

МАКРОЭКОНОМИЧЕСКИЕ РАСЧЕТЫ

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RUSSIA'S MACROECONOMIC POLICY, BANK LENDING AND BUSINESS CYCLES¹

Introduction

Neoclassical synthesis, when formed, successfully placed financial side of the economy, including influence of credit on business cycles, out of mainstream economic discussion for a number of years. Real business cycle doctrine gained dominance, and any analysis of real effects of financial cycles was possible only at the margin of the economic profession (see e.g. Minsky, 1977; Kindleberger, 1978).

When post-war Keynesian measures of stimulating economies, coupled with oil shocks of 1970s, produced high inflation, a period of man-made recessions followed, when inflation was stabilized and then decreased at the expense of economic growth. A well-known example of policies addressing high inflation is Federal Reserve System monetary policy under Volcker's presidency. Inflation was quickly stabilized in most developed countries, and this was followed by smaller magnitudes of business cycle — a phenomenon named 'great moderation'. Explanations of 'great moderation' include Central banks' independence, introduction of economic policy rules, structural changes in the economy (growing share of services, increased flexibility of the labour market), etc.

Rather stable economic growth did not bring accelerating inflation, though traditionally inflation is assumed to be pro-cyclical (Lucas, 1977). This suggested that new institutional arrangements of economic policy were sufficient to produce economic growth with controlled inflation. Analysis of this unique period of macroeconomic stability resulted in a body of mainstream theoretical work with economic policy recommendations that had been since followed by most governments and Central banks. However, all these theories ignored the part of the economy that was absorbing increasing supply of money and credit — the financial sector. Deregulation and globalization of financial markets resulted in a series of financial and economic crises, and it transpired that inflation targeting is not enough to ensure stability of finance and economy in general.

Deregulation of 1980s and 1990s resulted in unprecedented growth of leverage in the financial system at the end of 20th and early 21st century. Though financial crises were followed by more and more aggressive monetary policy response, economic consequences of these crises were worsening (Schularick, Taylor, 2012). Moreover, recessions following financial disasters were deeper and lengthier than otherwise (Claessens et al., 2011; Borio, 2014). At the same time economic recovery tended to be stronger under credit expansion and increasing house prices (Claessens et al., 2011).

However, after another recession was over and the economy back to its (new) potential level of output, long-term growth trajectory changed, resulting in losses of potential output

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and public welfare (Borio, 2014; Martin et al., 2015). These observations suggested that it was important to develop early warning indicators of financial instability for proactive policy actions. This brought in the idea of macroprudential regulation — Central banks were tasked with maintaining financial stability on top of inflation targeting, and most measures of macroprudential regulation are presently related to the banking sector (e.g. anticyclical capital buffer included in Basel III standard). It is important not to subject financial stability to other aims of monetary policy — monetary policy should respond with restrictive measures if financial sector builds up imbalances even when inflation is at its targeted levels (Borio, 2014).

Except for negative supply shocks (wars, oil crises, pandemics etc.), economic crises of the past century were caused by problems in the financial system and (often unexpected) change of financial cycle's phase. This makes financial system stability the cornerstone of overall economic stability. Minsky's financial instability hypothesis (Minsky, 1977) suggests that instability is an immanent characteristic of any financial system causing cyclical build-up of risks even in the absence of exogenous shocks. This means that permanent financial stability is unattainable, implying the necessity to minimize risks to financial system stability to decrease frequency and depth of financial crises.

There are many different factors that might enhance instability of financial sector. In our paper we analyze how macroeconomic factors influence Russian banking sector, and how credit activity of the banking sector influences Russian macroeconomic indicators. We concentrate on the banking sector and its credit activity since Russia belongs to the continental (bank-based) financial system, meaning that bank loans is the main channel of financing needs of economic agents. Since early 2000s consumer bank loans supported consumption-driven model of GDP growth in Russia (Darovskii, 2017). Besides, Russian equity market, compared to advanced countries, is shallow and highly volatile, and definitions of financial cycle for Russia exclude it (Artemova, Vymyatnina, 2019). Another important feature of Russian economy that has to be taken into account is its high share of oil and gas in total exports. This means specific macroeconomic policy, like counter-cyclical budget rule. There are not many papers that consider the impact of various types of credit on dynamics of the major macroeconomic indicators, and we aim at filling this gap accounting for specificities of Russian economy.

The paper is structured as follows: in the next two sections we discuss stability of Russian banking sector in the context of macroeconomic policy dynamics as well as macroeconomic effects of bank lending in Russia. In the next part we present empirical results from several VAR models with various types of credit in the macroeconomic context. Additional information on the data used, quality of our models and additional models is provided in the appendices. In concluding section we summarize our main findings and suggest ideas for further analysis.

Macroeconomic policy and banking sector stability

Russian banking system has been accumulating risks for a long time. A number of problems in the banking sector — such as liquidity loss or negative capital — result from imprudent behaviour of banks and can be prevented by appropriate regulation. However even strict adherence to regulation does not guarantee stability of the banking system since it is highly influenced by macroeconomic situation in general. A great variety of factors affect susceptibility of national banking systems to external shocks — barriers on capital movement, exchange rate regime, prevalence of commodities in exports, degree of integration in international trade and finance, level and structure of country's external

debt, etc. Banking crises often turn into serious financial and economic crises, worsening government's financial position and increasing government debt (Reinhart, Rogoff, 2009).

Macroeconomic factors, especially monetary policy of 2000s, led to increasing risk profile of Russian banking system. Underassessment of currency risks by the banking sector became evident during 2008–2009 crisis when many banks had to rely on the state's support. Bank of Russia's policy of managed exchange rate in 1999–2014 prompted banks to rely on cheap external funds (borrowing in foreign currency) while issuing loans in national currency. Large real sector companies also relied on cheap loans from abroad, though not all of them had their earnings in hard currencies. It was private sector external debt that became a problem in 2008–2009 crisis, unlike 1998 crisis.

Bank of Russia chose to support the banking sector (and some real sector companies) through ruble's managed devaluation. The policy was public knowledge and, in hindsight, resulted in loss of foreign currency reserves and further tightening of credit availability to the real sector of economy — instead of using cheap money for helping companies and people in need of credit, banks played a safe game against Bank of Russia's devaluation scheme, using borrowed money to increase profit and improve their balance sheets. Households were following the suit, increasing their holdings of foreign currency by nearly \$50 bln from September 2008 till February 2009 (Yudaeva, Godunova, 2009). The banking system was stabilized, but GDP plummeted by 7.8% in 2009 (Federal State Statistic Service GDP data).

It is clear that the policy of predictable exchange rate was detrimental for the economy and was based primarily on fears of sharp devaluation that were inherited from the 1998 crisis. It is likely that allowing ruble to adjust quickly to its new equilibrium value in 2008–2009 could bring Russian economy to a new equilibrium quicker. Such instruments as repo (including foreign currency repo operations with a broad list of securities accepted as a pledge) could provide banks' access to much needed foreign currency without adverse effects on monetary mass. However, the choice was more a political issue than purely monetary policy question.

The problem of currency mismatch in the banking sector has subsided since due to a constellation of several factors, including general switch to a higher share of ruble in the banks' balance sheets, sanctions of 2014 that limited ability of Russian banking sector to borrow abroad, and re-introduction of the budget rule. The latter, in its current form, decreased ruble's dependence on oil prices (fig. 1), making Russia's economy more resistant to terms of trade shocks. As a result, changes in the current account balance are not fully transferred into nominal exchange rate, and real exchange rate now adjusts slower to changes in factors productivity, long-term price adjustments etc. Polbin et al. (2019) discuss recent episodes of real effective exchange rate departure from its fundamental values that might be the result of foreign currency interventions by the Ministry of Finance since February 2017 within the budget rule.

The current budget rule smooths influence of oil prices on a number of macroeconomic parameters, including credit and financial cycles. However, Russian financial market (including banking system) remains vulnerable to exchange rate risk and requires further development of hedge instruments and capital buffers. The budget rule in its present form is monetary neutral and thus helps inflation targeting regime of monetary policy introduced in late 2014. Abandoning exchange rate targeting and introduction of inflation targeting increased manageability of money market interest rates (decreased volatility) and volatility of exchange rates: in August 2000 — November 2014 standard deviation of interest rate was 3.14 and of exchange rate — 3.11, while in December 2014 — March 2019 they were, correspondingly, 2.47 and 5.41. This means that interest rate risk decrease comes at the price of increased exchange rate risk.

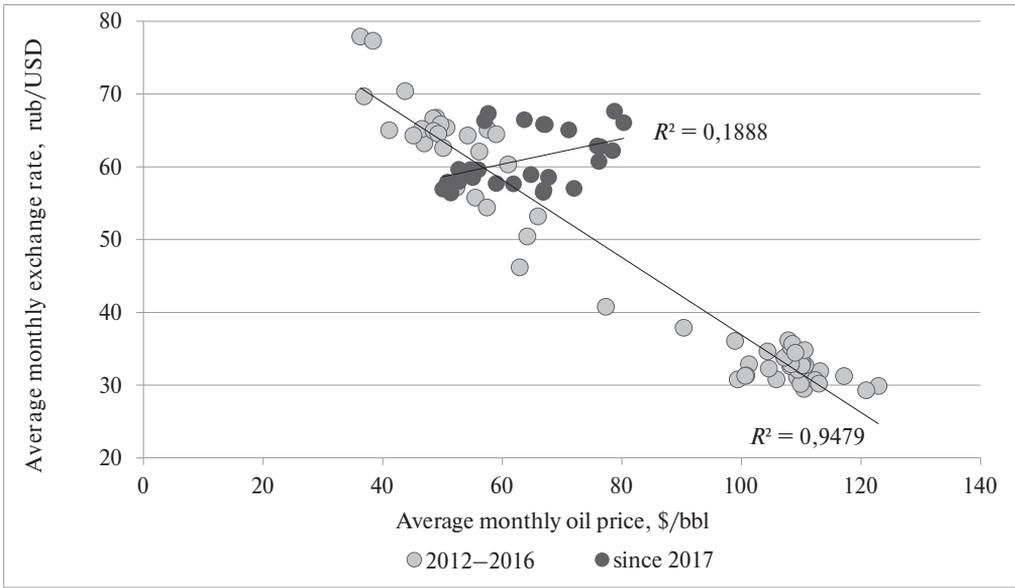


Fig. 1. Ruble nominal exchange rate and oil price before and after the current budget rule

Sources: Bank of Russia; Investment Holding Finam Ltd; authors’ calculations.

One of the key results in open macroeconomics is known as “impossible trinity” — it is impossible for any country to have at the same time free capital flow, fixed exchange rate and sovereign monetary policy. This explains why an attempt of the Bank of Russia to target both exchange rate and inflation under free flow of capital was doomed to be ineffective. The problem is that a new impossibility seems to have emerged lately — a so called “dilemma of monetary policy” (Rey, 2015). According to this concept, a Central bank can pursue independent monetary policy only if capital controls are in place. Otherwise global financial market will impose monetary policy of the major financial institutions (most notably, Federal Reserve System or European Central Bank). Thus, a global cycle of interest rate increases will lead to capital outflows from emerging markets, forcing Central banks of these countries to respond. This calls for selective capital controls (for example, limits on cross-border borrowing for selected banks or companies) as a means of stabilizing national financial system.

Table 1

Bank of Russia’s tools for regulating exchange rate and level of foreign currency liquidity

Direct instruments		Indirect instruments
Currency exchange market (domestic)	Foreign currency liquidity market	<ul style="list-style-type: none"> • Verbal interventions • Other indirect instruments
<ul style="list-style-type: none"> • Currency interventions • Discrete auction 	<ul style="list-style-type: none"> • Currency repo • Currency swap 	

Source: authors’ desk research results.

Bank of Russia has to maintain price stability as well as stability of the financial system. This includes stability of exchange rate as a second-order task, since it influences both price stability (via pass-through effect) and financial stability (via currency mismatch and currency exposure). Bank of Russia has a number of instruments to counteract undesirable shocks to exchange rate that are not absorbed through current account balance (table 1). These instruments gain additional importance due to monetary policy dilemma, especially in conditions of excessively soft monetary policy of the global financial centres.

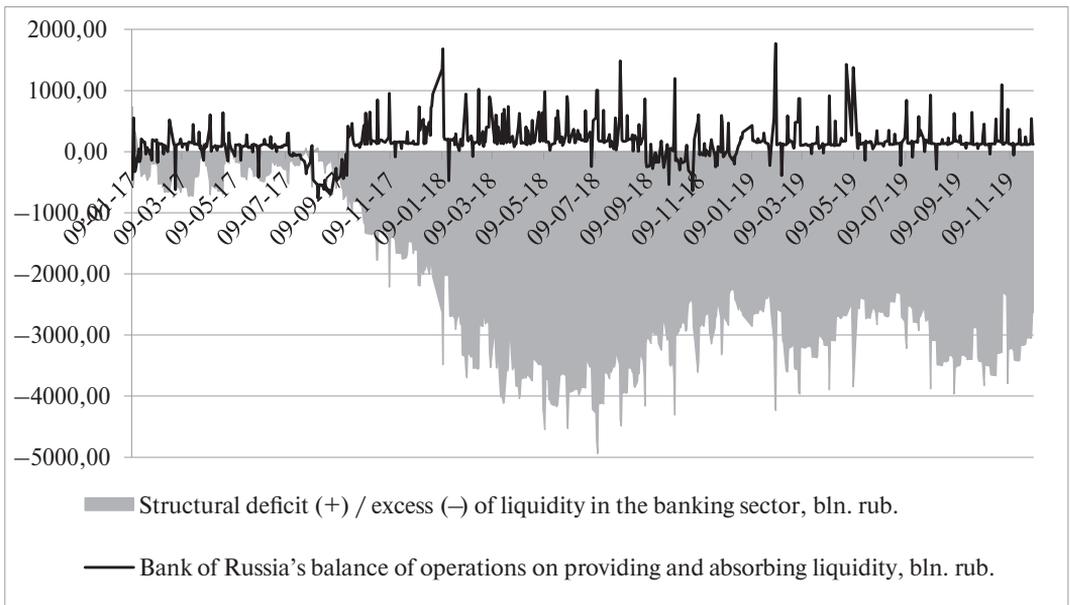


Fig. 2. Banking sector liquidity, September 2017 — September 2019

Source: Bank of Russia.

Note: Structural deficit/excess of liquidity is a difference between operations of provision and absorption of liquidity. Bank of Russia's operations balance is a difference (on a reporting date) of its liabilities to and demands on the banks.

Another important macroeconomic change, though of a technical nature, is a prolonged period of structural excess of liquidity in Russian banking sector (fig. 2). There are several reasons for this: predominantly saving mode of the households after 2014–2015 crisis, positive government budget balance in recent years, and, partly, expenditures on the rehabilitation of the banking system. The latter cannot be considered the main reason for the structural excess of liquidity since Bank of Russia absorbed liquidity provision through deposit auctions and its own bonds. Share of commercial banks deposits at the Bank of Russia in broad monetary base increased from an average of 4% in January 2000 — March 2017 to an average of 12% in April 2017 — October 2019. As a result, monetary base was growing faster than monetary mass, and money multiplier decreased (fig. 3).

Banking system received a sizeable injection of funds from the Bank of Russia (about 3 trln rubles or 5% of broad monetary mass at the end of 2018). However, this did not seriously affect inflation or exchange rate due to absorption of excessive liquidity and reasonably tough monetary policy in 2017–2018. This absorption kept money market interest rates within reasonable limits and constrained inflation. But the price of this macroeconomic stabilization was zero transfers to the federal budget from the CBR profits (with the exception of Sberbank's dividends). Bank of Russia reported the loss of 870 bln. rubles in rehabilitation of the banking system in 2017–2018.

However, the effects of structural excess of liquidity are far from being simple. On the one hand, liquidity in the banking sector increased by at least one percentage point on average in 2017–2019 compared to 2013–2016. On the other hand, excessive liquidity might lead banks to engage in riskier strategies to increase profits — this was observed after 2008–2009 crisis with a boom of consumption loans and capital outflows of 2011–2013. Deposit auctions and Bank of Russia's bonds cannot fully solve the problem of high credit

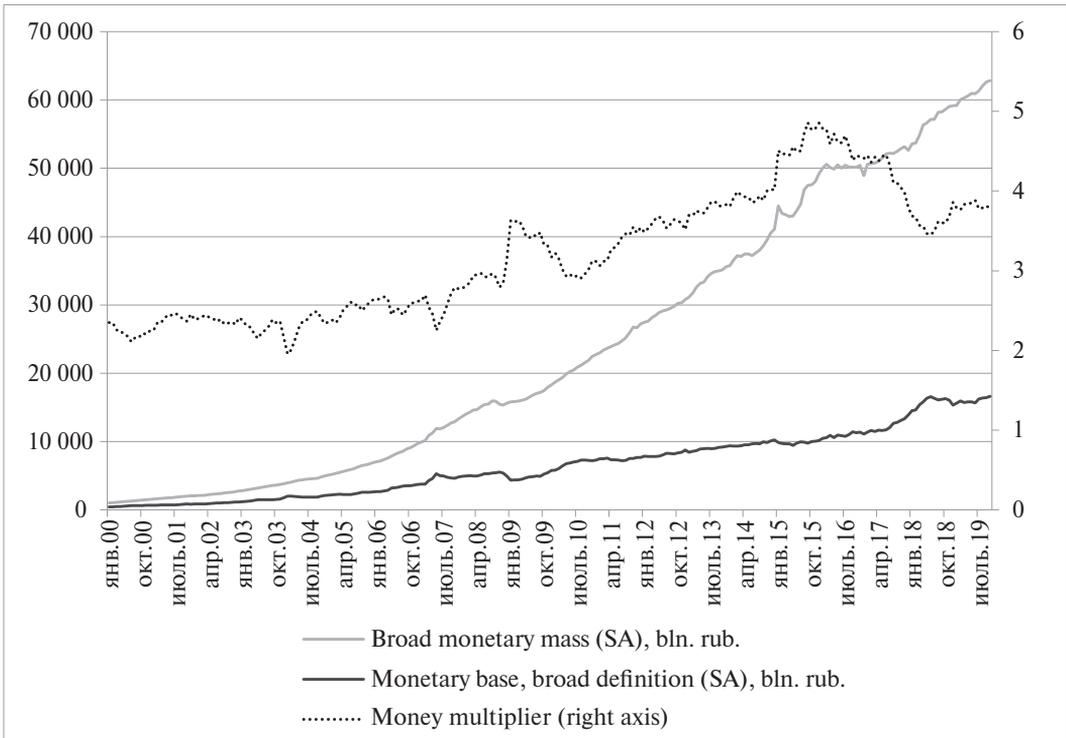


Fig. 3. Monetary base, monetary mass, and money multiplier, January 2000 — September 2019

Source: Bank of Russia; authors' calculations.

risk, since banks, seeking long-term assets, will continue with unsecured consumer lending and risky corporate credits even at the risk of decreasing quality of their loans portfolio. A solution for the deficit of long-term risk-free assets in Russian financial system could be sought in the creation of a deep market of government bonds, bringing increased stability of the banking system as a by-product.

Recently, Russian government and Central bank have created stable macroeconomic environment by introducing a new version of the budget rule and inflation targeting regime of monetary policy. Bank of Russia attempted a serious rehabilitation programme of the banking sector. This consistent and transparent macroeconomic policy led to a number of positive developments in the banking sector: reduction of currency mismatch, increased liquidity, improved resilience to shocks. At the same time, banking system is far from being stable and secured from credit risks. In the next section we describe some of the macroeconomic effects of credit dynamics in Russia.

Macroeconomic effects of credit

Macroeconomic stabilization — including serious decrease in inflation and, as a result, lower interest rates — led to expansion of credit since late 2017. Credit demand has been increasing due to low rates of real income growth and general stagnation of economic growth with consumers seeking to support their previous consumption level. This resulted in an expansion phase of credit cycle that at present could be assumed to be at its local minimum (fig. 4). It is important to remember that previous two credit cycles' expansion phases ended due to recessions provoked by external shocks, and were accompanied by realization of accumulated risks in the banking sector.

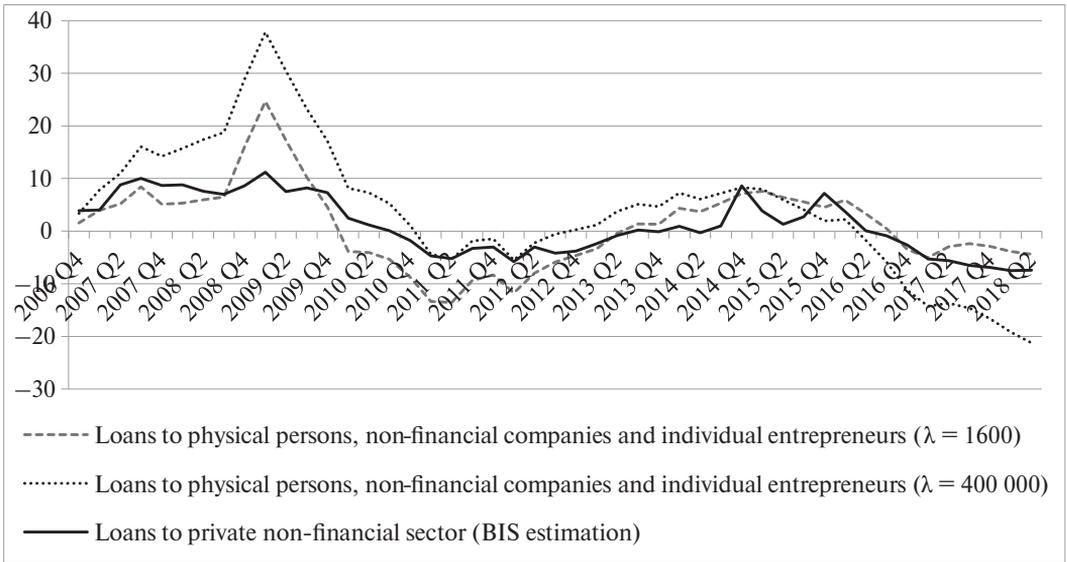


Fig. 4. Credit gap in Russia (percentage points), 2006:4 – 2018:2

Sources: Bank of Russia; BIS; authors' calculations.

Note: Credit gap¹ is calculated as de-trended (Hodrick–Prescott filter with $\lambda = 400\,000$) logarithm of credit-to-GDP quarterly data. We estimate credit cycle accounting for changes in exchange rate.

Credit can support long-term economic development and economic growth, but at the same time extensive credit activity of the banking sector increases macroeconomic instability (in line with Minsky's financial instability hypothesis — Minsky, 1977). This calls for special attention to the credit cycle, and for measures to counteract overconfidence of banks in the upward phase of credit (and business) cycle. Unfortunately, policymakers often tend to support credit expansion rather than to curb it in time.

First of all, often there are no limits (or they are set up too late) to constrain upward dynamics of the most dangerous types of loans — unsecured consumption loans, loans to over-borrowing economic agents, mortgages based on loose income assessment, etc. Extending such credit beyond reasonable limits leads to financial market bubbles and growth of bad debts with negative consequences for the banking and financial sector. Secondly, government often tries to stimulate economic growth through provision of easy credit. One of such, often advocated as being reasonable and investment-promoting, policies (Palley, 2004) suggests encouraging pro-investment credit. However, artificial measures of credit allocation usually lead to macroeconomic imbalances and overheating of the economy — precisely the outcome that was supposed to be evaded.

Support of specific types of loans — or of loans to specific industries and projects — often is related to biased selection and worsening of the economy's structure (Darovskii, 2017). Nonmarket selection of creditworthy projects decreases efficiency of financial resources allocation, increases interest rates for other borrowers, and might result in increasing default risks of the banking sector. Therefore, aiming at balanced credit cycle, the regulator should use instruments to direct banks' lending behaviour in a desirable way. Such instruments form a standard macroprudential toolkit: anti-cyclical markup, special risk coefficients, norms of reserves on loans, policy interest rates, etc.

¹ More details on credit gaps phases can be found in BIS publication “Guidance for national authorities operating the countercyclical capital buffer” (2010).

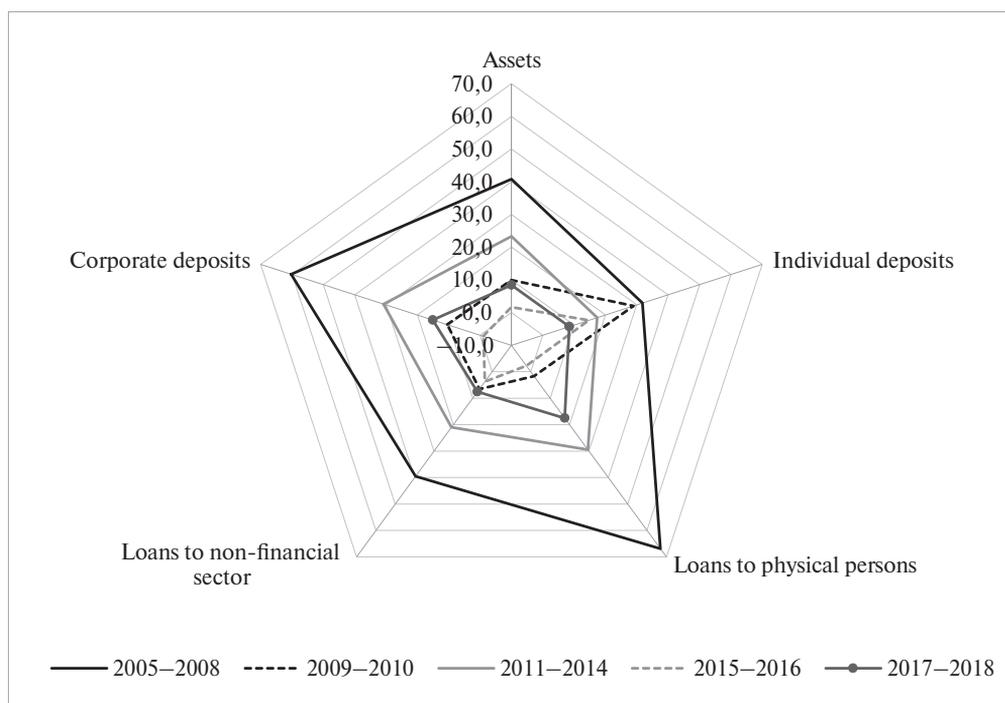


Fig. 5. Average yearly growth rates of different types of deposits and loans in Russian banking system, 2005–2018

Sources: Bank of Russia; authors' calculations.

As can be seen from fig. 5, under favourable macroeconomic conditions in Russia companies prefer to save more, while households take more debt. This implies that business model of banks is oriented at, presumably, highly profitable segment of unsecured consumption loans, making banks vulnerable to external shocks when the quality of such loans sharply deteriorates, while the amount of deposits increases. However, this business model is not even very profitable — during 2011–2017 credit cycle return on assets corrected for the quality of assets was low for most banks. At the same time aggressive policy of imposing credit on consumers formed the model of reliance on additional loans among Russian households. Only during crisis episodes did consumers switch to predominantly saving behaviour (fig. 6). High indebtedness of households and exchange rate volatility of 2018 resulted in the lowest level of household savings (since 1998) of 3.7% of their monetary income.

Credit stimulation of aggregate demand (including stimulating consumption) is limited under stagnating disposable income (in 2014–2018 it decreased by 10.9% according to the living standards data of the Federal Statistic Service) and high level of indebtedness. An attempt to push for further increase of consumption through credit expansion could result only in a situation similar to that of 2011–2013 when growth phase of credit cycle was supported mainly by unsecured consumption loans. At that period Bank of Russia introduced some new measures of macroprudential regulation (e.g. increasing risk coefficients and doubling of minimal reserves on potential losses in 2013), but they missed the target since capital adequacy ratios for a number of banks allowed them continuing with intensive programmes of consumer lending (Danilova, Elizarova, 2017, pp. 14–15). Moreover, at the peak of unsecured consumption loans new credit could not stimulate economy since it was offset by interest payments. The highest level of indebtedness — and continuously increasing — was registered for the least well-off people. This fact was of special concern for policymakers both in the government and at the Bank of Russia.

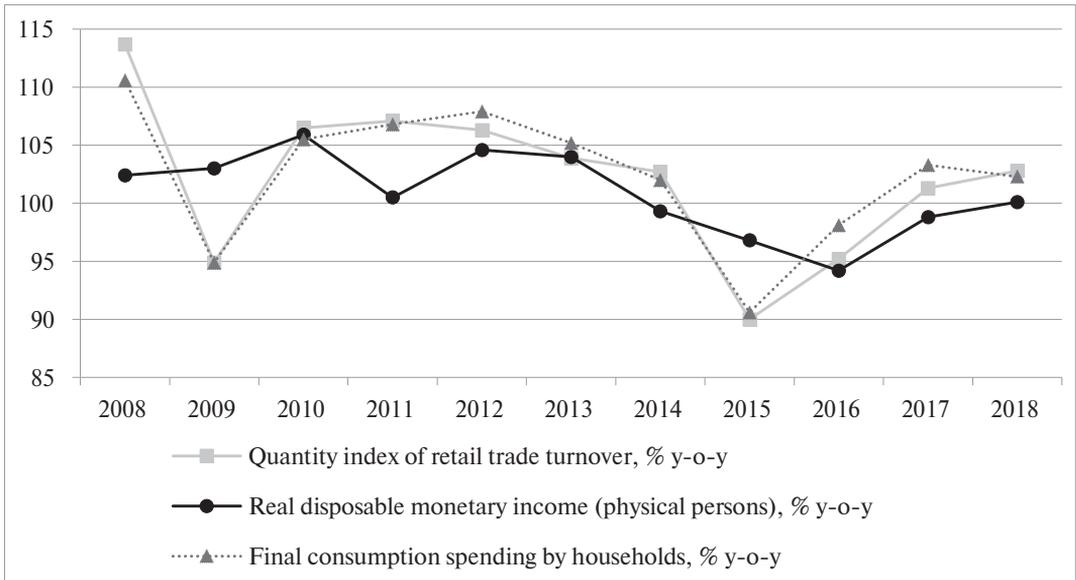


Fig. 6. Dynamics of real disposable income, consumption and retail trade, 2008–2018

Source: Federal State Statistic Service.

Note: Higher growth of retail trade in comparison with real disposable income growth suggests consumption out of savings or on credit. Opposite situation suggests increased savings.

Ministry for Economic Development called for enforced transition to investment growth model and developed a set of measures to support this transition: national projects, mechanisms of support for investments of small and medium enterprises, special programmes (e.g. “Factory of project financing” and “Infrastructural mortgage”). The Ministry set its priorities in promoting mortgage and investment loans, and it was concerned with increasing growth rates of consumer credit as it believed that the latter was thriving at the expense of corporate loans. The idea that credit should be used to stimulate business activity and investments has a long pedigree in Russia: one of the well-known groups — Stolypin club — advocated, among other things, for monetary policy to support preferential credit rates for companies, especially for investment purposes¹.

Table 2

Economic growth and real interest rate on loans in different countries

Country	Years	Average economic growth rate, %	Average real interest rate on loans, %
Azerbaijan	1998–2009	14,6	11,3
Albania	1999–2008	6,9	11,6
Bangladesh	1995–2018	5,8	5,8
Bulgaria	2000–2008	5,9	3,2
Brazil	2000–2008	3,8	43,2
Chile	1985–1998	6,8	9,3
China	2000–2007	10,6	2,1
Czech Rep.	1999–2008	4,0	4,1

¹ For more details, consult their website: <http://stolypinsky.club/strategiya-rosta-3>.

Окончание табл. 2

Georgia	2003–2007	9,7	11,2
India	1992–2007	6,4	6,5
Indonesia	1986–1997	6,6	10,6
Kyrgyzstan	2013–2018	5,2	16
Korea (S.)	1999–2018	4,4	3,9
Mexico	1996–2000	5,3	6,4
Senegal	2014–2017	6,6	4,9
Singapore	1987–1997	9,2	3,2
Tajikistan	2010–2018	7,0	17,0
Thailand	1976–1996	7,9	7,6
South Africa	1999–2008	4,0	5,7
Sweden	1994–2006	3,4	4,7

Sources: World Bank; IMF; authors' calculations.

It is important to stress that such plans implicitly assume that investment and business risks are transferred from companies and banks to the state (and therefore — to its citizens), as it means lower economic efficiency (including that of new investments), higher taxes, and, most likely, higher inflation. However, taking risks is an integral part of business, while the state should decrease or mitigate risks, including macroeconomic ones. Preferential financial conditions misprice risks and result in investment decisions that are ineffective in the long-run. To increase investments, the government should aim at improving investment climate and institutions in general, and only after that monetary policy can be successfully used for promoting investments.

Decreasing policy rate as a means of increasing investments is likely to induce banks to turn towards carry-trade currency operations or active involvement in financial markets, but it cannot force them to provide credit lines for the projects that are so risky as not to be profitable under market interest rates. In case sanctions remain, foreign capital inflows are limited, and this means that investments have to rely on domestic savings and, therefore, to guarantee acceptable returns on them.

It is known from experience of many countries, that economic growth is consistent with positive real interest rates (table 2). This means that companies are prepared to pay higher interest rates to finance investments that eventually increase productivity. Negative real interest rates in Russia during 2000s were exceptions, not the rule, for investments. Moreover, negative interest rates distorted incentives, and partly this distortion continues into the present — as manifested by a very small number of effective investment projects. National projects and substitution of private investments with those of the government will not solve the underlying problem of distorted motivation and corrupted institutions.

To support our reasoning on the potential of credit expansion to stimulate economic activity and economic growth, we consider a series of VAR models that allow us to relate external shocks (changes in oil prices) with changes in credit aggregates and indicators of economic activity. We consider different types of credit — to companies, to households and total private sector credit, — as well as different indicators of economic activity — investments, consumption and GDP as a whole.

Data and methodology

To answer our empirical research questions, we use the following quarterly data for the period 2004q1 — 2018q1:

- oil price;
- interbank market interest rate (MIACR);

- total bank credit to non-financial sector (except for credit to the government, but including household credit);
- credit to non-financial companies;
- short-term (up to one year) loans to households;
- long-term (over one year) loans to households;
- CPI;
- real GDP cycle;
- fixed capital formation (in real terms);
- consumption (in real terms);
- imports (in real terms).

Macroeconomic indicators come from the Bank of Russia and the Federal State Statistic Service. Information on credit indicators is from the 101 accounting form as reported by the banks to the Bank of Russia. For full description of data and their sources, please, refer to Appendix 1.

Real GDP cycle was obtained as a result of one-sided de-trending with Hodrick–Prescott filtering procedure. All series were seasonally adjusted prior to VAR-modelling. Unit-root tests (ADF, ADF-GLS and KPSS) confirmed that all series, except for CPI and GDP cycle, are integrated of order one (the two exceptions have zero order of integration). Hence VARs were estimated using first differences of most variables.

We employ VAR methodology that allows us to build several small models highlighting relations between variables of interest for us. We use the usual VAR form:

$$y_t = A_0 + A_1 y_{t-1} + A_2 y_{t-2} + \dots + A_p y_{t-p} + \varepsilon_t, \quad (1)$$

Where p is lag's number, $y_t = (y_{1t}, \dots, y_{kt})^T$ is a vector of k variables of the VAR, A_0 is a vector of constants, A_i , ($i = 1, \dots, p$) are matrices of coefficients, ε_t is a vector of residuals.

VAR models were selected for further analysis provided that they satisfied the following conditions: stationarity (inverse roots less than one), homoscedasticity, and no autocorrelation in residuals (see Appendix 2 for the test results). We used impulse response functions (IRF) to assess how variables react to an external shock to one of the VAR variables. We rely on Granger causality tests to establish when change in one variable invoked change in another variable in a statistically significant way. While Granger tests as such do not allow testing for causal relations, their results can be used to confirm or reject prior theoretical reasoning about causality. Since we have VAR with most variables in differences, we apply Toda–Yamamoto procedure to test for Granger causality (Toda, Yamamoto, 1995).

As our goal is to assess how shocks in the terms of trade (i.e. oil prices in case of Russia) affect credit dynamics, and the impact both of them have on the short-term (cyclical) part of GDP and its relevant parts (investments and consumption), we consider the set of three VAR models:

- (1) oil price (differenced) Δp_{oil} , interbank interest rate (differenced) Δi , total bank credit to non-financial sector (differenced) $\Delta cred_{tot}$, cyclical component of real GDP y_{cycl} , inflation cpi ;
- (2) oil price (differenced) Δp_{oil} , interbank interest rate (differenced) Δi , bank credit to non-financial companies (differenced) $\Delta cred_{firm}$, investments (fixed capital formation, differenced) Δinv , inflation cpi ;
- (3) oil price (differenced) Δp_{oil} , interbank interest rate (differenced) Δi , short-term bank credit to households (differenced) $\Delta cred_{scons}$, long-term bank credit to households (differenced) $\Delta cred_{lcons}$, consumption (differenced) Δc_{cycl} , imports (differenced) Δimp , inflation cpi .

Results and discussion

Model 1

The first VAR is second-order model comprising Δp_{oil} , Δi , $\Delta cred_{tot}$, y_{cycl} , cpi . Figs. 7 and 8 illustrate impulse response functions in response to an external shock in the difference of total credit and in the rate of change of oil prices. Table 3 and fig. 9 provide a summary of Granger tests results.

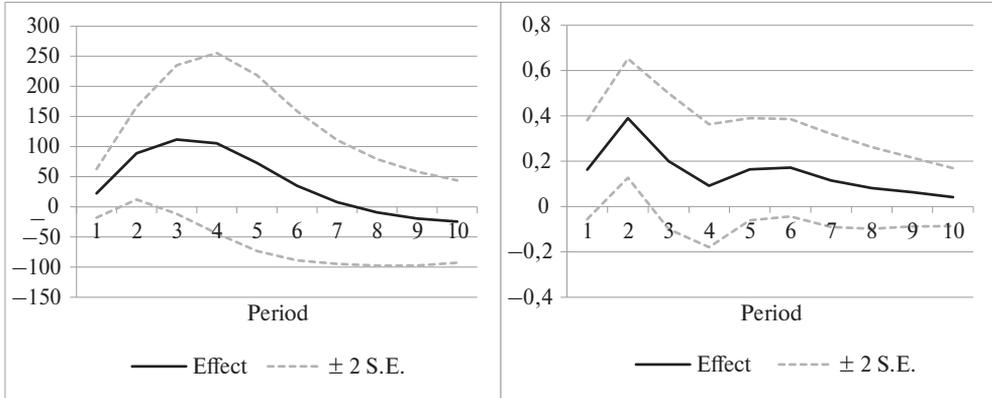


Fig. 7. IRF of GDP cycle (left) and CPI (right) in response to an external shock in total credit to non-financial sector difference

Source: authors' calculations.

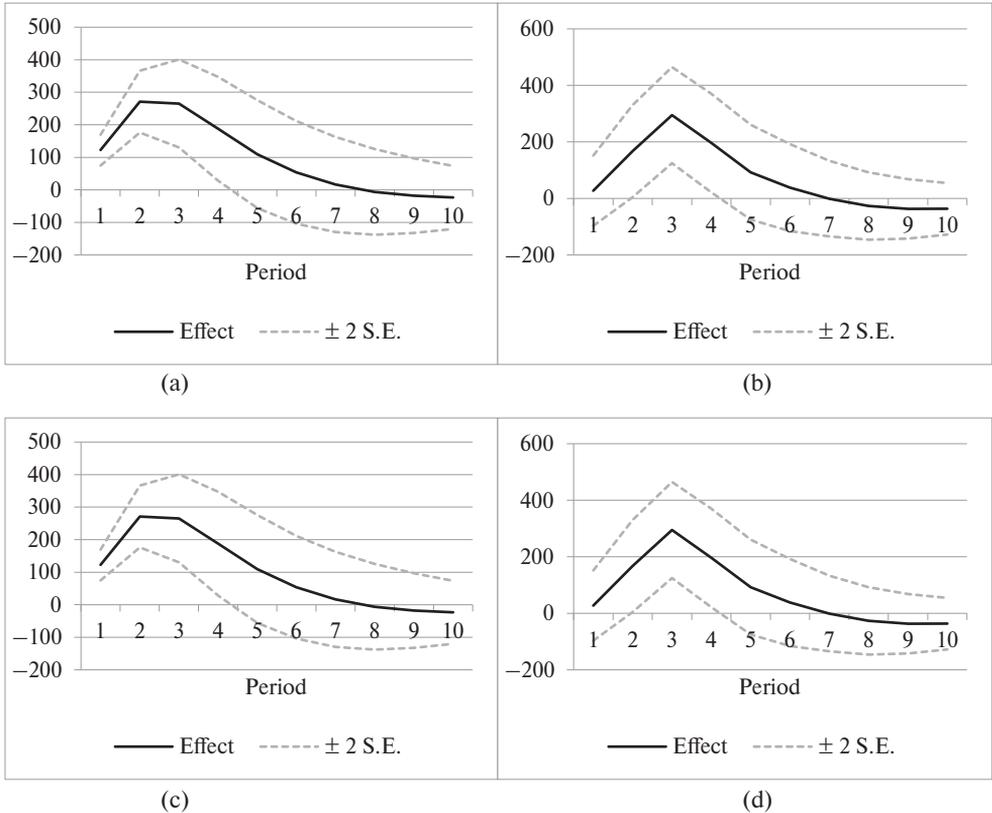


Fig. 8. IRF of GDP cycle (a), first difference in total credit (b), CPI (c), and first difference of MIACR interest rate (d) in response to an external shock in the speed of oil price changes

Source: authors' calculations.

As can be seen from fig. 7, an unexpected increase in the rate of credit expansion results in a slight increase of GDP cyclical component and inflation after two quarters from the initial shock. Both effects are expected — increasing rate of credit expansion means increased spending in the near future that contributes to the cyclical component of GDP and (at least at some instances) to inflation. An unexpected increase in the rate of oil price change results in significant increase of both GDP and the rate of total credit expansion over five quarters after the shock (fig. 8 a, b). This suggests synchronization of the global commodity cycle (represented in our case by oil) with the business and credit cycles in Russia, which is in line with previous results on resource-dependent economies (González et al., 2015; Kinda et al., 2016).

Table 3

Results* of Granger tests for VAR1 model

Granger causality direction	Significance level
MIACR → total credit to non-financial sector	1%
GDP cycle → total credit to non-financial sector	10%
CPI → total credit to non-financial sector	1%
Oil price → GDP cycle	5%
Total credit to non-financial sector → GDP cycle	5%
MIACR → CPI	5%
Total credit to non-financial sector → CPI	1%

* Only statistically significant results are shown.

Source: authors' calculations.

Increase of the rate of change of oil prices means for Russia (in case of positive change in the oil prices) improvement of the terms of trade and results in foreign currency inflows and local currency appreciation. These processes stimulate internal demand — both for consumer products and for investments, and banks (both domestic and foreign) usually readily increase (at an increasing speed) supply of credit that supports further expansion. At the same time local financial markets become attractive for carry-trade operations. However, if the change of oil prices is negative, the country faces capital outflows, depreciation of local currency, and in the worst-case scenarios — deleveraging and financial crisis. This stresses the need for resource-dependent countries to have active macroprudential policies.

In Russia increase in the rate of change of oil prices also brings in higher inflation after three quarters, and it remains persistently higher over 2.5 years. This suggests that Bank of Russia should counteract such increases in the speed of oil prices change with interest rate increase. The results we get for the interest rate are mixed — at first the impact on the change of interest rate is slightly negative, and only after 3 quarters it becomes slightly positive (fig. 8, d). The explanation here is two-fold: first of all, we consider an indicator that is different from the policy rate, and, though closely correlated with it in the medium-term (year averages), might diverge from the policy interest rates in the short-run. Another part of explanation is related to the fact that throughout large part of our sample Bank of Russia's policy was targeting exchange rate, not inflation, meaning a different reaction in terms of interest rate changes is indicated. However, increase in economic activity and inflation brought about increase in the speed of interest rate adjustment.

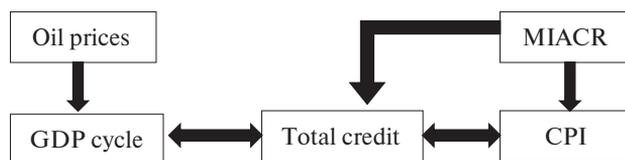


Fig. 9. Granger-test causality directions for VAR1 model

Source: authors' construction.

Analysis of Granger causality tests (table 3) adds relations between levels, not changes of our variables. Figure 9 summarizes these relations, supporting the ordering of variables — oil prices and interest rate influence other variables in the model. It is also clear from this scheme that credit takes a centre-stage in its relations to the cyclical component of GDP and inflation and in its response to the interest rate. This reinforces the idea that credit developments are important in propagating the cycles, and that a special attention should be paid to it — a build-up of credit might reinforce the upward part of the GDP cycle and create inflationary pressure in the economy.

To verify that credit affects the cyclical component of GDP more than the trend one we consider a different way to de-trend GDP — taking appropriate differences. We build a similar (second order) VAR model with GDP difference instead of GDP cycle. While most of relations within this VAR model remain the same (see Appendix 3 for details), there is no Granger causality between GDP and total credit (in levels, as suggested by Toda–Yamamoto procedure) in such a setting. Since GDP trend clearly dominates GDP, these results support our conclusion.

Model 2

The second VAR is the first-order model with trend comprising Δp_{oil} , Δi , $\Delta cred_{firm}$, Δinv , cpi . Fig. 10 illustrates some most prominent examples of impulse response functions. Table 4 and fig. 11 provide a summary of Granger-test results.

Table 4

Results* of Granger tests for VAR2 model

Granger causality direction	Significance level, %
MIACR → credit to non-financial companies	10
CPI → credit to non-financial companies	10
CPI → investments (fixed capital formation)	5
MIACR → CPI	10
Credit to non-financial companies → CPI	1

* Only statistically significant results are shown.

Source: authors' calculations.

As fig. 10 (b, c) demonstrates, an external shock in the rate of change of credit to non-financial companies resulted in negative dynamics of investments' rate of change after 3–4 quarters, and in a sharp increase of inflation for nearly a year. And a shock in inflation has a slightly negative influence on investments rate of change (fig. 10, a). These results are reinforced by the Granger causality test results (table 4 and fig. 11): credit to companies did not Granger-cause investments, but investments responded to CPI changes implying that at least in part investments increased in response to higher prices. Though CPI does not capture dynamics of production factors' prices, it does partially reflect a potential for increase in labour costs.

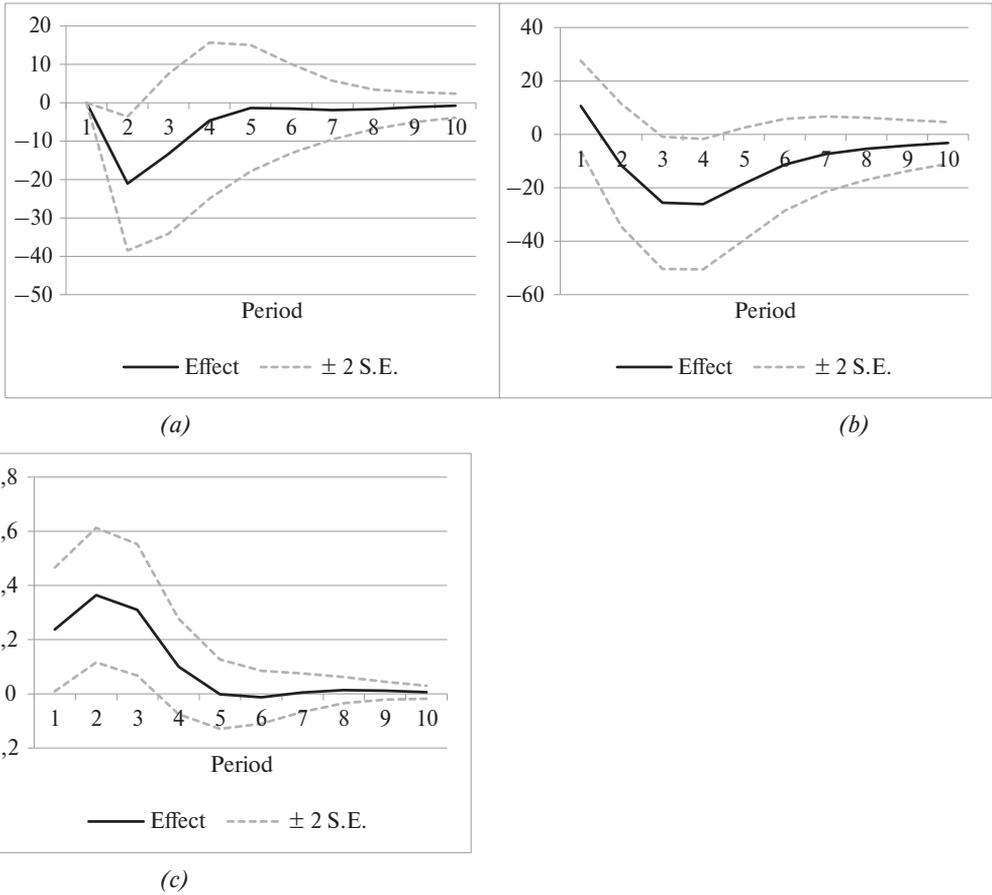


Fig. 10. IRF of (a) investments difference on a shock in CPI, (b) investments difference on a shock in the difference of credit to non-financial companies, and (c) of CPI on a shock in the difference credit to non-financial companies

Source: authors' calculations.

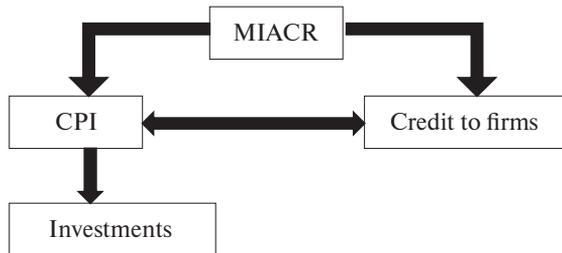


Fig. 11. Granger-test causality directions for VAR2 model

Source: authors' construction.

These results suggest that hopes that easier credit will result in increasing investments and, as a result, in higher economic growth, are not supported by empirical facts. This result is consistent with other data — in 2004–2018 bank credit financed only 9.7% of investments (authors' calculations on the basis of the Federal State Statistic Service data on investments). Most companies relied on their own funds for investments — their averaged share in capital investments in the same period was 44.9% (authors' calculations on the basis of the Federal State Statistic Service data on investments).

While investment model of economic growth — a strategic priority — needs credit financing for new investments, the main issue is to choose those projects that are likely to result in higher factor productivity. The latter is especially important for Russia, where in 2019 actual GDP was above its long-term potential (fig. 12). If credit were to be used widely as a source of investment financing, most likely we would have encountered overheating of the economy with all the consequences. It is not clear if investments, planned in the framework of “national projects”, will be made in a way that increases labour productivity or effectively substitutes labour.

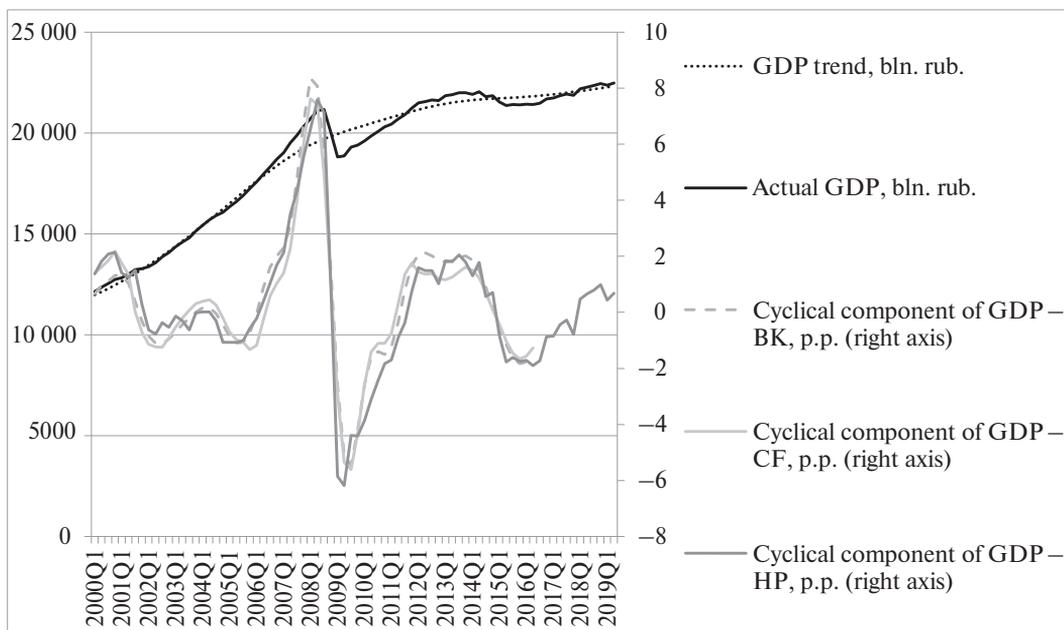


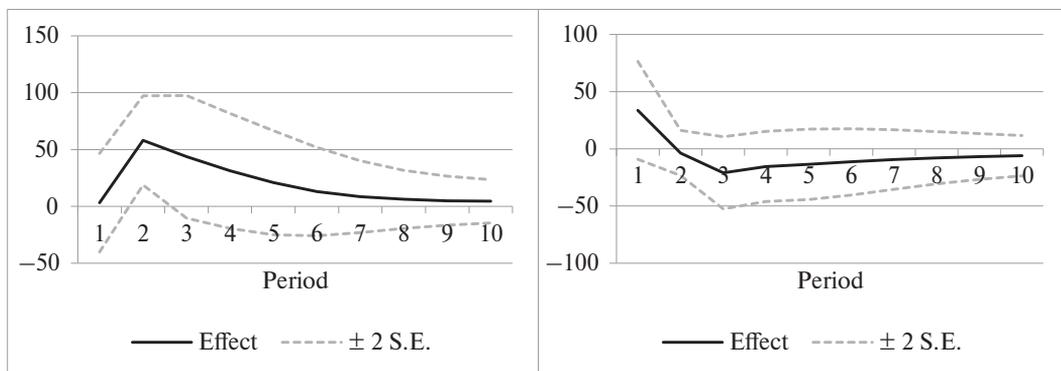
Fig. 12. Output gap in Russia

Source: authors' calculations on the basis of the Federal State Statistic Service data.

BK stands for one-sided Baxter–King filter, CF — Christiano–Fitzgerald, HP — Hodrick–Prescott.

Model 3

The third VAR is first-order model comprising Δp_{oil} , Δi , $\Delta cred_{scons}$, $\Delta cred_{lcons}$, Δc_{cycl} , Δimp , cpi . Fig. 13 illustrates some most prominent examples of impulse response functions. Table 5 and fig. 14 provide a summary of Granger-test results.



(a)

(b)

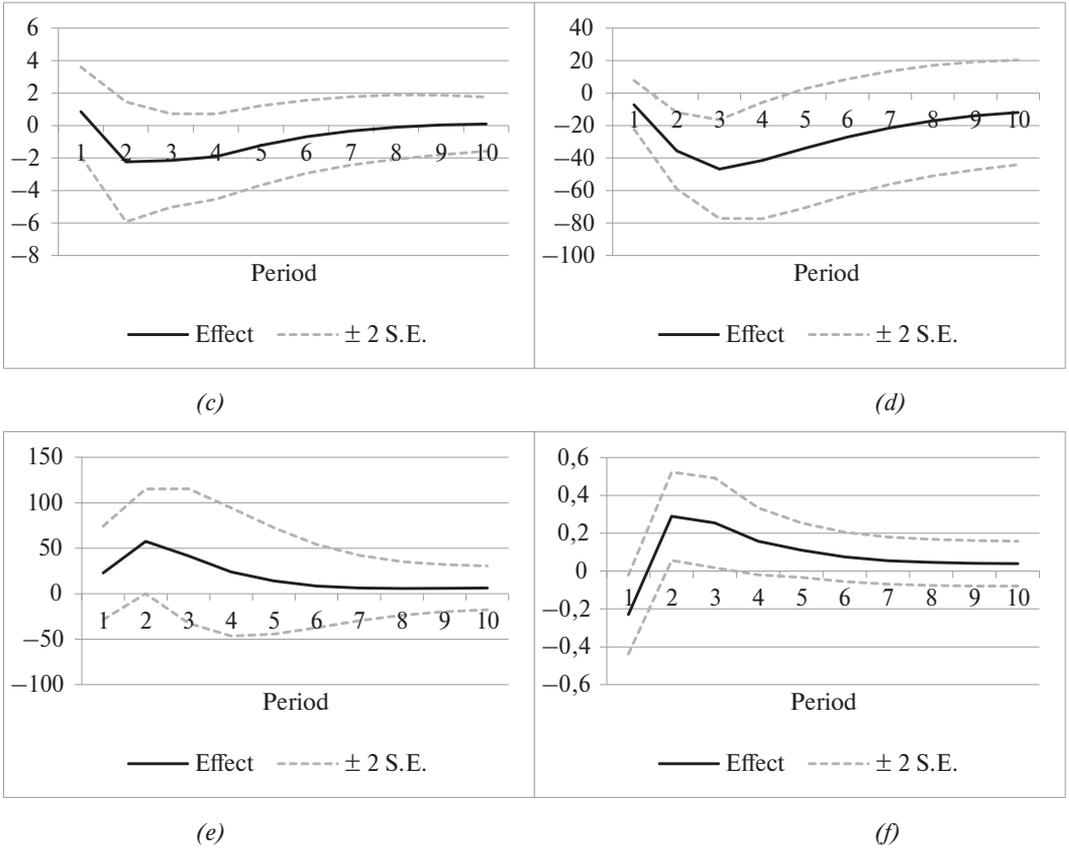


Fig. 13. IRF of (a) consumption difference on a shock in short-term loans to households' difference, (b) consumption difference on a shock in long-term loans to households' difference, (c) short-term consumer credit difference on a shock in MIACR interest rate difference, (d) long-term consumer credit difference on a shock in MIACR interest rate difference, (e) import difference on a shock in short-term consumer credit difference, and (f) CPI on a shock in consumption difference

Source: authors' calculations.

Table 5

Results* of Granger tests for VAR3 model

Granger causality direction	Significance level, %
MIACR → consumption	5
Short-term credit to households → consumption	10
Long-term credit to households → consumption	10
Oil price → import	5
Short-term credit to households → import	1
Long-term credit to households → import	1
Consumption → import	1
Long-term credit to households → CPI	10

* Only statistically significant results are shown.

Source: authors' calculations.

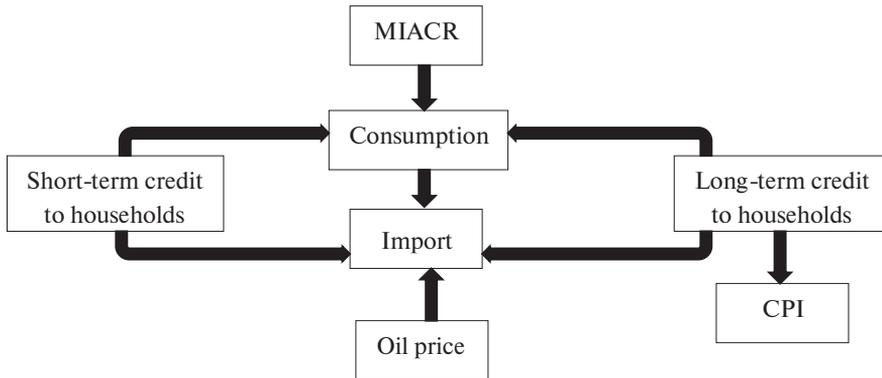


Fig. 14. Granger-test causality directions for VAR3 model

Source: authors' construction.

Though import is part of consumption (we consider both government and private consumption), we are interested to see if higher credit for consumption implies more consumption of only domestic goods, of imported, or both. Import and consumption are closely related, but multicollinearity in time series is not a problem in VARs. Increase in the rate of change of short-term loans to households brought in a short-lived increase in the rate of change in consumption after two quarters (fig. 13, a), and had a marginally increasing effect on the rate of change of import (fig. 13, e). A shock in the long-term loans to households' rate of change did not result in any substantial changes in either consumption difference or import difference. However, long-term credit to households includes credits that are used for investment purposes (i.e. mortgages).

An unexpected increase in the rate of change of consumption leads to increase in CPI after about two quarters (fig. 13, f). This suggests that accelerating consumption is an important factor in inflation dynamics, and the Bank of Russia is fully justified in close monitoring of it. An increase in the rate of change of MIACR had more effect on the long-term credit rate of change than on the short-term credit rate of change (fig. 13, c, d). This is interesting, since usually overnight rate changes affect short-term credits more. In our case the effect might be explained by the fact that changes in the long-term rates follow the suit set by changes in the policy rate and overnight rate. However, the overnight rate does not Granger-cause either short-term or long-term credit to households (table 5 and fig. 14).

Our results support policy steps taken recently by the Bank of Russia to decrease risks in (short-term) credit to households (increase of macroprudential risk coefficients among other things). This policy resulted in slowing consumer credit expansion in the Russian banking system in 2019 and, hopefully, in reducing excessive borrowing for the less well-off borrowers. While limiting credit availability lowered consumption growth and total GDP growth, it improved financial position of the most vulnerable borrowers, and, therefore, stability of the banking system.

Since interest rate affects consumption (through short-term and long-term credit to households), further reduction of policy rate will result in decreasing rates on long-term loans to households (i.e. mortgage loans). However, this cannot be a sustainable source of economic growth, for any external shock to the economy will reduce income and increase the share of non-performing mortgage loans. Valuation of mortgaged property is likely to drop in any recession, making it more difficult for the banking system to maintain required capital. This calls for careful monitoring of the real estate market to enable the Bank of Russia to act pro-actively before a serious bubble forms there.

Conclusions

Financial side of the economy, never ignored much in modern Russia, does influence economic development and can be a source of support or discouragement of investments in the long-run economic growth. With shallow financial markets, the economy has to rely primarily on the banking system for the much needed financial resources to sustain growth in the economy. To be a source of financial support, the banking system has to be stable and well-regulated, with incentives to provide loans to the real sector as well as to the consumers.

We have reviewed Russian macroeconomic policy developments of the last few years — most notably a switch to inflation targeting and the latest version of the budget rule, — and concluded that they greatly enhanced macroeconomic stability and thus contributed to the stability of the banking sector. At the same time, as we argue throughout our paper, these policy improvements do not guarantee banking sector stability, since the present stance of macroprudential policies does not remove all incentives for risky credit expansion.

We have also reviewed empirical evidence related to the role of credit in the dynamics of GDP and its components. There are several notable conclusions from our empirical results. First, increased credit contributes to the cyclical part of GDP, and not its trend (that is actually responsible for the economic growth in the long run). This suggests that an attempt to ensure economic growth based on expansion of credit is unlikely to succeed. Secondly, we have established that investments are not Granger-caused by credit dynamics. This finding corroborates the fact that most investments of Russian companies are carried out of their retained earnings, and that credit is mostly used by the companies in order to sustain existing production.

Thirdly, it is important to pay a special attention at loans for consumption purposes that are thriving in the Russian banking system, but at the same time create increasing risks of non-payments in case of any negative external shocks to the Russian economy. Short-term and long-term credit to households promotes increased consumption and imports, but hardly contributes to long-run economic growth. Bank of Russia should pay attention to the build-up of unsecured credit in the banking system, as it is an important source of potential instability. Even secured consumer loans, such as mortgages, might be detrimental to the stability of the banking sector, since real estate prices can be easily distorted by over-optimistic views during expansion phase.

Therefore, our main conclusion is that an attempt to stimulate economic growth through credit financing of investments, as well as using National Welfare Fund for this purpose, will mostly influence the cyclical component of GDP. Such investments will contribute to economic growth only after a lag of some years (if at all). In the meantime, it is clear that the current growth target is too ambitious, and any enforced credit financing to achieve it will be detrimental to macroeconomic stability of the Russian financial sector since it will misplace risks. The same is true about financing investments with the use of National Welfare Fund money — if the oil price stays well below current cut-off price (\$42.4) for some time (a year or longer) due to any reason, this money will have to be used for supporting government budget, while the economy will be in a recession. Besides, the choice of investment projects that is not based on the market principles will bring about inefficient allocation of scarce financial resources. Thus, the best that the government can do about enhancing investments is to improve investment climate through reform of formal institutions.

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Appendix 1

Data sources

Data series	Source
Oil price	Bank of Russia https://www.cbr.ru/statistics/macro_itm/svs
Interbank market interest rate (MIACR)	Bank of Russia https://www.cbr.ru/hd_base/mkr/mkr_monthes
Total bank credit to non-financial sector (except credit to the government)	Bank of Russia https://www.cbr.ru/banking_sector/otchetnost-kreditnykh-organizaciy (data from 101 accounting form)
Credit to non-financial companies	
Short-term (up to one year) loans to households	
Long-term (over one year) loans to households	
CPI-measured inflation	Federal State Statistic Service https://www.gks.ru/price
GDP (in real terms)	Federal State Statistic Service https://www.gks.ru/accounts
Fixed capital formation (in real terms)	
Consumption (in real terms)	
Imports (in real terms)	

Appendix 2

Summary of test statistics for VAR1, VAR1-1, VAR2 and VAR3 models

Model (lag order)	Endogenous variables	Inverse roots of characteristic polynomial (modulus)	Residual serial correlation LM tests				p-value for VAR residual heteroskedasticity joint test (H_0 : homoskedasticity)
			H_0 : no serial correlation at lag h		H_0 : no serial correlation at lags 1 to h		
			Lag	Prob.	Lag	Prob.	
VAR1 (2)	Δp_{oil} Δi $\Delta cred_{tot}$ y_{cycl} cpi	0,792098					0,3350
		0,792098					
		0,573255	1	0,1738	1	0,1738	
		0,573255	2	0,8317	2	0,5998	
		0,537314	3	0,2137	3	0,1295	
		0,537314	4	0,6254	4	0,2966	
VAR1-1 (2)	Δp_{oil} Δi $\Delta cred_{tot} \Delta y$ cpi	0,747247					0,3633
		0,683939					
		0,683939	1	0,1601	1	0,1601	
		0,658151	2	0,7899	2	0,6053	
		0,537515	3	0,3531	3	0,2739	
		0,537515	4	0,4972	4	0,2512	
VAR2 with trend (1)	Δp_{oil} Δi $\Delta cred_{firm}$ Δinv cpi	0,724403	1	0,1478	1	0,1478	0,1161
		0,525297	2	0,3408	2	0,2090	
		0,525297	3	0,6327	3	0,3715	
		0,315298	4	0,0971	4	0,1127	
		0,315298					
		0,231049					
VAR3 (1)	Δp_{oil} Δi $\Delta cred_{scans} \Delta c$ Δimp cpi	0,912393	1	0,2088	1	0,2088	0,0871
		0,657003	2	0,8080	2	0,5196	
		0,657003	3	0,2360	3	0,2307	
		0,489591	4	0,0657	4	0,0517	
		0,327132					
		0,327132					
		0,200181					

Source: authors' calculations.

Appendix 3
Summary of test statistics and Granger causality tests for VAR1-1 model with de-trended GDP

VAR1-1 model variation is second-order model comprising Δp_{oil} , Δi , $\Delta cred_{tot}$, Δy , cpi .

Table A3.1.

Results* of Granger tests for VAR1-1 model

Granger causality direction	Significance level
MIACR → total credit to non-financial sector	5%
CPI → total credit to private non-financial sector	1%
Oil price → GDP	5%
MIACR → CPI	5%
Total credit to private non-financial sector → CPI	1%

* Only statistically significant results are shown.

Source: authors' calculations.

Note: Granger tests were performed for variables in level.

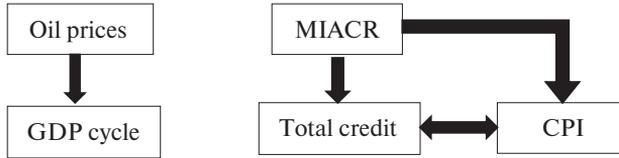


Fig. A3.2. Granger-test causality directions for VAR1 modified model

Source: authors' construction.

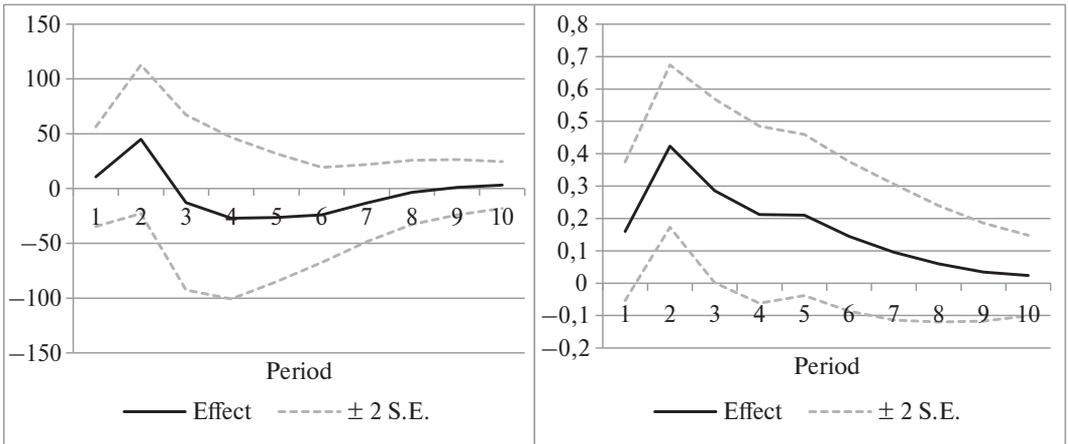


Fig. A3.3. IRF of the first difference of GDP (left) and CPI (right) in response to an external shock in the difference of total credit to non-financial sector

Source: authors' calculations.

Note: As can be seen from the left part of this figure, a positive shock to the total credit difference does not influence GDP difference while in reality it does influence GDP's cyclical part. This stresses that proper de-trending allows locating correct relations, and thus additionally validates our VAR 1 model.