NATIONAL BANK OF KAZAKHSTAN

RESEARCH PROGRAM
OF THE NATIONAL BANK OF KAZAKHSTAN

Research plays a fundamental role in carrying out its activities by the National Bank of Kazakhstan (NBK); it is an analytical toolkit for policy decisions and allows better understanding of current issues of the Kazakh and global economy. The research performed by the NBK also strengthens its institutional reputation by establishing an effective communication with stakeholders and thereby facilitating the NBK strategic goals.

This document defines the NBK's main research areas both in terms of strategic objectives in the field of monetary policy, macroprudential policy and financial stability as well as in respect of new challenges brought by new technologies, climate change and the recent COVID-19 pandemic. The Research Program does not represent a commitment to its implementation, but rather a guide for the research development. The outlined research directions should not be considered exhaustive and do not put bounds to the research agenda of the NBK employees. An important aspect underlying the areas announced is the attention to the use of up-to-date methodologies and the development of new analytical and econometric tools.

The results of research performed by the NBK staff and external researchers are used for internal discussion and published in the 'Working paper series of the National Bank of Kazakhstan' section of the NBK official Internet resource, in the 'Economic Review of the National Bank of the Republic of Kazakhstan' and in other analytical and peer-reviewed academic publications. In addition, we plan to present the most interesting research results to the general public by organizing conferences and workshops.

The document complements and updates the analytical and research directions of the NBK formulated in the NBK's Research Program for 2021–2022.

The current and planned NBK research work is arranged in the Research Program by five focal areas:

1. Macroeconomic Policy;

2. International economy, regional and global trends;

3. Financial markets, financial stability and macroprudential regulation;

4. New technologies and the future of finance;

5. Statistical matters and exploring new data sources.

External partnerships are a key part of our research strategy. By publishing the Research Program, we strive to cooperate with external researchers, inform the expert community about topics and issues of interest to the NBK. Thus, in 2021, the NBK for the first time announced a competitive selection of applicants for research grants. The main purpose of such grants is to mobilize the scientific potential of the academic community and raise public awareness in the field of monetary policy and financial stability.

Therefore, the NBK intends to continue and pay special attention to the practice of providing research grants, and to expanding the forms of cooperation, both with the Kazakh scientific community and foreign research institutions, central banks, and international organizations.

MACROECONOMIC POLICY

A comprehensive study of the fundamentals underlying the macroeconomic policy, interaction and mutual influence of monetary, fiscal and macroprudential policies are essential for retrospective analysis and for determining the future monetary policy stance, building improved models that have the most accurate forecast indicators and qualitatively reflect the internal reaction to the changing global economic environment.

In conducting the monetary policy, great importance is given to adherence to the adopted approach, consistency and transparency of actions taken by the central bank. Therefore, such aspects as choosing and justifying the monetary policy framework, the mandate and goals, compliance of instruments and objectives, parameters of the target, effective communication and degree of disclosure, the relationship between price and financial stability remain relevant, since macroeconomic stability requires mutual consideration and development of the ways of coordination between different government institutions. While maintaining the inflation targeting regime in the course of monetary policy implementation, the NBK will nonetheless continue to study other approaches of targeting nominal and real variables.

At the moment, one of the significant and less studied areas that has a direct impact on sustainable development of the country is social policy in conjunction with the pursued monetary policy. Solving problems in the social sphere will certainly have a positive effect on the monetary policy through the channel of the welfare of the population.

Below are some examples of relevant research matters.

▶ 1.1 Monetary Policy and its Effective Communication

- A comparative analysis of monetary policy regimes: assessment of alternatives to inflation targeting and evolution of the central bank mandates;
- The effect of monetary policy regime on the development of the financial, real and other sectors of the economy;
- Determining an optimal figure/value of inflation target for the Kazakh economy;
- Assessing effectiveness of the monetary policy transmission channels;
- Defining a neutral interest rate for Kazakhstan;
- Inflation expectations, effective communication strategy of central banks and the use of forward guidance;

▶ 1.2 Macroeconomic Coordination

- Coordination of the monetary and macroprudential policies for achieving the price stability and financial stability;
- Relationship between the fiscal, monetary and structural policies and the financial sector in order to achieve macroeconomic stability;
- Fiscal and monetary policies during a crisis;

▶ 1.3 Macroeconomic Trends

- Determining the economic growth drivers economy-wide and at a sector level, developing new sectors of the economy as new sources for the economic growth;
- Relationship between savings and investments with the economic growth;
- Analysis of economic and financial cycles;
- Estimating the potential GDP and output gap, assessing total factor productivity, correlation of the technological development with productivity growth;
- The nature and behavior of producer prices;

▶ 1.4 Macroeconomic Modeling and Forecasting

- Modeling inflation processes;
- The role of unobservable variables in the monetary policy modeling toolkit;
- Designing a DSGE model as a macroeconomic policy analysis and assessment instrument;
- Improving models that forecast the balance of payments items in order to assess their mutual effect, elasticity to shocks and potential influence on the economy;

▶ 1.5 Fiscal Policy

- Budget rules, adherence to the rules and fiscal sustainability;
- Choosing an optimal source of the budget deficit financing from the standpoint of social welfare;
- The impact of fiscal policy measures on macroeconomic stability;

▶ 1.6 Social Policy

- The labor market and inflation linkages, assessing the impact of processes taking place in the labor market and demographic changes on the monetary policy;
- Exploring alternative ways to assess unemployment;
- Developing human capital via education, healthcare, and science and raising financial literacy. Assessing the contribution of human capital to the economic growth;
- Assessing effectiveness of the implemented social policy and its short-term and long-term effects on monetary policy;
- Assessing the impact of inequalities (gender inequality, age inequality, inequality due to the place of residence: city or village) on social welfare;
- Retirement policy: determining an optimal retirement age based on the gender, labor, social specifics, and long-term effect of pension withdrawals on the return on pension assets and sufficiency of savings upon retirement.

INTERNATIONAL ECONOMY, REGIONAL AND GLOBAL TRENDS

In an increasingly globalized world, no sphere of economic life can be isolated from the economic forces shaping global markets. The NBK monitors global trends related to the monetary policy and financial stability, including trends in the global output and trade, macroeconomic policies, capital flows, exchange rates, and commodity prices, to gauge and anticipate their impact on the country's economy. It is also necessary to understand the impact of global shocks such as cross-border spillover effects of the monetary policy, climate change and the COVID-19 pandemic.

Regional alliances are getting a new round of development in light of the latest trends in deglobalization and disruption of supply chains. In particular, the Central Asian region has a great potential for building self-sufficient logistics supply chains within the region, as it has similar political and economic systems and can become a regional hub for international trade and cooperation. In this regard, the study of regional development issues, advantages and risks of regional alliances, a comparative analysis of the development of neighboring countries, identification of competitive advantages, etc. is given priority for research.

Some of the relevant issues for this area of research mainly related to the Kazakh economy are listed below.

▶ 2.1 International Trade and Capital Flows

- Analysis of trends in the global markets: identifying risks and opportunities;
- Impact of external shocks (global inflation, new technologies, trade wars, sanctions, cross-border spillover effects) on sustainability of the country's economy;
- Effect of world prices and foreign trade prices on the domestic inflation in Kazakhstan;

▶ 2.2 Exchange Rate and the Balance of Payments

- Factors influencing the exchange rate, assessing the relationship between exchange rates and macroeconomic variables;
- Assessing the impact of fiscal expenditures and the exchange rate on the balance of payments;
- Adequate exchange rate policy measures to external shocks as part of inflation targeting, effectiveness of foreign exchange interventions;

▶ 2.3 Regional Comparisons

- Regional Alliances: risks and opportunities;
- Ways of sustainable development within the frames of mutually beneficial neighborhood;
- Assessing the inflation rate and factors determining its dynamics in the Central Asian countries and in the EAEU member countries;
- The monetary policy specifics of central banks in the neighboring countries, aspects determining the choice of targets and monetary policy instruments, assessment of potential cross-border spillover effects;
- Assessing the development of payment systems and digital banking in regional alliances;

▶ 2.4 Global Climate Change and the Move Towards the Green Economy

- Monetary policy in the era of climate change and a transition to a low-carbon economy;

- Integrating ESG principles (environment, society, governance) into the Kazakh economy, developing ESG investment approaches in asset management, including asset management by the NBK, implementing ESG principles at the institutional level;
- Markets, financial institutions and central banks in the face of climate change: challenges and opportunities;

▶ 2.5 Long-Term Impact of the COVID-19 Pandemic on Social and Economic Life of the Country

- Digitalization as a key way to mitigate losses from the pandemic;
- Anti-crisis measures taken and assessment of their impact on fiscal sustainability and inflationary processes.

FINANCIAL MARKETS, FINANCIAL STABILITY AND MACROPRUDENTIAL REGULATION

The 2008 Global Financial Crisis highlighted the interdependence of financial markets and the real sector of the economy. Since then, financial regulators in many countries, including Kazakhstan, have reformed the financial sector and expanded their toolkit, including the introduction of macroprudential regulation, to ensure the soundness of banks and, ultimately, the financial system stability. However, a further study is required, and it is desirable to improve the modeling framework in a broader sense, in order to understand how effective these tools have been, to estimate the costs and benefits of the policies implemented, and to analyze welfare and optimal policies.

The development of non-banking sectors of the financial market and their role in building a full-fledged and healthy financial system represent important issues for the research.

In addition to analyzing available and liquid markets, research should also focus on missing markets and markets that remain poorly liquid, such as unsecured money market, foreign exchange derivatives markets, long-term interest rate swaps, and non-government securities. The purpose of the analysis is to find out the reasons for the absence of these markets, identify barriers to their development, understand demand for them, apply a critical analysis of the measures taken and develop recommendations.

Examples of some topical issues in this area are provided in the following sections.

▶ 3.1 Macroprudential Regulation

- Assessing effectiveness of the counter-cyclical macroprudential policy for mitigation of risks to financial stability;

- Measuring the systemic risk and contagion risk and the ways to mitigate them;

- Developing models for stress testing, stress testing of financial organizations and the real sector and assessing the results obtained through the lens of financial stability;

- Assessing parameters of debt burden on the population and the factors that increase the risk of financial system destabilization;

- Analyzing the liquidity structure for bank soundness;

▶ 3.2 Financial Market

- Modeling the relationship between various parts of the financial system and the real economy to assess the response to large shocks by the economy;

- Can the financial policy facilitate achieving the goals of long-term growth and prosperity in a broader sense, apart from securing the financial system's safety and soundness?

- Developing the mechanism of regulatory sandboxes in Kazakhstan;

- Assessing the impact of the country's sovereign rating on the financial market;

- Non-bank financing: problems and implications;

- Secured creditor rights, the mechanism for declaring an individual bankrupt;

- Insurance market: problems and development prospects;

▶ 3.3 Stock Market

- Analyzing liquidity and pricing efficiency, identifying the causes of market or government failure, assessing efficiency of government and

non-government securities markets, primary liquidity market, foreign exchange markets, currency and interest rate derivatives markets;

- Assessing risk premium on the yield curve of government securities and its implications for monetary policy. Analyzing the effect of monetary policy decisions on the interest rate curve in the financial market;

- How Kazakhstan's stock market is responding to the monetary policy signals?

▶ 3.4 Real Estate Market

- The effect of real estate prices on inflation;

- Analyzing housing lending market, assessing the subsidy mechanism under the housing policy, their long-term systemic consequences for the stated goals and financial stability. The impact of government housing policy on real estate prices.

04

NEW TECHNOLOGIES AND THE FUTURE OF FINANCE

The financial industry across the globe is undergoing rapid structural changes through the emergence of new business models and digital technologies. In this regard, technological changes create the need for fresh research streams to understand whether and how they create new risks for financial markets and systems.

Financial entities are currently using machine learning, artificial intelligence and other methods to process big data for the decision-making. The use of new technologies is also relevant for supervisors. Large amounts of supervisory data collected by central banks have the potential to identify risks, but more analysis is required on how they are applied in practice.

New technologies have the potential to change the nature of money. The rapidly growing popularity of cryptocurrencies, central bank digital currencies (CBDC) raises questions and the need to study their role for the financial system and the development prospects, and especially the risks and impact on the monetary policy, financial stability and the payment market.

Despite gains in efficiency, the growing digitalization of the financial sector increases the importance of ensuring its resilience to cyber-attacks. These attacks can undermine financial stability through three channels: loss of confidence, lack of substitutability of key agents, and contagion. In this regard, cyber security issues are critical for financial stability and require thorough research.

The following are sample questions for research in this area. At the same time, given the rapid development of technology and the emergence of new players, the range of issues in this area can be expanded.

▶ 4.1 Technology Innovations and their Use

- The use of machine learning and artificial intelligence, including by the supervisor, and their implications for the financial system;
- A technological transformation of the financial market and the regulator's response in order to mitigate associated risks and costs in the financial sphere;
- Developing fintech, financial eco systems and other technology innovations in the financial system and their impact on competition and financial stability;
- Analyzing the degree of influence on financial stability by cyber security;

▶ 4.2 Digitalization of Money and Finance

- What is the impact of CBDC and private digital currencies and decentralized financial instruments on the monetary transmission mechanism, financial stability and cross-border payments?
- Risks to financial stability arising from a massive investment into cryptocurrencies.

05

STATISTICAL MATTERS AND EXPLORING NEW DATA SOURCES

In order to improve the quality of researches and to deepen them, the existing official statistical and administrative data are sometimes insufficient due to the presence of a time lag in their publication and the absence or low level of detail. An active development of new technologies and social media and widespread digitalization have led to the emergence of new data sources with specific characteristics in terms of their volume (Big Data), level of detail, frequency and structure. New data sources have a significant potential for central banks, in particular, in expanding the databases used for the financial stability function; using new methodologies to improve the economic analysis, better understanding (due to greater granularity) and real-time monitoring (due to shorter time lags) of the economic activity; better assessment of expectations and behavior of economic agents; their application in increasing the economic and financial literacy of the population and other areas.

Primary objectives in improving the statistical activities at the NBK include building a centralized data management system, ensuring uniform standards for information processing and the development of information technologies. The implementation of these objectives will ensure transparency of the process of data collection and processing, improve its quality, reduce the burden on respondents and ensure efficiency in making management decisions.

An important issue is to increase the availability of data both at the inter-agency level and for external researchers from the academic community in order to identify and build the research capacity.

▶ The high-profile issues in this area include:

- Exploring new data sources, including the use of alternative methods of data collection (Web scrapping, scanner data, mobility data, text mining, search and social media data, etc.) to identify and efficiently monitor the economic processes;

- Developing the official statistics compilation methodology;

- Up-to-date data processing instruments (extraction, analytics, visualization, etc.);

- Digitalization and automation of feedback with respondents in order to expand the coverage and deepen the information received. Construction of new indicators reflecting business cycles in modern realities;

- Construction and timely updating time series databases of official statistical indicators based on their historical revisions (vintage database);

- Assessing consumer inflation in real time;

- Issues related to data storage, confidentiality and availability.

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