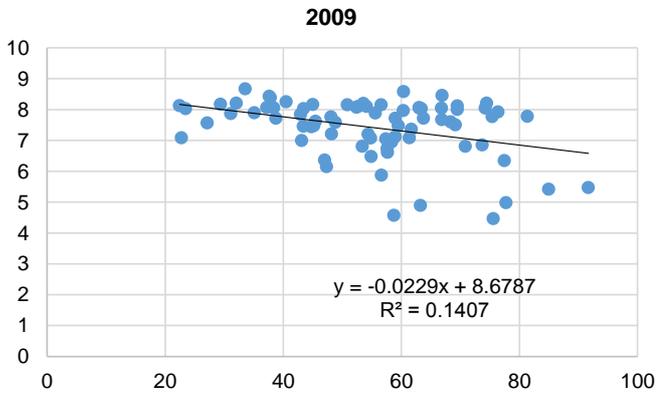
Source: Bank of Russia calculations.

Chart 39. Dependence of Sberbank rates on household deposits on the bank's share in the region

2014

y = 0.0069x + 4.348
R² = 0.0584
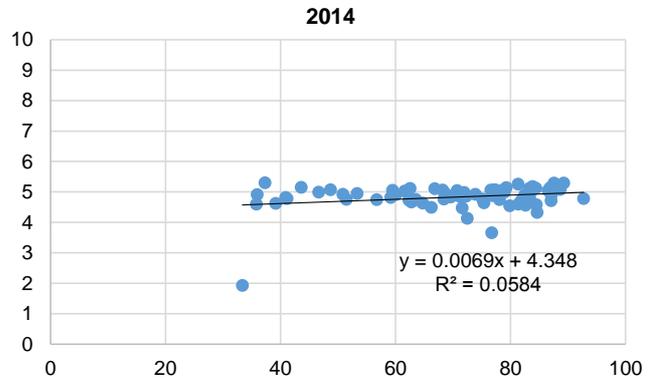
Source: Bank of Russia calculations.

Chart 40. Dependence of Sberbank rates on household deposits on the bank's share in the region

2017

y = 0.0019x + 4.9488
R² = 0.0508
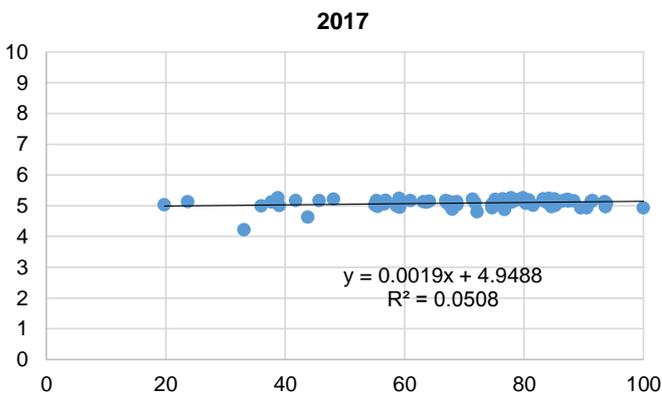
Source: Bank of Russia calculations.

Chart 41. Dependence of Sberbank rates on deposits of organisations on the bank's share in the region

2009

y = -0.0172x + 9.0076
R² = 0.1339
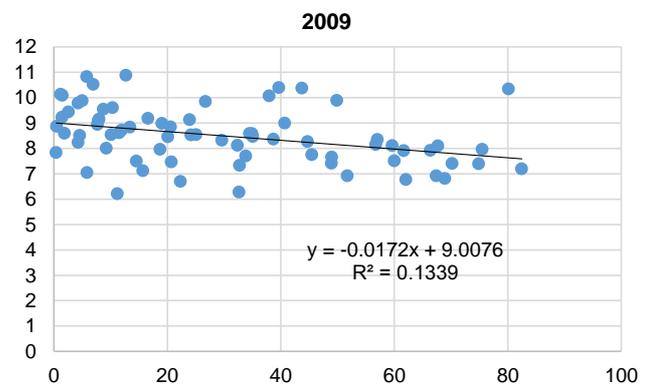
Source: Bank of Russia calculations.

Chart 42. Dependence of Sberbank rates on deposits of organisations on the bank's share in the region
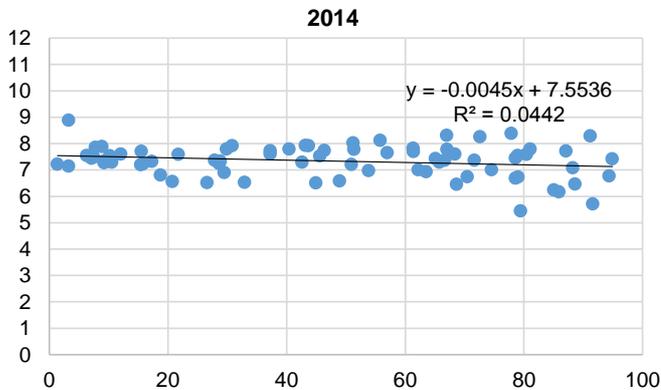
Chart 43. Dependence of Sberbank rates on deposits of organisations on the bank's share in the region

2014

$y = -0.0045x + 7.5536$
$R^2 = 0.0442$

2017

$y = -0.0002x + 6.7961$
$R^2 = 0.0005$

Source: Bank of Russia calculations.
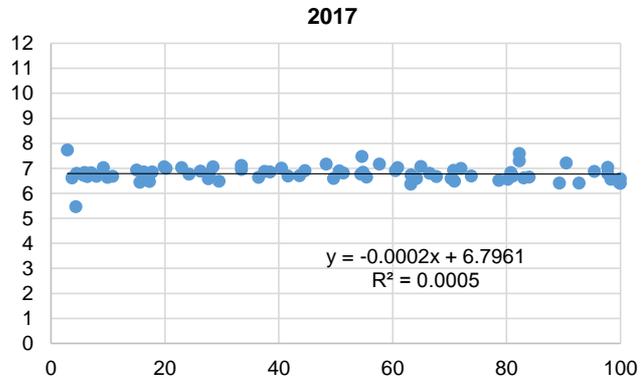
Source: Bank of Russia calculations.

These results could be explained by the fact that the banking services market was cleared of weak banks which pursued an aggressive policy of attracting funds at high rates, which was followed by the equalisation of rates. In this regard, the impact of the market share factor on the differential of rates used for attracting financial resources has also experienced a relative decline to a statistically indifferent level. However, this is not the only possible explanation. Other explanations can be found in the changes to Sberbank's policy on attracting funds at different intervals of the analysed period. In any case, these results show that, contrary to the perceptions of some experts about weakened competition in the banking sector following its quantitative contraction, the statistical methods used for assessing the situation do not confirm this version but indicate increased competition.

Measuring Competition by Comparing Sberbank's Conduct with the Rest of the Banking Sector

In addition, we checked the state of competitive processes in the sector based on the dynamics of deposits in Sberbank in response to changes in interest rates compared to the average market situation. It was assumed that, compared to an average bank, Sberbank's position[18] allows it to generate a larger inflow of deposits for the same change in the bank's interest rate.

During the 2008 crisis, the amount of Sberbank's ruble-denominated household deposits (of up to one year of maturity, excluding on-demand deposits) would have dropped by 30% following the rate hike made by Sberbank (Chart 44). This would have happened if Sberbank depositors' response by to the interest rate change was the same as for an average bank in the sample (excluding Sberbank). In fact, the deposits decreased by less than 20 pp of the predicted

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[18] The size of a bank, which may be interpreted as a large market power or monopoly power, as well as the Bank of Russia's participation in capital and the "too big to fail" effect regardless of management's success and efforts.

value. This means that in this period the sensitivity of Sberbank deposits to interest rate changes was three times less than for the rest of the banking sector. With the same change in the rate, the outflow of deposits from Sberbank was constrained by some other factors, which could be due to, for example, the bank's position in the banking sector.

Chart 44. Predicted and actual change in ruble-denominated household deposits

The average market model suggest that the annual amount of Sberbank-attracted deposits would have dropped in the 2008 by a further 20%
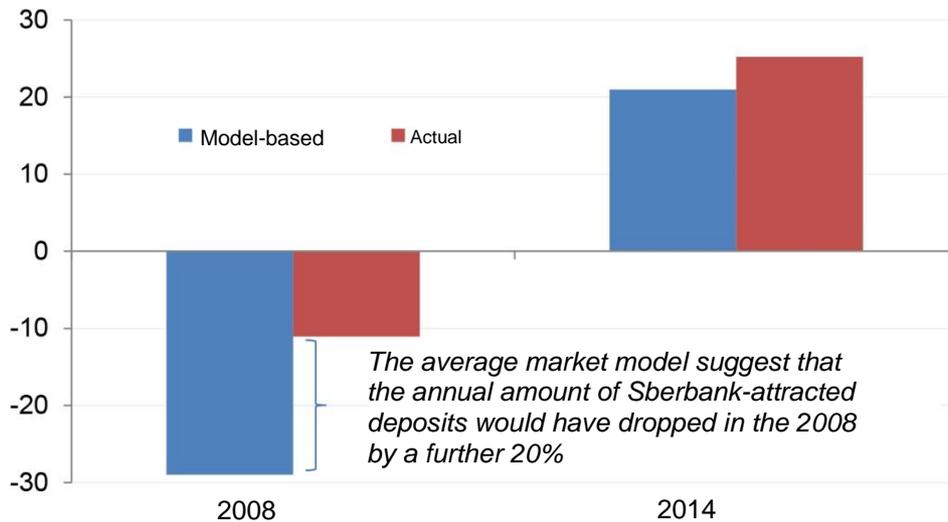
Source: Bank of Russia calculations.

During the 2014 crisis episode, Sberbank raised interest rates on deposits by 5 percentage points. As the general (which excludes Sberbank) market model suggests, the effect of this hike would have been a 20% increase in the annual amount of deposits. In fact, the amount of deposits was not significantly higher.

This example allows us to draw the following conclusions:

1. Sberbank's position in the banking sector is reflected in the dynamics of its liabilities, allowing it to raise (retain) a relatively larger amount of deposits during the crisis, against the relevant interest rate increase, than an average bank in the system. This indicates that there is no perfect competition in the sector.

2. In 2014 compared to the 2008 crisis, the response of deposits to changes in Sberbank's interest rate was more like the average response in the market. This may indirectly indicate a decline in Sberbank's market power and strengthening of competition in the sector caused by, among other things, a trend towards the alignment of patterns in the market conduct of various banks.

For reference

Transition of the Bank of Russia to Proportional Regulation of the Banking System

Starting in 2018, in order to support and strengthen competition in the sector, the Bank of Russia began to use proportional regulation of banking activities, aimed at ensuring a more

proportionate distribution of regulatory and supervisory burdens on banks. Among other things, this should to a certain extent balance large banks' advantages, which are unrelated to their management's operational improvement efforts, through an additional regulatory and supervisory burden. At the same time, this approach will ease the administrative regulatory and supervisory burden on small banks, thereby promoting competition.

Given that banks with less than 1 billion rubles in capital selected strategies aimed at increasing capital or transitioning to another type of licence, out of 517 banks operating at the end of 2017:

- 336 banks plan to continue operating under a universal licence (65%);
- 150 banks plan to transition to a basic licence (29%);
- 3 banks have not yet made a final decision on their type of licence (0.6%);
- 28 banks are undergoing financial rehabilitation (5.4%).

At the same time, most of the banks planning to continue operating under a universal licence reported their plans to increase capital by raising subordinated loans, as well as increase authorised capital by placing additional shares or receiving financial assistance from the bank's owners. Therefore, we do not expect any increase in the number of bank mergers.

1.4. Profitability

Existing empirical cross-country studies on the nature of the relationship between GDP growth and return on assets[19] do not reveal a clearly positive correlation between these indicators. In particular, it is noted that the results obtained in most of these empirical studies are not stable and are often very sensitive to their time horizon[20]. This fact could be explained by objective difficulties in ensuring the acceptable completeness of the model specifications and quality control over the cyclical or structural nature of GDP fluctuations, as well as in generating a balanced sample of historical observations for subsequent empirical calculations.

The Russian banking sector's return on assets and equity has followed the economic cycle phase (quite predictably). A decline in economic activity is typically accompanied by a significant drop in profitability ratios, while economic recovery is accompanied by their growth (Chart 45). Nevertheless, in 2008–2017, the Russian banking sector as a whole remained profitable year-on-year, even during the acute phases of the 2008–2009 and 2014–2015 economic crises. For 2017, the return on equity in the banking sector was 8.3% and the return on assets was 1%, which is lower than in 2011–2013 and significantly lower than at the beginning of 2008.

Chart 45. Profitability dynamics, %   **Chart 46.** ROA dynamics, %

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[19] For example, Dimson et al. (2002), Ritter (2005).
[20] Morgan Stanley.

Return on equity
Return on assets (right-hand axis)

Return on assets
Return on risk-weighted assets
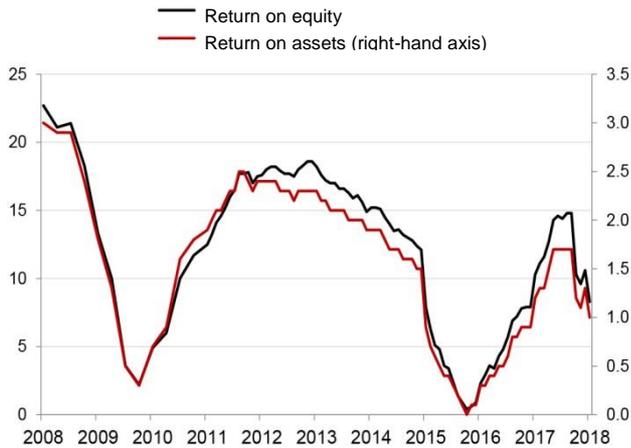
Source: Bank of Russia calculations.
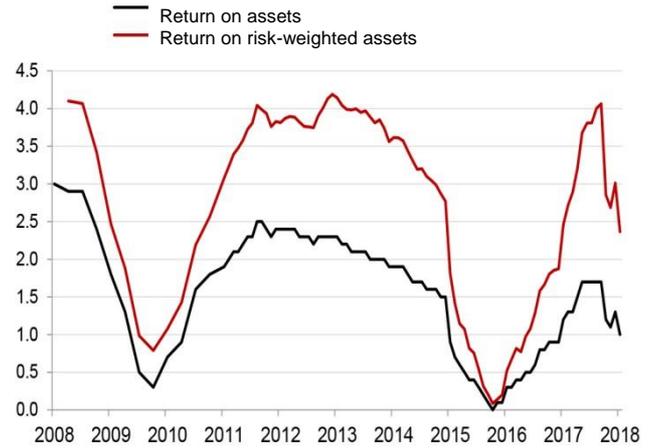
Source: Bank of Russia calculations.

The dynamics of the return on risk-weighted assets is a simple indicator of the return adjusted for the change in the degree of risk of the bank's business models. In 2017, the return on assets adjusted for risk recovered to 2008 and 2011–2013 levels[21] (Chart 46). In part, the lower returns observed in the banking sector in 2011–2013 and in 2017 were associated with lower credit risk for investments which, as a rule, immediately generates less revenue but, at the same time, protects against significant and often critical future losses.

In the context of international comparisons, the return on assets of Russian banks at the end of 2017 were in line with the ratios in emerging markets and exceeded the corresponding figures of most developed countries. Similarly, the return on bank equity in Russia at the end of 2017 was below the level of emerging markets but above the level of the euro area countries.

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[21] The decline in return on assets and return on risk-weighted assets in 2017 H2 is probably related to a one-time addition to loss provisions on troubled assets by banks undergoing financial rehabilitation under the control of the Banking Sector Consolidation Fund. Therefore, the dynamics of this indicator should not raise any particular concern.

Chart 47. Factors in banking sector profits, billion rubles
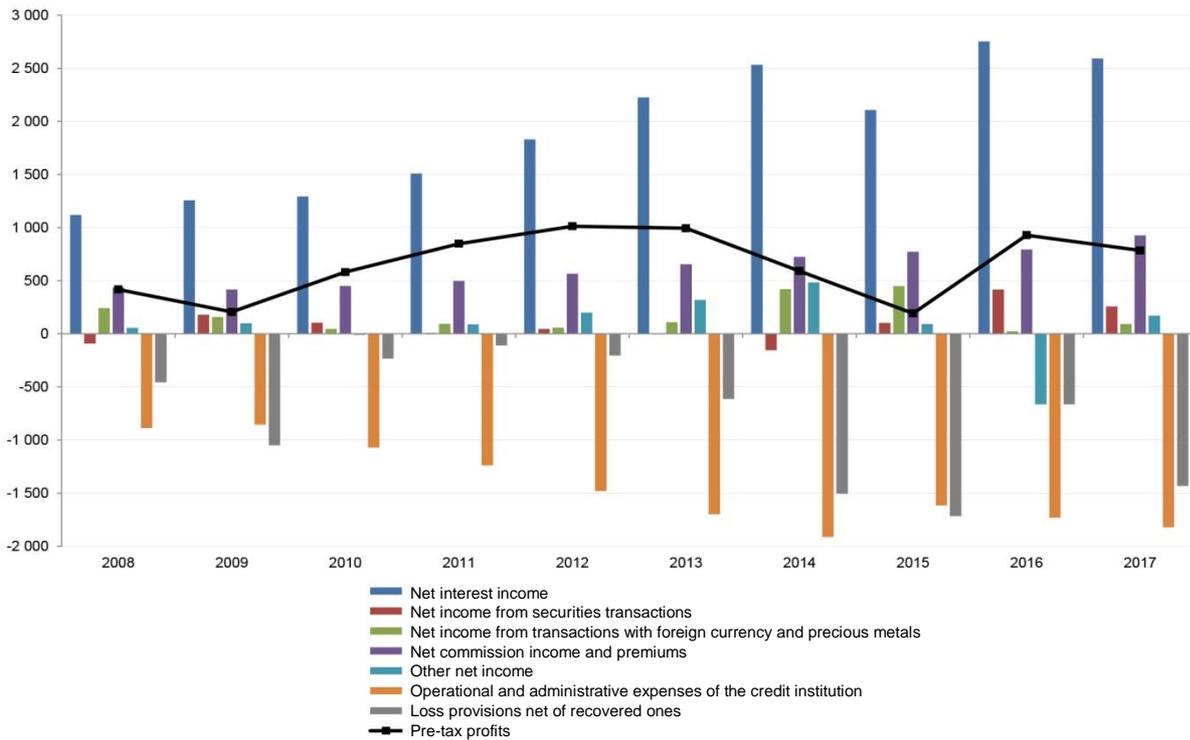
Source: Bank of Russia calculations.

Net interest income was the most important factor of those generating financial results in the banking sector in 2008–2017. The second in importance was net commission income (Chart 47). Key expenditure components included operating costs and loan loss provisions. The latter was related both to the deterioration of borrowers' position, reflecting Russia's economic difficulties, and to the banking sector rehabilitation policy the Bank of Russia has implemented since 2013 Q4.

- Net interest income grew for nearly the entire period under review, with the exception of 2015 and 2017. In this case, if the situation in 2015 resulted from the materialisation of interest rate risk following the sharp hike in rates amid unequal capabilities of banks to change loan and deposit rates, the 2017 situation resulted from the decrease in net interest margin driven by reduced rates. As a result, after a substantial decline in 2015, the net interest margin[22] did not recover to the 2009–2014 level and stood at 3.9% for 2017 (Chart 48).

- Net commission income grew steadily in the period under review.

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[22] Net interest margin is an indicator of net interest income received by the bank for the past year relative to the average annual value of assets generating interest income.

Chart 48. Net interest margin for the banking sector as a whole, %
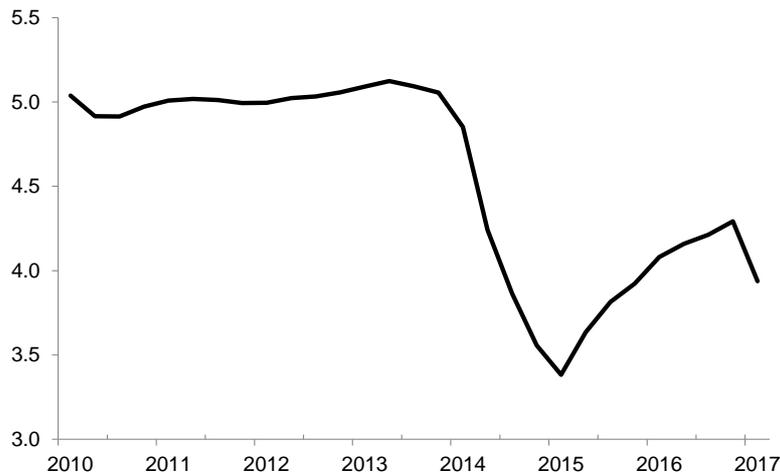
Source: Bank of Russia calculations.

After the acute phase of the crisis, the return on assets and equity increased in 2017 in all clusters, except for banks undergoing resolution (Chart 49, Chart 50). However, for 2017, the return on assets remained below the corresponding value for 2010–2013 in all clusters, with the exception of Sberbank. In 2017, the return on equity for all clusters was lower than in 2010–2013.

Chart 49. Return on assets, by credit institution cluster, %
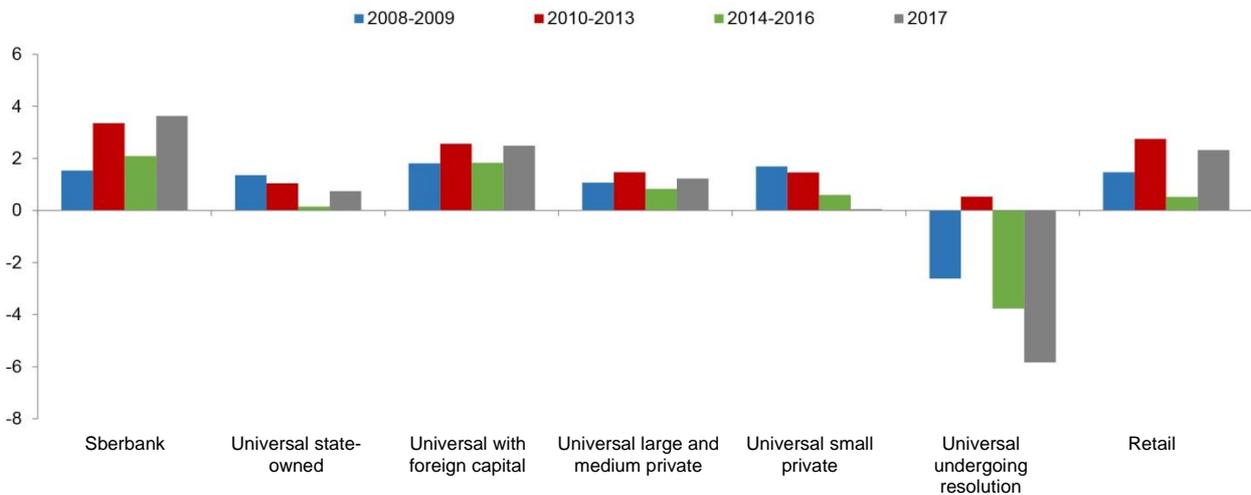
Source: Bank of Russia calculations.

Chart 50. Return on equity, by credit institution cluster, %
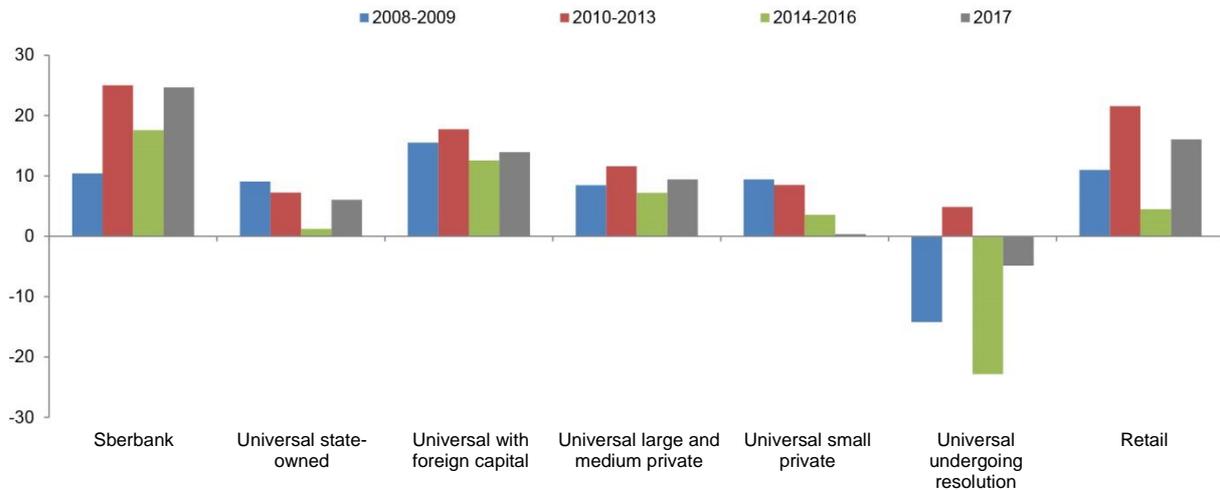
Source: Bank of Russia calculations.

The 2017 growth in returns across all clusters, except for universal small private banks and universal banks undergoing resolution, vs. 2014–2016 was associated with a recovery in net interest margin (Chart 51).

In 2014–2017, near-zero returns on assets and equity were observed in the universal small private bank cluster (Chart 49, Chart 50). This may indicate a problem with these credit institutions' business model. This problem can be partly addressed by proportional banking regulation being implemented by the Bank of Russia (see also the box on page 33).

Chart 51. Net interest margin, by credit institution cluster, %
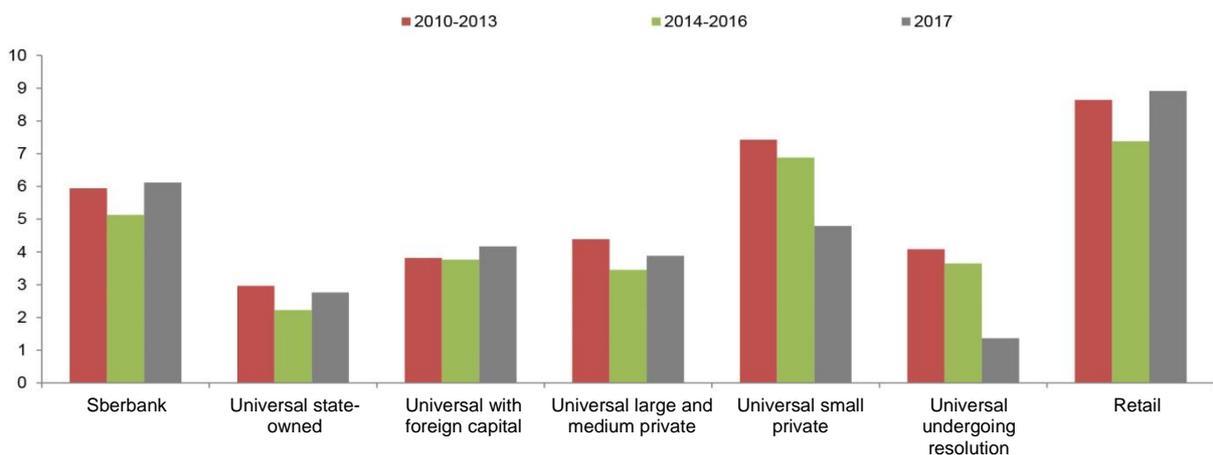
Source: Bank of Russia calculations.

In addition to a steady decline in net interest margin, the profitability of universal small private banks is negatively affected by a low level of leverage –lower the sector average (Chart 52[23]). However, lower leverage in this cluster is not driven by regulatory norms. It is possible that small private banks are unable to sufficiently increase leverage due to the natural limitations of

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[23] The figure shows the state of the capital adequacy ratio (N1.0), which, with a certain assumption, can be viewed as the inverse of leverage.

their product and customer niches. Another possible (though less likely) explanation is the fact that universal small private banks artificially constrain their business development (leverage growth), being forced to maintain an additional equity capital safety cushion, including for building a favourable reliable/stable lender image among their creditors and customers.

Chart 52. Capital adequacy ratio (N1.0), by credit institution cluster, %
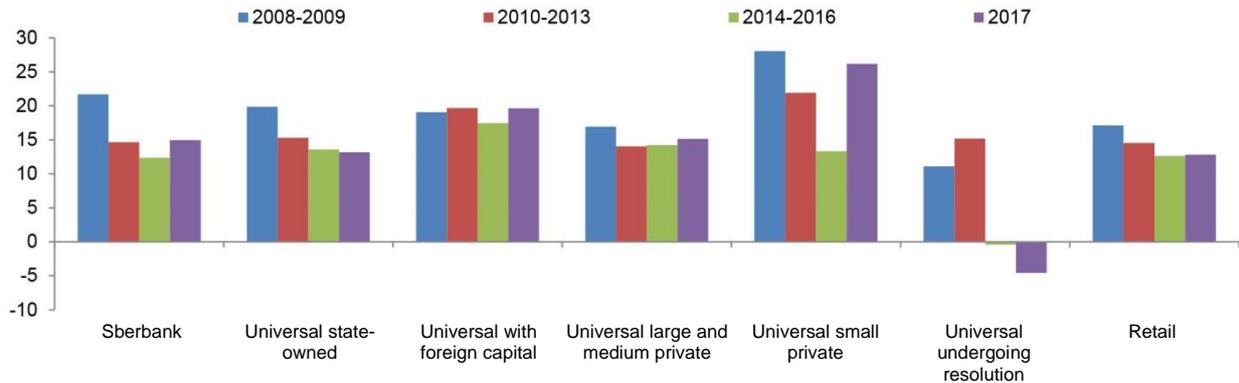
Source: Bank of Russia calculations.

1.5. Stability

Overdue debt and the Z-score index calculated under the methodology of Roy (1952) [24] are the indicators of banking sector stability most commonly found in the literature.

The dynamics of overdue debt are traditionally considered to be a lagging variable in relation to the dynamics of economic activity. The increase in the share of overdue debt, which followed the acute phase of the 2014–2015 crisis, was responsible for this share in 2016 exceeding the figures reported in the aftermath of the 2008–2009 crisis (Chart 55) [25]. The stabilisation of overdue debt in 2017 allows us to conclude that the period marked by materialisation of credit risks in the banking sector has passed. At the end of 2017, the share of overdue debt was 6.4% in the portfolio of loans to non-financial organisations and 7% in the household loan portfolio.

According to data presented in the report, the highest share of overdue debt in retail and corporate portfolios is predictably observed in the cluster of banks undergoing resolution, where it amounts to more than 30% of respective loan portfolios (Chart 53, Chart 54).

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[24] Roy, A. (1952). Safety first and the holding of assets. Econometrica, Vol. 20 (3), pp. 431–449.
[25] A direct comparison of indicators between periods would not be entirely correct due to strengthening of control over the quality of bank reporting. Given the significant reduction in the number of captive banks during the period under review, we should expect gradually improving reliability of reporting, including on overdue debt, starting with the reporting for 2013.

Chart 53. Share of overdue debt in the portfolio of loans to non-financial organisations, by credit institution cluster, %
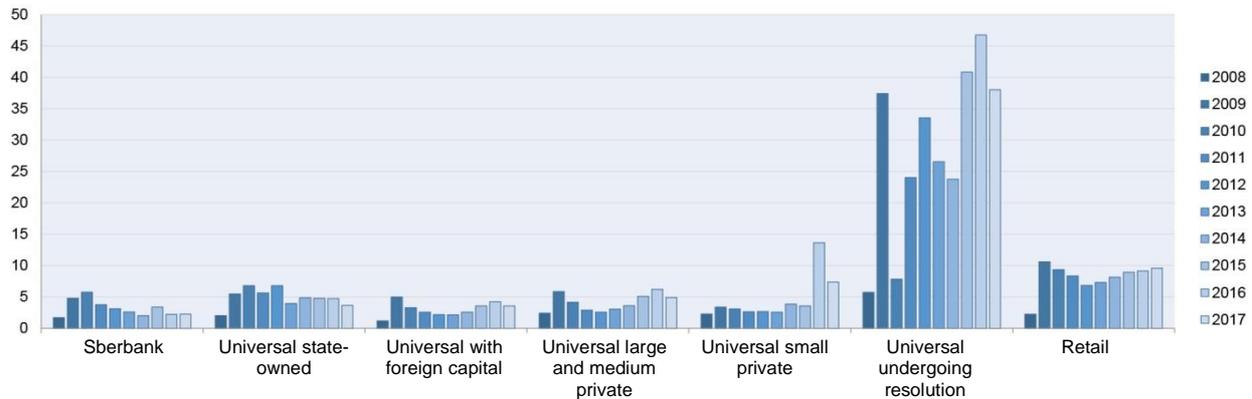
Source: Bank of Russia calculations.

Among the other clusters, relatively higher levels of overdue debt can be observed in both clusters of universal private banks, retail banks, and, in the case of overdue debt under the household loan portfolio, in the cluster of universal banks with foreign capital. However, for 2017, in almost all these clusters, the share of overdue debt declined, indicating a weaker negative impact of this factor on banks' stability. Sberbank has the lowest level of overdue debt (Chart 53, Chart 54).

Chart 54. Share of overdue debt in the household loan portfolio, by credit institution cluster, %
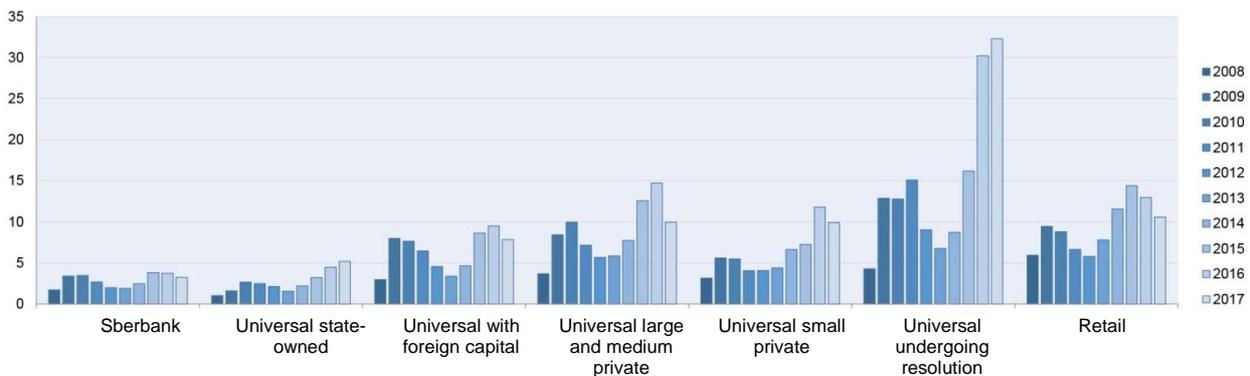
Source: Bank of Russia calculations.

The Z-score index for stability is designed to estimate "the distance to default", that is, to measure the number of standard deviations reducing banks' profits to the point where losses would "destroy" its capital. Thus, while overdue debt reflects the probable level of losses related to credit risk, the Z-score index assesses the level of safety ("immunity") to the aggregate of all risks (credit, market, liquidity, interest rate, operational, etc.):

$$Z_{it} = \frac{\frac{E_{it}}{A_{it}} + \overline{ROA_{it}}}{\sigma_{ROA_{it}}},$$

where *i* is the bank*; t is the* month, *ROA* is the return-on-assets ratio; *E/A* is equity to assets ratio; σ_{ROA} is the standard deviation of ROA.

For the Russian banking sector, the dynamics of the Z-score index indicate a weak recovery of this stability index in 2016–2017 (adjusted for a slight decline in profit and, accordingly, a decrease in the Z-score at the end of 2017 due to a one-time addition to loss provisions on troubled assets made by a number of large banks undergoing financial rehabilitation) (Chart 56).

Chart 55. Share of overdue debt, %
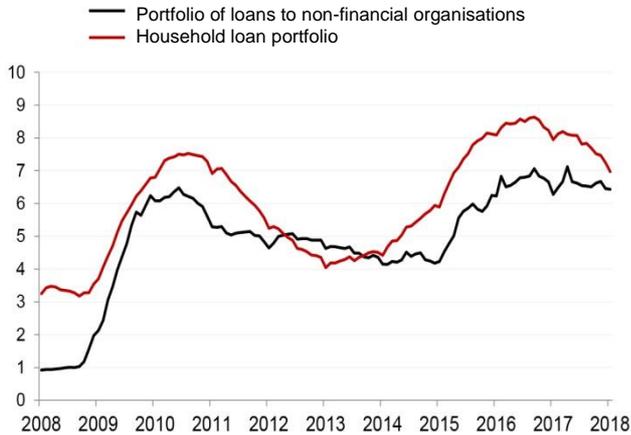
Source: Bank of Russia calculations.

Chart 56. Z-score index dynamics
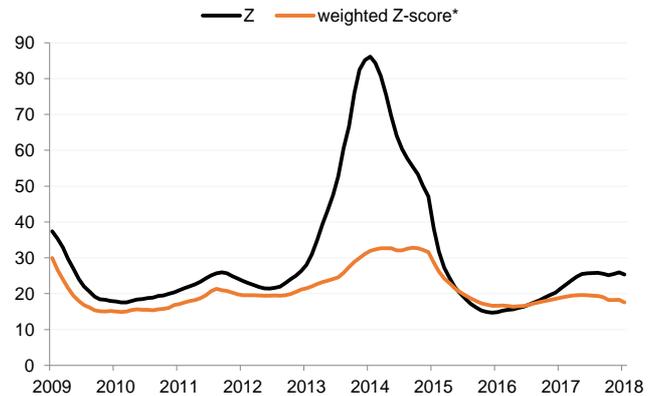
Note: A weighted Z-score is defined as an asset-weighted individual Z-scores of all banks.

Source: Bank of Russia calculations.

Capital adequacy also indicates banks' safety margins. Stricter requirements for the size and quality of capital[26] and risk assessment were the factors that led to a decline in capital adequacy ratios from 15.5% as of 01.01.2008 to 12.1% as of 01.01.2018. Without banks undergoing financial rehabilitation, capital adequacy at the end of 2017 was 14.7%. Nevertheless, the current capital adequacy level is quite acceptable, especially given capital quality, which improved not only following the implementation of Basel Committee Recommendations with regard to capital, but also as the first effects of the Bank of Russia's banking sector rehabilitation policy.

Regular stress tests show that even amid severe shocks (when oil prices fall to $25) the total banking sector's capital adequacy ratio remains near the regulatory minimum. Thus, the stability of the Russian banking sector is at a satisfactory level and is gradually improving in terms of dynamics (after some deterioration in the crisis period).

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[26] Since 2014, more conservative approaches to the calculation of capital in accordance with Basel III requirements have been in force, leading to Common Equity Tier 1, Additional Tier 1 Capital, and Tier 2 Capital distinguished. In addition, 2016 was marked by the introduction of capital adequacy requirements. Moreover, the requirements for buffers in systemically important banks are higher than for other credit institutions. Tighter capital requirements encouraged banks to build their capital from higher quality sources.

Chart 57. Capital adequacy ratio, %
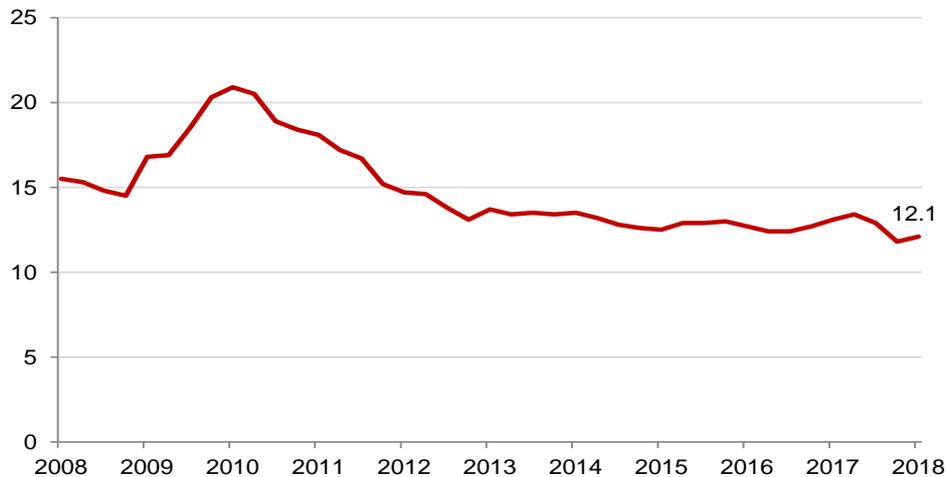
Source: Bank of Russia calculations.

1.6. Captive Banks

Captivity means dependence of a bank on transactions with the ultimate owner/beneficiary and/or its decisions concerning the bank's activities, which may significantly affect its financial stability. While not being a "sentence", captivity nevertheless carries additional risks in terms of the quality of corporate governance, risk management, and, ultimately, the bank's stability. The environment in which the Russian banking sector took shape from the late 1980s to the early 2000s led to large-scale captivity. Therefore, the risks associated with it are typical for the Russian banking sector. The materialisation of these risks was a primary cause of troubles banks experienced in the decade under review.

The Bank of Russia's banking sector rehabilitation policy enables significant reduction in the impact of captivity on the banking sector.

The share of captive credit institutions in banking sector assets saw a steady decline throughout the 2008–2017 decade (Chart 58). As of 01.01.2018, it fell to 4.4% of banking sector assets, as credit institutions undergoing financial rehabilitation in 2018 are no longer considered to be captive banks. The decline in the share of assets held by captive banks greatly accelerated in 2013–2017, primarily reflecting the Bank of Russia's stepped-up efforts towards rehabilitating the banking sector.

The decline in the role of captive banks has contributed to improved stability and efficiency of the banking sector. The Russian banking sector's practice showed that captive banks had often hid the poor quality of their real loan portfolios (Chart 59). Supervisory activities, especially as part of banking sector rehabilitation efforts, allow us to identify the scale of their problems, including deficiencies in the quality of their loan portfolio and the reliability of reporting.

Chart 58. Dynamics of the share of captive banks' assets in banking sector assets, %
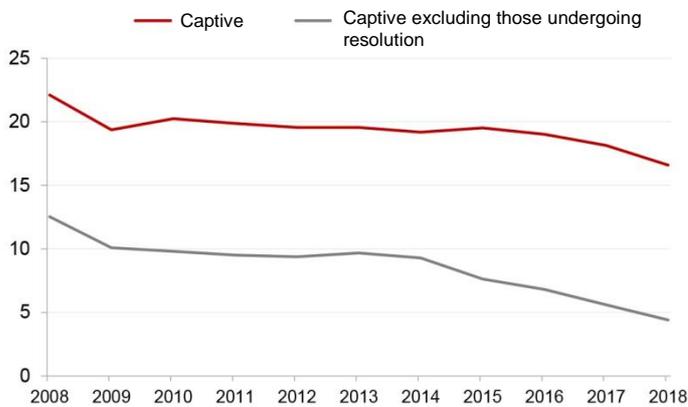
Source: Bank of Russia calculations.

Chart 59. Dynamics of the share of overdue debt in the corporate portfolio, %
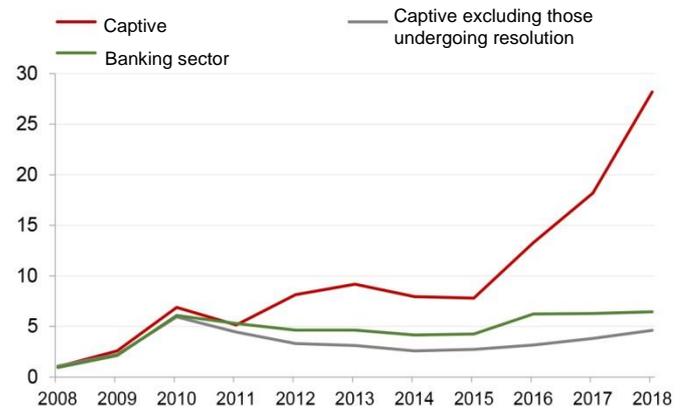
Source: Bank of Russia calculations.

As a result of the banking sector rehabilitation policy, a more reliable assessment of loan portfolio quality can be made. Among other factors positively impacting on the quality of bank reporting may be signals that contribute to strengthening the market discipline in the sector. These include the systematic failure of the model based on unreliable statements and accounting of assets, along with the increased responsibility of beneficial owners and top management for corporate governance quality. These developments push banks capable of learning from others' experience towards more appropriate business strategies[27].

Unreasonably optimistic assessments of the loan portfolio quality and the resulting substantially inadequate provisions for loan losses led to a number of captive banks submitting, for a certain period of time, reporting with incommensurably inflated capital adequacy ratios (Chart 60). Among other things, this distorted the assessment of capital adequacy for the banking sector. The banks' problems detected in the course of supervisory activities appear to be declined capital adequacy of such banks and the banking sector. In reality, the context of current supervision practices, actual capital adequacy remains unchanged. Supervisory activities are meant to eliminate false information on the purported level of capital adequacy and financial stability of banks. In addition to improving the reliability of reporting, the reduction in the number of unstable banks helped improve the real stability of the banking sector. Among other things, the latter was brought about by reduced risks of contagion spreading from banks that hide their "diseases" to healthy banks.

The characteristics of captive banks also include:

- Marked and consistently lower dollarisation of assets compared to the banking sector in general (Chart 61). This may be due to the specifics of such banks' activities, including greater focus on operations with ultimate owners, whose business is mainly concentrated in Russia.

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[27] At the same time, the issues of responsibility on the part of beneficiaries and top management for the quality of governance and stability of banks, as well as the problem of quality (reliability) of reporting, are still to be addressed.

Chart 60. N1.0 adequacy ratio (known as N1 prior to 01.01.2014), %
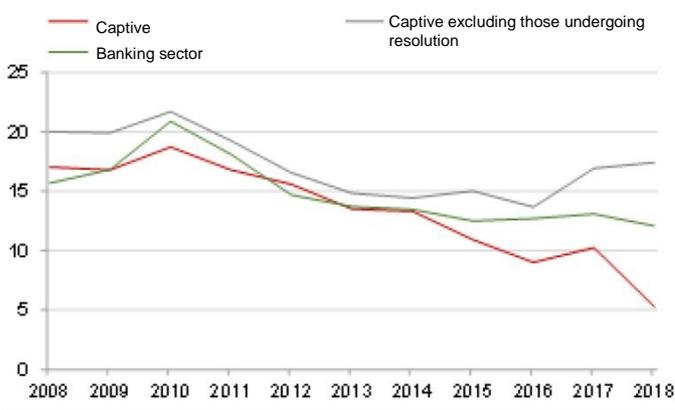
Source: Bank of Russia calculations.

Chart 61. Dollarisation of assets, %
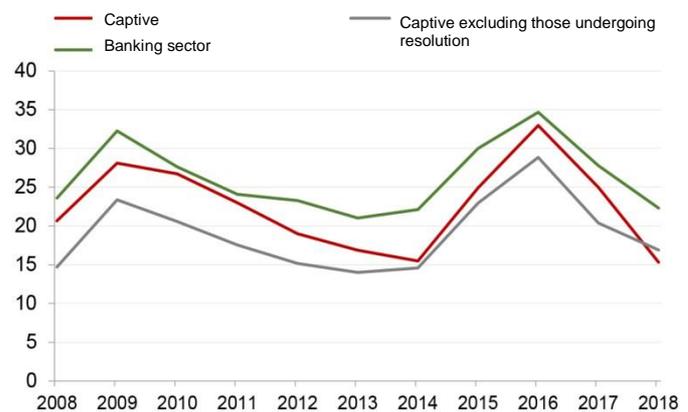
Source: Bank of Russia calculations.

- A slightly smaller focus on lending that increases towards the end of the period under review and greater emphasis on investments in securities compared to the rest of the banking sector (Chart 62, Chart 63). These peculiarities may also be related to the concentration of business activities on the entities affiliated with such banks and the use of financial instruments for "asset stripping" and/or manipulation of accounting and reporting.

Chart 62. Share of loan portfolio in assets, %
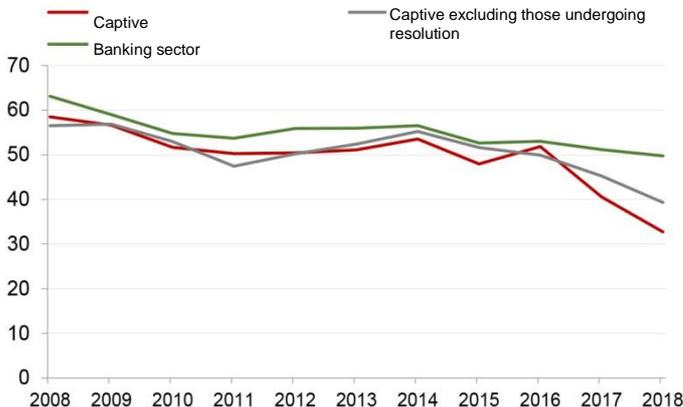
Source: Bank of Russia calculations.

Chart 63. Share of securities in assets, %
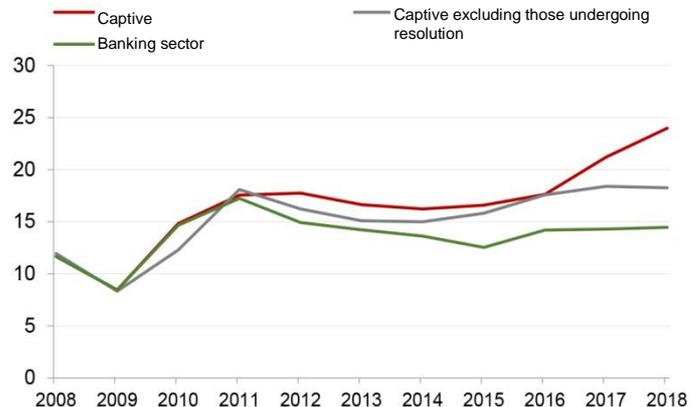
Source: Bank of Russia calculations.

2. LICENCE REVOCATION AND FINANCIAL REHABILITATION THROUGH THE PRISM OF BANKS' BALANCE SHEETS

As part of the analysis, we made an attempt to identify the characteristics of operations in troubled banks, i.e., banks that subsequently had their licence revoked, as well as banks

subsequently placed under financial rehabilitation. To this end, we divided all banks operating in the period under review[28] into three groups:

- Banks with revoked licences
- Banks undergoing financial rehabilitation
- Other banks (hereinafter, "healthy banks").

To identify the specifics of balance sheet indicators in the first two groups of banks, we compared the individual balance sheet indicators in these groups for several months prior to licence revocation or the start of financial rehabilitation[29] with the indicators of healthy banks. For *each* bank in the first and second group, we assigned the value of "0"[30] as the date of licence revocation/bank resolution/introduction of provisional administration and considered the value of the indicator one month prior to that event to be "–1", two months prior to that event to be "–2", and so on down to "–11". The data obtained for the group of banks with a revoked licence and banks undergoing financial rehabilitation were compared with data on healthy banks in the same calendar period.

We obtained the following results:

1. At the time of licence revocation, troubled banks had a significantly lower incoming turnover than healthy banks[31]. For more than half of the banks with revoked licences (Chart 64), this indicator was significantly lower prior to licence revocation than on average for healthy banks in the same period. A lower incoming turnover was observed at least a year before the start of financial rehabilitation (Chart 65). Moreover, in banks with a revoked licence, this indicator demonstrated clearly negative dynamics for a few months prior to revocation. This may indirectly indicate that the condition of these banks was known to the market (including their customers and customers' counterparties) long before licence revocation, and information about their operating problems was gradually spreading.

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[28] For analysis purposes, we also used data on license revocations and decisions on financial rehabilitation in 2018 Q1.
[29] In this case, if license revocation or the start of financial rehabilitation was preceded by the introduction of the Bank of Russia's provisional administration, then X date means the date of provisional administration introduction. For the sake of brevity, we will use such concepts as "the date of license revocation" or "the date of bank resolution", without indicating each time whether this decision was preceded by the introduction of a provisional administration.
[30] For analysis purposes, the date of license revocation/introduction of provisional administration/bank resolution was understood as the 1st day of the month when the relevant decision was made.
[31] Incoming turnover means debit turnovers on correspondent accounts and the bank's cash desk for the month, normalised for the bank's assets. Normalisation was also made for the number of business days in the month.

Chart 64. Ratio of monthly turnover in banks with revoked licences to the average for healthy banks in the same period (distribution percentile: 25th, 50th, 75th).

Note: The X-axis indicates the months prior to the date of licence revocation/introduction of provisional administration/start of financial rehabilitation. The Y-axis indicates the ratio of the indicator specified in the chart's title for a particular bank to the average for healthy banks in the same period. Therefore, if the value corresponding to the 50th percentile is close to 1, then the medians of distributions for the samples of banks are approximately the same.

Source: Bank of Russia calculations.

Chart 65. Ratio of monthly turnover in banks undergoing resolution to the average for healthy banks in the same period during 2008–2017 (distribution percentile: 25th, 50th, 75th).
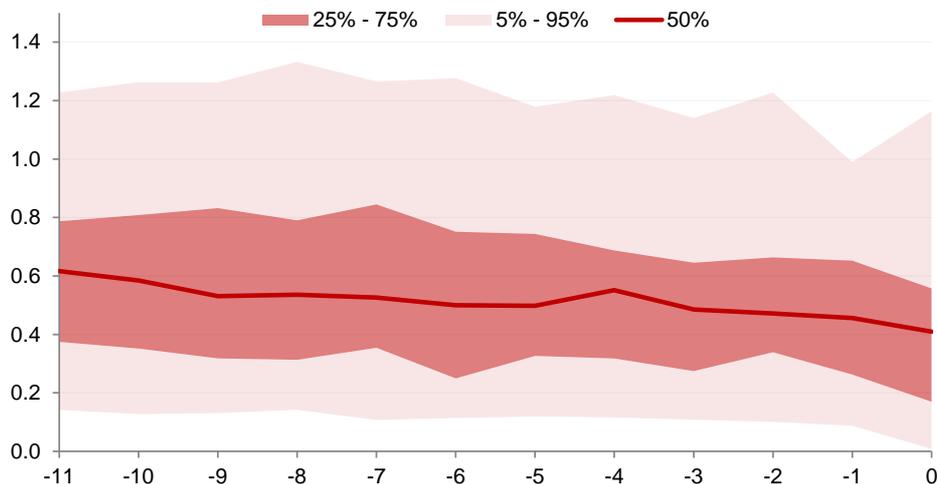
Note: The X-axis indicates the months prior to the date of licence revocation/introduction of provisional administration/start of financial rehabilitation. The Y-axis indicates the ratio of the indicator specified in the chart's title for a particular bank to the average for healthy banks in the same period. Therefore, if the value corresponding to the 50th percentile is close to 1, then the medians of distributions for the samples of banks are approximately the same.

Source: Bank of Russia calculations.

Despite the fact that the values of the studied indicators among banks from I and II groups were significantly below the average for healthy banks, they were not atypical, that is, they were

also found among healthy banks within the same period. During the year prior to licence revocation dates, only 6–15% of cases fell outside the 95% interval of values for incoming turnover among healthy banks within the same calendar period[32]. The values in banks undergoing resolution have been observed even less frequently outside this 95% interval. At the same time, if in 2008–2013 the percentage of banks with a revoked licence that were outside this interval was moderate and fairly stable throughout the entire forecast horizon, during the period of active supervisory policy, it was low for several months prior to the licence revocation date, but increased significantly immediately before revocation (Table 1).

Such dynamics of atypical values for incoming turnover may complicate the supervisory authorities' identification of troubled banks if the assessments are based on market perceptions. At the same time, the banking sector rehabilitation policy is based on the methodology of an early warning system, which includes the supervisory authorities' ability to detect problems in banks earlier than market entities can. If this is the case, these circumstances will not create additional difficulties in implementing supervisory policy measures.

Table 1. Share of cases where incoming turnover in banks with revoked licences deviated from 95% interval of values in healthy banks within the same period, %

Month	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
Entire period	8.5	8.1	7.9	9.2	9.4	9.6	9.3	8.0	8.7	9.1	10.8	20.1
2008–2013	15.0	14.0	14.9	15.9	15.4	14.9	14.7	15.0	13.6	14.4	15.5	20.4
2014–2017	2.9	3.2	2.3	4.2	5.2	6.1	6.0	3.8	5.8	6.3	8.5	20.1

Source: Bank of Russia calculations.

2. In 2014–2017, 75% of banks with revoked licences, as of the time of revocation, and 75% of credit institutions undergoing resolution, as of the start of financial rehabilitation, saw their *ratio of loan loss provisions to the bank's capital* exceed the median value of this ratio in healthy banks in the relevant period (Chart 66, Chart 67). This indicator began to increase 5–6 months prior to the licence revocation date and, one month before that event, it significantly increased, especially for banks with revoked licences.

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[32]Hereinafter, the interval between values corresponding to the distribution percentile of 2.5% and 97.5%.

Chart 66. Ratio of loan loss provisions to the bank's capital in banks with revoked licences to its median indicator for healthy banks in the same period (distribution percentile: 25th, 50th, 75th)
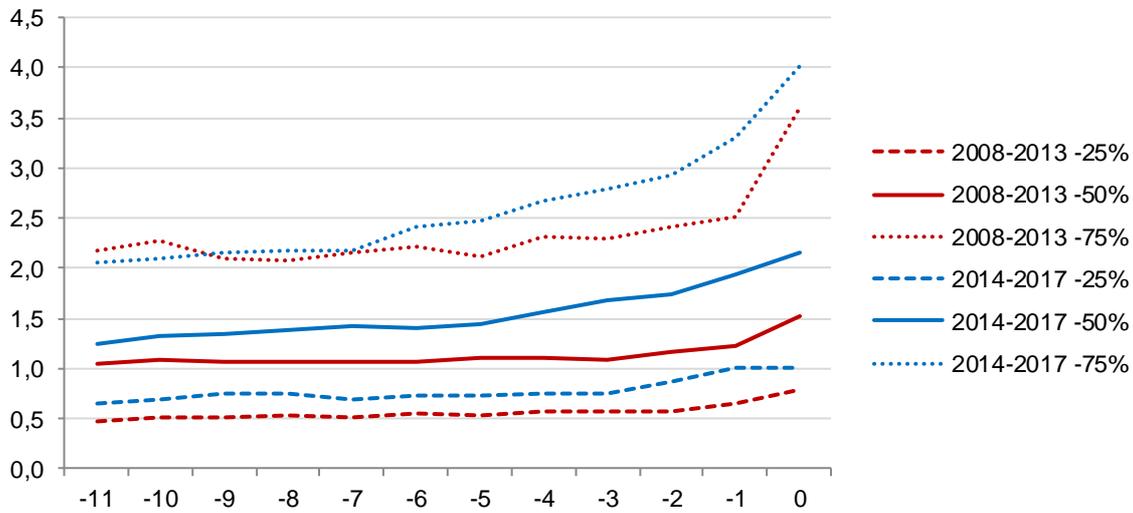
Note: The X-axis indicates the months prior to the date of licence revocation/introduction of a provisional administration/start of financial rehabilitation. The Y-axis indicates the ratio of the indicator specified in the chart's title for a particular bank to its median value for healthy banks in the same period. Therefore, if the value corresponding to the 50th percentile is close to 1, then the medians of distributions for the samples of banks are approximately the same.

Source: Bank of Russia calculations.

In 2008–2013, the loan loss provisions to capital ratio for troubled banks was closer to that of healthy banks. Weak growth was observed for 2–3 months, and the turning point came one month prior to the supervisory authorities' final decision. These differences indicate a significant improvement in the efficiency and conservatism of supervisory authorities in assessing the quality of assets. If significantly inadequate provisions in 2008–2013 were detected on average 1–3 months prior to licence revocation (1–5 months prior to the decision on bank resolution), throughout 2014–2017 the supervisory authorities began to file serious claims to bank asset quality much earlier[33].

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[33] In this case, the retrospective of claims filed by supervisory authorities is limited by the methodology of analysis and constitutes up to 11 months prior to license revocation/the decision on bank resolution.

Chart 67. Loan loss provisions to capital ratio in banks undergoing resolution to its median value for healthy banks in the same period (distribution percentile: 25th, 50th, 75th)


Note: The X-axis indicates the months prior to the date of licence revocation/introduction of a provisional administration/start of financial rehabilitation. The Y-axis indicates the ratio of the indicator specified in the chart's title for a particular bank to its median value for healthy banks in the same period. Therefore, if the value corresponding to the 50th percentile is close to 1, then the medians of distributions for the samples of banks are approximately the same.

Source: Bank of Russia calculations.

At the same time, banks and their owners were given real opportunities to rehabilitate their credit institutions. In some cases, the owners and management did not miss this opportunity. More often, however, key persons in the bank's management had no intention and/or ability to restore its financial stability. In some cases, instead of addressing the problems, the owners and management deliberately aggravated them by stripping the banks of their assets. For both groups of banks, the ratio of loan loss provisions to the loan portfolio did not significantly deviate from the 95% interval of values in healthy banks. The figures were outside the interval in 5–16% of cases. Typically, the frequency of values outside the interval increased with the approach of the licence revocation date, and it rose more visibly and rapidly in the last months prior to licence revocation/start of financial rehabilitation in 2014–2017 (Table 3). As a result, for approximately 15–18% of banks with revoked licences, the ratio of loan provisions to the loan portfolio within the 95% confidence interval significantly differed from the indicators of healthy banks immediately prior to licence revocation.

Table 2. Share of cases where the ratio of loan provisions to loan portfolio in banks with revoked licences deviated from 95% interval of values in healthy banks within the same period, %

Month	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
Entire period	6.5	5.4	5.8	6.5	6.3	6.9	6.5	6.9	8.6	8.4	10.8	15.7
2008–2013	8.6	7.0	8.1	8.4	8.8	8.6	8.8	10.2	15.1	13.4	15.7	17.5
2014–2018	4.5	4.0	3.9	5.0	4.4	5.8	5.0	4.9	4.8	5.7	8.2	14.8

Source: Bank of Russia calculations.

The fact that the share of values outside the interval is relatively small may be the result of a somewhat more conservative approach to the creation of loan loss provisions in the period banking sector rehabilitation policy was being implemented. In addition, it should be kept in mind that, along with the banks that experienced serious financial problems during banking sector rehabilitation, licences were also revoked if credit institutions were actively involved in operations that contradict AML/CFT requirements. Their financial position of the latter was not always associated with serious problems such as a high share of troubled assets. We can assume that, after excluding this category of banks, the share of values outside the interval (non-overlapping values of indicators for troubled and healthy banks) would be greater.

3. Banks from group 1 and 2 had a lower *share of loans received from other credit institutions in their liabilities* compared to the average for healthy banks. In the period under review, such banks accounted for more than 75% – both before a stepped-up supervisory policy and during the implementation of the banking sector rehabilitation policy. At the same time, group 1 and 2 banks had a lower share of loans to other credit institutions in their assets, compared to healthy banks. This ratio was typical for more than 75% of banks (Chart 68).

The ratios for both indicators show that banks with revoked licences and banks undergoing resolution start experiencing liquidity problems for some time before supervisory authorities make strategic decisions. Among other things, this could serve as an unfavourable media coverage factor and a reason of lower amount of incoming turnover. At the same time, the indicator denoting the troubled banks' ability to receive interbank loans suggest a better awareness and/or a more restrictive response by banks to the state of other market participants than is generally shown by other bank customers.

Chart 68. Difference in the share of loans provided to other credit institutions in the assets of banks with revoked licences and the average value of this indicator in healthy banks in the same period (distribution percentile: 25th, 50th, 75th)

Note: The X-axis indicates the months prior to the date of licence revocation/introduction of a provisional administration/start of financial rehabilitation. The Y-axis indicates the ratio of the indicator specified in the chart's title for a particular bank to its average value for healthy banks in the same period. Therefore, if the value corresponding to the 50th percentile is close to 1, then the medians of distributions for the samples of banks are approximately the same.

Source: Bank of Russia calculations.

Chart 69. Difference in the share of loans provided to other credit institutions in the liabilities of banks with revoked licenсeы and the average value of this indicator in healthy banks in the same period (distribution percentile: 25th, 50th, 75th)

Note: The X-axis indicates the months prior to the date of licence revocation/introduction of a provisional administration/start of financial rehabilitation. The Y-axis indicates the ratio of the indicator specified in the chart's title for a particular bank to its average value for healthy banks in the same period. Therefore, if the

value corresponding to the 50th percentile is close to 1, then the medians of distributions for the samples of banks are approximately the same.

Source: Bank of Russia calculations.

Researchers of the Russian banking sector[34] also identify other early signs of negative capital, such as the level and changes in household deposits and loans to corporate organisations in the bank's assets. The calculations provided the following results:

About 65% of banks with revoked licences and slightly more than 80% of banks undergoing resolution had a higher share of household deposits in the bank's assets compared to the average for healthy banks in the same period.

About 60% of banks with revoked licences had a higher share of loans to non-financial organisations compared to the average for healthy banks in the same period. No significant differences were found for banks undergoing resolution.

The share of loans to non-financial organisations in assets and share of household deposits in liabilities very often differed from the interval covering 95% of respective values in healthy banks in the same period. Among group 1 banks, the average frequency of healthy banks being outside the 95% interval within 12 months prior to licence revocation was approximately 15% both for the share of loans in assets and the share of deposits in liabilities (Table 3, Table 4).

Table 3. Share of cases where the loan portfolio share of non-financial organisations in the assets of banks with revoked licences deviated from 95% interval of respective values in healthy banks in the same period, %

	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
Entire period	12.7	13.3	14.7	14.5	14.3	16.0	15.9	16.8	14.7	15.2	15.0	12.0
2008–2013	16.3	21.7	23.4	22.6	22.4	24.9	27.2	26.6	26.7	28.0	30.1	19.8
2014–2018	9.5	6.5	7.9	8.5	8.7	10.3	9.0	10.9	7.9	8.4	7.4	9.6

Source: Bank of Russia calculations.

Table 4. Share of cases where the share of household deposits in the liabilities of banks with revoked licences deviated from 95% interval of respective values in healthy banks in the same period, %

	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
Entire period	13.2	14.6	14.1	15.7	14.8	15.2	16.8	16.1	16.6	16.6	16.1	20.2
2008–2013	14.5	16.5	15.9	15.9	17.0	16.6	15.2	15.5	15.2	14.8	13.8	18.4
2014–2018	12.1	13.0	12.8	15.6	13.2	14.4	17.8	16.5	17.3	17.5	17.3	20.7

Source: Bank of Russia calculations.

For group 2 banks, the corresponding figures were 19% and 17%. However, they were very different during sub-periods and for a varying number of months prior to the bank resolution date (Table 5, Table 6).

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[34] See, for example, Mamonov, M. (2018). Banks' Hidden Negative Capital Before and After a Senior Management Change at the Bank of Russia. Russian Journal of Money and Finance, vol. 77, No. 1, pp. 51–70.

Table 5. Share of cases where the loan portfolio share of non-financial organisations in the assets of banks undergoing resolution deviated from 95% interval of respective values in healthy banks in the same period, %

	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
Entire period	12.2	12.2	18.4	16.3	22.4	12.2	18.4	24.0	16.0	26.0	22.0	26.0
2008–2013	21.4	17.4	30.4	34.8	40.9	27.3	36.4	47.4	42.1	61.1	55.6	61.1
2014–2018	0.0	7.7	7.7	0.0	7.4	0.0	3.7	9.7	0.0	6.3	3.1	6.3

Source: Bank of Russia calculations.

Table 6. Share of cases where the share of household deposits in the liabilities of banks undergoing resolution deviated from 95% interval of respective values in healthy banks in the same period, %

	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
Entire period	14.3	14.3	18.4	16.3	16.3	18.4	16.3	16.0	20.0	18.0	20.0	18.0
2008–2013	17.9	17.4	26.1	21.7	18.2	18.2	13.6	15.8	15.8	11.1	11.1	11.1
2014–2018	9.5	11.5	11.5	11.5	14.8	18.5	18.5	16.1	22.6	21.9	25.0	21.9

Source: Bank of Russia calculations.

These data confirm the qualitative views on signs of trouble in the banks, which served as a warning for supervisory authorities in the period under review and were used most effectively in implementing the banking sector rehabilitation policy. One such sign is the aggressive policy of banks as regards transactions with assets and/or liabilities. This sign triggered increased supervisory focus on the bank. Also, regulatory decisions were made towards limiting such banks' aggressive operations.

The decline in 2014–2017 in aggressive corporate lending posture of troubled banks, compared to healthy banks, against 2008–2013 can be explained by the fact that banks had responded to the regulator signals. However, this response was mostly of formal nature. For deposits, a certain increase in the share of deviations demonstrated by group 2 troubled banks compared to healthy banks could occur in connection with the unfair actions of banks aimed at preferential treatment of claims submitted by their affiliated creditors including legal entities.

In addition to the above, we also considered other indicators. They include monthly growth in household deposits, monthly growth in corporate loans, monthly growth in loan loss provisions etc. However, no systematic and stable deviations in groups of banks with revoked licenced/banks undergoing resolution were found in the movement of these indicators compared to the median conduct of healthy banks. At the same time, as the licence revocation date approached, growing provisions demonstrates a more significant deviation from typical values that fall within the 95% distribution interval of healthy banks (Table 7).

Table 7. Share of cases where growth in loan loss provisions in banks with revoked licences deviated from 95% interval of respective values in healthy banks in the same period, %

	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
Entire period	8.6	9.9	7.7	10.8	12.5	14.2	10.3	13.8	13.5	14.8	16.8	29.9
2008–2013	10.0	13.6	9.1	10.4	12.4	14.4	11.0	18.1	15.1	15.9	16.4	23.4
2014–2018	7.3	6.8	6.6	11.0	12.5	14.0	9.9	11.1	12.6	14.3	17.0	33.1

Source: Bank of Russia calculations.

None of the above indicators can reliably identify existing or potential problems in a bank. This information represents an analysis of dynamics for indicators in materialised cases of licence revocation and the introduction of financial rehabilitation with respect to banks. In new cases of licence revocation/financial rehabilitation, there may be other parameters and ratios. Meanwhile, the analysis of characteristics describing bank activities, along with other approaches, may be used to identify banks that require increased supervisory focus.

3. CHALLENGES OF THE NEW DECADE

3.1. Macroeconomic Challenges

Structural transformation in the global and Russian economies sets general conditions for the development of banking. The global structural shift is associated with the transition of key central banks to monetary policy normalisation. This assumes increasing global interest rates and restricting global liquidity supply. Changes in foreign exchange rates, as well as in directions and amounts of capital flows, which usually accompany changes in the monetary policy of leading central banks, serve as an additional factor for banks to consider, which is especially relevant for banks building their business models upon extensive global capital market interactions. Global banks should be prepared to operate in an environment of positive real interest rates, including when they attract funds at relatively low margins.

For Russia, the challenge that positive real interest rates bring is doubly important in the context of Bank of Russia inflation targeting and the use of the budget rule by the Russian Finance Ministry. Unlike in the previous decade, changes in oil prices will have less impact on the economy, with inflation and aggregate demand becoming less sensitive to oil prices. While throughout 2001–2007 the rise in oil prices led to increased economic activity, double-digit inflation, and negative real interest rates, future interest rates are likely to be less sensitive to the oil cycle, settling in positive territory at an equilibrium level, reflecting the movements of global interest rates and Russian risk premium.

As a result, the banking sector, on the one hand, must adapt to low inflation, which assumes relatively low margins and cost optimisation. This factor should strengthen banking competition and lead to further cost optimisation. On the other hand, steadily positive real interest rates are an important prerequisite for the development of the long-term money institution. The emergence of an investment economic model suggests that banks will have to search for their place in the economy with due considerations for stability requirements.

Two more challenges (non-specific to the banking sector, but important for Russia) relate to the deteriorating demographic structure of the population and changes in the economy's structure, including in connection with changes in oil prices. Deteriorating demographics may affect the structure and dynamics of demand for banking and financial services, including mortgage and consumer loans, and the ability of banks to finance operations. Structural changes in the economy in favour of its non-tradable sectors change the profitability of lending to these sectors of the economy and to households employed in these sectors. They also stimulate change in the financial sector's business structure.

3.2. Technological Challenges (fintech)

Internet and mobile communications have become an integral part of economic and financial life. New information technologies based on distributed networks, smart contracts, machine learning and pattern recognition, and big data analysis are increasingly used in the financial sector. This already has (in the case of payment services) or is likely to have (in the case of peer-to-peer lending) important implications for the financial industry, especially banks.

On the one hand, fintech increases the efficiency of banking services by reducing the expenditures of banks, improves the availability of financial services, making them truly global, and can improve the quality of assessing credit and other risks, liquidity management, and reduction of operational risks. Financial intermediation can become much more effective thanks to modern information technology.

On the other hand, fintech creates additional risks. These include risks to confidentiality of financial and personal information, risks to operational resilience to various technological shocks, as well as financial stability risk. The latter is driven by increased interdependencies in the system, accelerating the spread and scaling of adverse events resulting from higher sensitivity to technological shocks (increasingly faster operations and quicker development of interdependencies). As a factor in the globalisation of services, fintech increases national financial systems' sensitivity to global shocks. This is a challenge for market participants, especially systemically important banks, and for the regulator.

The principles of the regulator's policy towards fintech are under development. There is an understanding that regulation should not block the positive opportunities associated with fintech advances. In particular, this implies removing barriers to the development of fair competition in the

IT market. At the same time, regulation in the modern environment should be accompanied by effective management of risks arising from the roll-out of fintech.

The process of structural shifts in the banking services market will be less painful if banks initiate the introduction of fintech. Banks that are not ready to lead in fintech, as well as banks that do not ensure adequate protection against the risks caused by the development of financial technologies will be forced to give way to more effective market participants.

3.3. State Participation in the Capital of Banks

The acceptable scale of state participation in the banking sector is the subject of discussion among experts and politicians. The experience of many countries indicates that strengthening the state's role in the economy, including the banking sector, in an unfavourable external environment is a natural way to preserve the system's stability.

The new mechanism of financial rehabilitation of credit institutions provides for the Bank of Russia's direct participation in the capital of banks undergoing resolution. Moreover, the Bank of Russia has the authority and tools necessary to implement measures for recapitalisation of banks undergoing resolution. This makes it possible to restore, within a short period of time, their financial indicators to an acceptable level and extend all prudential requirements to such banks immediately after their recapitalisation.

Measures for financial rehabilitation of banks are inevitably accompanied by a temporary increase in the state's participation in their capital. At the same time, the ultimate goal of financial rehabilitation is to develop competition in banking services, which involves the Bank of Russia's withdrawal from the capital of banks undergoing resolution after their financial rehabilitation and sale to private owners. Therefore, financial rehabilitation is not strategically aimed at increasing state participation in the capital of banks. On the contrary, its goal is to increase the number of healthy market participants with private (non-state) capital.

<p align="center">* * *</p>

If the banking sector successfully responds to its current challenges, it will become more customer-oriented, reliable, and efficient. In this case, the regulator's tasks are primarily to maintain the stability of banking sector, protect the interests of creditors and other customers of banks, and create conditions for the development of the banking sector, including the development of healthy competition within it. We believe that the banking system has everything it needs to meet the challenges it faces to embark on a path of well-balanced and long-term development.