Банк России

Bank of Russia Agenda for Economic Research

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CONTENTS

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Economic research is integral to various areas of the Bank of Russia's operations. Analytical findings are critical to the formulation and conduct of monetary policy, to decisions on financial stability policy and to banking supervision, as well as to the development of financial markets and the payment system. Applied research findings are used for internal discussions and may be represented in the regular publications of the Bank of Russia. Focused on the highest global standards, the Bank of Russia's economic research relies on advanced methods, maximally complete available data and the rich source of global academic expertise. Research papers by Bank of Russia employees are published in Working Paper Series, The Russian Journal of Money and Finance, and other peer-reviewed journals.[1] Below are current and future topics for Bank of Russia research.

1. Applied macroeconomic research

Development of models for decision-making in monetary policy and in macroeconomic analysis and forecasting. The wide range of models developed at the Bank of Russia includes statistical, semi-structural, agent-based and general equilibrium models. Among current research priorities are more advanced models of the financial and budgetary sectors of the economy in general equilibrium, as well as models of foreign economic activity.

These studies are also being conducted at the economic divisions of the Bank of Russia's regional branches. Their key focus areas include: the analysis of monetary policy transmission channels, broken down by constituent territory of the Russian Federation; the development of indicators for economic cycles;

[1] All papers are subject to blind peer review by external PhD researchers, which is meant to ensure their quality is sufficient and to confirm their academic novelty and merit. Working Paper Series publications are also subject to a blind review process, both external and internal. Before a paper is published, it is the subject of detailed discussion at a Bank of Russia workshop with the participation of the Bank's leadership.

and the construction of structural and semi-structural models for economic analysis and forecasting at the regional and federal levels.

Monetary policy transmission. The Bank of Russia continues its research into the assessment of the effectiveness of monetary and information policy. To this end, there are a number of ongoing research projects:

- construction of models for the term structure of interest rates;
- construction of models using high frequency financial market data to detect *monetary surprises* (i.e. changes in the prices of traded financial instruments caused by changes in monetary policy), with research into the effect of monetary policy transmission on the entire interest rate curve;
- research to determine how well *anchored* inflation expectations are across various groups of domestic economic agents. It is easier for the central bank to keep inflation to target when inflation expectations are anchored;
- research into the extent of fragmentation of the corporate lending market. Unique reporting data coming in from banks enable experiments to identify the Russian-specific component of the interest rate spread;
- analysis of the implications of alternative approaches to pricing in the credit market with a fluctuating liquidity surplus/deficit.

Relationship between the structure of the financial sector and macroeconomic processes. The Bank of Russia studies the macroeconomic effects associated with changes in the structure of the financial system.

In particular, the focus is on paths for the development of the financial sector which will improve access to long-term financing in the real sector, taking into account the potential risks for various economic sectors arising from the mismatch between asset liquidity and liabilities.

Research is being done into the nature of the impact of alternative financial instruments on the demand for money.

Potential implications of a future central bank digital currency are being investigated. Research efforts are being made to quantify economic agents' demand for the digital ruble in multiple implementation scenarios.

Ecological and climate risks. Extensive research is focused on the impact of climate change policies, in particular the implications of a potential carbon tax for exporting countries if their goods have high greenhouse gas emissions. Another issue is the transition to a low-carbon economy, which is driven by the changing preferences of economic agents, and its implications for price and financial stability. The Bank of Russia will be carrying out a study of the potential effects of such risks, including on the sectoral structure of the economy, and relevant regulatory approaches, including the introduction of a carbon tax.

Priority areas of applied macroeconomic research in 2021:

- modelling of the effect of the transfer of Bank of Russia monetary policy to loan rates over the entire yield curve;
- assessment of the extent to which inflation expectations are anchored to the target through non-structural methods;
- assessment of the fragmentation of the banking sector using granular data from the credit register (granular data on loans to legal entities);
- study of demand for payment services in Russia and the introduction of a central bank digital currency;
- quantitative assessment of the effects of a cross-border carbon tax and the transition to a low-carbon economy on the national economy and on financial stability;
- study of the *zombification* of corporate lending ('zombies' refer to companies whose interest payments on loans exceed their profit before interest and tax) and of the correlation between zombie loans and firm productivity (sectoral perspective).

2. Applied research to support financial stability and banking supervision

The Bank of Russia continues to improve its toolkit to deliver on the following objectives:

- general analysis of banking sector trends and stability;
- assessment of the impact of specific events on the stability of the banking sector and of individual credit institutions (CIs);
- determination of the quality of loans (including in connection with restructuring);
- analysis of changes and risks in individual segments of the credit market (including in mortgage lending);
- analysis of the profitability, efficiency and capital adequacy of the banking sector and of individual CIs.

Stress testing is one of the key tools in this dedicated toolkit. In this area, the Bank of Russia is making efforts to refine the models that enable the forecasting of loan defaults, as well as its models of real-financial interactions.

Macroprudential policy. An important part of the Bank of Russia's research agenda is research measuring the efficiency of macroprudential measures, as well as research into the interaction between monetary and macroprudential policies, including their optimal interaction.

The example of unsecured consumer loans, based on data from bank statements, is used to explore the effects of macroprudential policy measures to regulate unsecured consumer loans. Gaining insight into the impact of the regulation of one type of loan on other types and the assessment of the effect of macroprudential policy on credit register data are research priorities.

The Bank of Russia is also exploring the optimal combination of monetary and macroprudential policies aimed at mitigating negative shocks in the

economy. For this purpose, a three-period model with nominal price rigidity and financial constraints is being used.

Dollarisation. The Bank of Russia is analysing the causes and implications of financial dollarisation. Specifically, analysis is focused on the factors driving demand for foreign currency loans and deposits, as well as the potential risks arising from a mismatch between the currency structure of assets and liabilities.

Early warning indicators. Efforts are underway to further improve early warning systems (including the methodology for calculating the credit-to-GDP gap and for measuring the debt burden). These indicators enable the assessment of financial crises and forecasts for the severity of their consequences.

Assessment of the debt burden based on microdata analysis. To date, most debt burden indicators (e.g. the debt service ratio) have been calculated using aggregated data. However, newly available microdata (credit register data and data on financial flows from the National Payment System), together with tools for big data collection and analysis, have enabled the Bank of Russia to obtain more accurate and detailed estimates of these indicators.

Network models. Detailed microdata make it possible to build network structures (not only for the banking sector, but also for the non-financial sector of the economy) and subsequently use them for various analytical tasks.

Priority areas of applied research to support financial stability and banking supervision in 2021:

- research into proactive (ex ante) monetary and macroprudential policies to offset financial stability risks associated with excessive debt accumulation in the private sector;

- research into the theoretical economic reasons for the dollarisation of the Russian economy;
- modelling of the efficiency of macroprudential measures based on simulated data;
- modelling of the effects of macroprudential regulation and DFM models;
- comprehensive assessment of changes in the maturity structure of corporate loan portfolios, credit risk and changes in the corporate debt burden.

3. Statistical analysis

Search for new sources of information (including big data). While official statistical indicators provide a good view of economic developments at the aggregate level, as the coronavirus pandemic has shown, they are not without their drawbacks, which relate to the publication lag and the non-granularity of the data. In the digital and big data era, alternative data sources may offer researchers and analysts rich information about the state of the economy almost in real time and at almost any level of disaggregation.

Increased data availability is an important step towards improving the quality of research, expanding the range of research issues and reducing barriers to entry for novice researchers. The Bank of Russia has set a number of objectives in the effort to improve the research environment, including, among other things, the collection and clear presentation of existing data sources, the supply of external and internal researchers with new statistical indicators for various types of economic activity, and the publishing of data sets to encourage research on specific issues.

Priority projects for the next few years include:

- development of a set of indicators to enable economic monitoring at the sectoral and regional levels, as well as at the individual company level, based on granular and high-frequency data (including National Payment System data);
- calculation and publication of business monitoring data broken down by key economic activity, including the business climate index as an operational economic performance indicator;
- construction of analytical indicators in addition to official consumer price statistics;
- use of microdata for the calculation of debt burden indicators;
- construction and timely updating of the database of the time series of official statistics taking into account their historical revisions (vintage database);
- generation of data arrays to supplement data sets for assessments of the effects of monetary and macroprudential policy;
- generation of benchmark data sets to assess the quality of forecasting models.

4. Methodological studies

Modelling in emerging economies. The presence of structural shifts and the relatively short history of data are distinctive features encountered by researchers in the modelling of emerging economies. The lack of data in these cases often prevents researchers from constructing models and leaves many questions unanswered. Nonetheless, thanks to knowledge about the structure of the economy and global experience, it is possible to make adequate assessments of the effects of many events even when historical data are limited.

Advances in research concepts involving the use of a priori economic knowledge in models, together with reliance on global experience, are poised to shift academic discourse from the qualitative to the quantitative level, significantly improving existing models which have not yet used such information.

Measurement of the quality of estimates. Unlike many disciplines, economic science relies on data from past events, with experiments – the key research method in other sciences – virtually impossible here. This means that the quality of empirical estimates is determined by the validity of the economic and econometric assumptions the model relies on. Unfortunately, many such assumptions are difficult or even impossible to verify in practice, which makes it impossible to fully assess the quality of research findings. The development of a methodology for constructing quality metrics to at least indirectly assess the plausibility (validity) of various model assumptions is a research priority for the Bank of Russia.

Faster calculation of existing models. The development of computing capacity over the last decade has emerged as a key factor behind the ever-growing use of many older computational algorithms and the arrival of new ones. This suggests that many economic models previously viewed as too computationally complex and which could be calculated only with servers can now be used on personal computers, thanks to new capacities and to new algorithms borrowed from machine learning.

Priority projects for the next few years include:

- development of methodology for finding historically similar (by the nature of the economic processes in progress) points in time across different countries;
- integration of knowledge about the structure of the economy into non-structural models;
- measurement of the quality of various methods for assessing the efficiency of monetary and macroprudential policy;

- development of rapid methods for estimating non-linear state space models;
- improvement of the toolkit for solving and assessing non-linear general equilibrium models.