Republic of Belarus: Technical Assistance Report-Monetary Policy Modeling

REPUBLIC OF BELARUS

TECHNICAL ASSISTANCE REPORT—MONETARY POLICY MODELING

May 2020

This Technical Assistance report on the Republic of Belarus was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed in August 2018.

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REPUBLIC OF BELARUS

MONETARY POLICY MODELING

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August 2018

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GLOSSARY

FPAS	Forecasting and policy analysis system
FT	Forecasting team
IMF	International Monetary Fund
IT	Inflation targeting
MCM	Monetary and Capital Markets
MPEAD	Monetary Policy and Economic Analysis Directorate
NBRB	National Bank of the Republic of Belarus
NTF	Near term forecasting
QPM	Quarterly projection model
TA	Technical assistance

PREFACE

At the request of the National Bank of the Republic of Belarus (NBRB), a MCM project mission comprising Karel Musil (external expert, Czech National Bank) visited Minsk during August 21–31, 2018 for the seventh of the planned eight short-term technical assistance (TA) missions to help the NBRB enhancing its modeling, forecasting and policy analysis capacity, and the forecasting and policy analysis system, sponsored by the Swedish International Development Agency.

The mission followed up on the November-December 2016 MCM project initiation mission "Building Capacity in Monetary Policy Modeling and Analysis" and the subsequent six follow-up missions and two in-country customized training events.[1] The initiation mission reviewed the NBRB's modeling, forecasting and policy analysis capacity, and forecasting and policy analysis system (FPAS). It agreed with the authorities on a medium-term program TA and training project to help revise the projection model and better tailor it to the evolving policy framework, strengthening NBRB's modeling capacity, and further develop and improve the FPAS and policy decision making and analyses process. The earlier follow-up TA missions reviewed, adjusted and extended the core projection model (QPM), helped prepare and presented to the management and to the Board of the NBRB a mock-up QPM-based forecast scenario, and subsequently helped the NBRB staff identifying the initial conditions and compiling a QPM-based forecasts as a part of their first full forecasting rounds. It focused on processes related to the FPAS as well.

The mission met with Dmitry Murin, Head of the Monetary Policy and Economic Analysis Directorate (MPEAD); Zhanna Snopkova, Deputy Head of the Monetary Policy and Economic Analysis Directorate; and other senior officials and staff of the NBRB.

The mission would like to express its deepest appreciation to the management and staff of the NBRB, for their hospitality and the excellent arrangements made to facilitate the mission's work, and to Julia Lyskova at the IMF Office in Belarus for her assistance during the mission.

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[1] The first six from series of quarterly MCM TA missions "Monetary Policy Modeling", all of them led by Karel Musil, took place during February 27–March 10, May 22–June 2, September 4–15, November 8–15, 2017, February 28–March 7, and May 28–June 8, 2018. The modeling team was also supported by two customized training courses delivered by the staff from the IMF Institute for Capacity Development and the Joint Vienna Institute in October 2017 and February 2018.

EXECUTIVE SUMMARY

The National Bank of the Republic of Belarus (NBRB) is reforming its monetary policy framework in line with recommendations of past IMF TA missions and its Road Map for Transitioning to Inflation Targeting with the aim of eventually adopting inflation targeting (IT). Transitioning to IT would require, among other strengthening the monetary policy forecasting and analysis system (FPAS) and better integrating the core quarterly projection model (QPM) into the decision-making process. This mission was the seventh in a planned series of quarterly FPAS TA missions. It was mainly aimed at helping with reviewing the initial conditions and compiling a QPM-based forecast as a part of the NBRB's September forecasting round. The mission, in addition, worked on strengthening processes within the FPAS.

The mission worked with the NBRB's experts to compile a QPM-based forecast as a part of their full forecasting round in September 2018. Besides helping with preparing the baseline forecast scenario, the mission helped with the discussion and interpretation of the initial conditions and possible alternative scenarios. The mission also worked on other elements of the FPAS, in particular processes related to the FPAS and structure and organization of meetings during the forecasting round.

The authorities started to use model-based results to support policy decisions in March 2018. The first regular forecasting round in March 2018 helped initiate the establishment and development of the set of internal processes, communication channels, deadlines and responsibilities that constitute a full a model-based FPAS. These have to be further developed and institutionalized within the NBRB as the Bank gains experience.

The NBRB has made substantial progress in improving its FPAS and integrating it into the monetary policy decision-making. It is on track to meet the project's main milestones and successfully finalize the whole project as indicted in the table in Appendix A.

The summary of the key recommendations suggested by the TA mission is presented in the table below. Besides the recommendations, it also provides an implementation timeline, the prioritization of the actions, and responsibility, emphasizing that some future steps should be taken prior to the next mission. More detailed description of the key recommendations is provided in section B Recommendations and Future Steps towards Further Enhancement of the FPAS.

Table 1. Key Recommendations

Action	Timing[2]	Prioriti-zation[3]	Implementation Responsibility	Comments
Scheduling monetary policy meetings for the next year, including the timing of the forecasting round.	Short Term	2	NBRB Board MPEAD Management QPM team NTF experts	Before end-2018 and before the schedule is publicly available.
Establishing a Head of the forecasting team (FT) and considering personal sustainability within the FT.	Short Term	3	MPEAD Management QPM team	Preferably before the next forecasting round.
Expanding the modeling team by at least 2 experts.	Medium Term	5	MPEAD Management	New members of the team can participate in the follow-up mission in 4Q 2018.
Improving the NTF techniques, fiscal policy analyses in particular.	Medium Term	7	NTF experts	
Improving internal and external communication with the aim of making it more efficient and forward-looking.	Medium Term	6	QPM team Head of the FT MPEAD Management NBRB Board	Gradual process that should be initialized as soon as possible.
Proper planning of meetings within every fore-casting round and improve-ment in their efficiency.	Short Term	4	QPM team (Head of the FT)	Before the next forecasting round.
Boosting forecasting and policy analyzing capacity by: • finalizing the final version of the projection, • reviewing the QPM.	Short Term	1	QPM team	Before the next TA mission in 4Q 2018

[2] The timing horizon for the short-term period is understood up to 2 quarters, the medium-term horizon is 3-6 quarters.

[3] The prioritization ranks the action from the most important (1) to the least important (7).

I.   INTRODUCTION AND BACKGROUND

1.   **The NBRB is strengthening its monetary policy framework following the three-stage strategy recommended by the past IMF TA missions**. The first, and completed, stage comprised of a conventional money targeting framework. As a part of the ongoing second stage the NBRB in January 2018 shifted its operational target to the overnight interbank rate and an official end-of-year inflation target of "no more than 6 percent" (with an internal inflation target of 5.5 percent). The final stage envisaged a gradual shift to fully-fledged IT once the analytical tool kits is sufficiently developed, policy transmission is strengthened and the legal and governance framework is reformed.

2.   **This medium-term TA project aims to primarily help the NBRB with medium-term inflation forecasting and policy analysis and related tools to effectively support policy making and the planned transitioning to IT.** The project is composed of series of TA and training missions particularly focused on the preparation of forecasts and policy analyses, the medium-term forecasting and policy analysis model, and the internal communication of the forecasts and policy analysis.

II.   ENHANCING THE MODELING CAPACITIES: CURRENT SITUATION, MAIN CHALLENGES RECOMMENDATIONS

A.   The Provided Technical Assistance

3.   **The mission focused mainly on two streams during the visit.** One of the tasks of this TA mission was to work with the core modeling team to review the initial conditions for the forecast, to help compile a QPM-based forecast and simulate possible alternative scenarios as a part of the NBRB September forecasting round. The second stream was focused on the FPAS and its processes.

4.   **The QPM team and the mission expert worked together to generate a QPM-based forecast scenario, reflecting the estimates of the initial conditions approved by the Board during the mission.** The mission discussed with the QPM team the initial conditions and the current situation in the economy. Then a forecast scenario was simulated and discussed, in particular sanctions against Russia and oil price adjustments and tax maneuver applied by Russia on Belarus. In general, the mission experts emphasized that tunes are important part of the projection, but they must be considered carefully as there is a high risk of worsening the forecast if expert judgment is overused and not supported by detailed analysis. Moreover, based on the forecast scenario, the QPM team discussed possible alternative scenarios.

5.   **The generated forecast scenario will be presented as the first version of the projection to the Board members during the second Board meeting within the September forecasting round.** Based on the feedback from the Board and reflecting newly available data, the QPM will re-simulate the first version of the projection. The first version of the projection was also introduced to other experts from the NBRB for their review during a first version of the projection meeting. The mission provided its feedback on this meeting to the QPM team as well.

6.   **The mission also discussed processes of the FPAS related to forecasting rounds.** The discussions were related mainly to the monetary policy process of forecasting and analyzing, structure and timing of monetary policy meetings and forecasting rounds within a year. Recommendations in these areas are provided in section B Recommendations and Future Steps towards Further Enhancement of the FPAS.

7.   **Besides the previously listed core activities, there were also other works covered by the TA mission.** These includes especially (recommendations in these areas are discussed in section B Recommendations and Future Steps towards Further Enhancement of the FPAS):

- Review of the previous forecasting round in June, including a debriefing from the policy meeting, lessons from the forecast errors in the previous projection, and the remote work of the QPM team.

- Assistance to the forecasting team with interpreting the forecast results and assessing risks and uncertainties around the scenarios, and provided guidance on compiling a model-based macroeconomic story around the first version of the projection.

- Feedback to the QPM team on a first draft of a forecast presentation for the Board.

- Discussion about the structure of meetings during every forecasting round, including their content, focus, structure and outcomes.

- Discussion the issue about the difference between money market rates and NBRB's main policy rate.

- Assessment of the potential training demands of the staff and agreed on follow-up activities to be undertaken before the next TA mission.

B.   Recommendations and Future Steps towards Further Enhancement of the FPAS

8.   **Although the model-based FPAS started to be in use, it is necessary to further develop it so that the NBRB can benefit fully from discussing model-based projections and analyses with responsible experts and management**. The Central Bank should continue to institutionalize and formalize the forecasting processes; in particular *(i)* consider how the current schedule of the monetary policy meetings should be arranged for the next year; *(ii)* strictly follow a set of regular meetings during forecast rounds, which are incorporated into an internal forecasting calendar and formally approved by the NBRB's Board during each forecasting round, to discuss and present the forecasts developed with the help of the model; *(iii)* establish a formal head of the forecasting team and strengthen the role of the forecasting team as a forum for sharing expert views within the MPEAD; *(iv)* formally setting up information channels, rights and responsibilities; *(v)* strengthen the internal and consequently also external communication. These will help spreading the knowledge of model-based simulations and results and establishing a common language within the institution.

9.   **Based on discussions, the mission suggested scheduling either four or eight monetary policy meetings in the next year.** The Board and the management of the MPEAD is recommended to first think if the current arrangement of four meetings per year is proper in light of the practice of other central banks. There is a common practice of eight meetings with

four full forecasting rounds and inflation reports as the outcome, and four forecast updating rounds between the full forecasting ones (the updating rounds use newly available data to review the full forecasting round forecast[4]). The final number of the meetings should respond to policy-makers' needs in a timely manner and thus a communication with the Board in this respect is crucial for establishing appropriate procedures. At the same time the forecasting process involves different departments of the NBRB and experts (and not only from the NBRB) and is time challenging (see Table 3), which forms a significant constraint. In any case the final arrangement of the meetings affects the governance of the FPAS processes. Only once a conclusion in this debate is reached, the possible announcement of a calendar of policy meetings for the whole year 2019 is advised. This topic can be re-discussed during the follow-up mission with TA experts.

10.   **When discussing the schedule of the monetary policy meetings, the timing of the forecasting rounds should be reconsidered as well.** Data availability and the timing of the monetary policy decision meetings, as the two crucial factors during every forecasting round, impact which quarter is considered as a history and when the projection starts. Within the current setting, the policy meetings are scheduled at about 11th or 12th week of every quarter, i.e. they take place at the end of every quarter. When preparing the projections, the forecasting team then treats the current quarter as if it is already in the history. However, a number of important variables for this quarter are not released, for example, inflation for the whole quarter, exchange and interest rates, output and wages. It prompts the forecasting team to forecast all these variables using NTF tools. An alternative would be to hold the Board meetings 6-7 weeks after the end of a quarter. If this approach is followed, the forecasting team would already have actual releases of information about inflation indices, wages, exchange rates and interest rates. The only variable that might need to be nowcasted would be real GDP. The Board of the NBRB and the management of the MPEAD are recommended to consider a possibility of shifting the policy meetings. The quarter, when the meeting is held would then be the first quarter in the projection period.

11.   **For the whole forecasting process is crucial to have a clear (vertical) managerial responsibility.** As already recommended by the previous TA missions, a formal head of the forecasting team within the MPEAD should be established. Whereas the experts with their responsibilities have started to form the FT, the head of the FT (responsible for managing team activities and bearing responsibility for timely delivery of team work outcomes) is still missing. On top of that, the core QPM team currently consists of three experts which can be considered as the minimum number needed to operate the model. The risk of future staff departures from the QPM team should not be underestimated. The NBRB's management should thus expand the modeling team by at least two economists (model operators) to enable the team to cover all important aspects of the forecasting process with the desirable depths and

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[4] There is a clear capacity and data availability for running eight forecasting round in a year and thus these are no constrains. The final decision about the number of meetings must mainly reflect preferences of the Board of the NBRB.

scope, and to have a potential back up, including personal substitutability. At the same time, as the financial programing is playing a less important role in monetary policy analyses and projections in favor of the QPM, the financial programming experts are advised to be reallocated to the sectoral analyses carried out by the NTF team.

12.   **To fully utilize the organization within every forecasting round, the schedule of meetings should be maintained and the meetings must be organized effectively.** The recommended structure and sequence of regular meetings within a forecast round is presented in Table 2. It shows the meetings in the sequential order how they should follow each other. Meetings of the forecasting team (FT) with the management of departments and the MPEAD and the Board ensure a vertical flow of information from the FT up to the Board and provide crucial feedback from the Board. The ultimate goal of each of these meetings should be to find a consensus about results, provide suggestions for further improvement and agree about recommended alternatives and next steps. This practice evolved as the best one at the Czech National Bank over the period of using the FPAS during past 20 years.

Table 2. Structure of Recommended Meetings during a Forecast Round

Meeting	Week	Purpose	Audience	Outcome
Forecasting techniques	1	Present changes in the QPM and other forecasting tools (technical meeting).	FT	Approval of changes and amendments of the QPM and other forecasting tools.
Issue meeting	1	Discuss issues which might be important for the Board in the forecast round.	FT management	A list of issues to be analyzed in the forecast round.
Near-term forecast (NTF)	2	Discuss nowcast, NTF and views of sectoral experts.	FT management	Consensual views on current macroeconomic developments.
Initial conditions (IC)	2	Presents, discuss and get a feedback on the IC prepared for the meeting with the Board.	FT management	Management feedback on initial conditions.
Initial conditions meeting with the Board	3	Present and discuss the IC with the Board and get a Board's feedback.	FT management Board	The Board view and feedback on the initial conditions.
First version of the forecast	3	Present the first version of a forecast.	FT management	Consensual view on the forecast.
Meeting on the first version of the forecast with the Board	4	Present and discuss the first version of the forecast. Collect demand for alternative scenarios from the Board.	FT management Board	Board's view on the forecast and a list of alternative scenarios.
Final forecast	4	Present and discuss the final forecast.	FT management	Approval of the forecast by the management.
Meeting on the final forecast with the Board	5 or 6	Present the final version of the forecast.	management Board	Monetary policy decision.
Post mortem	5 or 6	Identify issues during the forecast round.	FT management	Improvements of forecasting processes for the next round.

Note: Meetings with the Board are highlighted in red.

13. **The meeting during the forecasting rounds should be developed into an internal forecasting calendar and formally approved by the Board of the NBRB.** The forecasting calendar is generated during every forecasting round by the QPM team and approved by the management. This practice is recommended to continue. Moreover, the forecasting calendar should be approved by the Board to be obligatory and serve as a schedule of every forecasting round.

14. **To allow a QPM-based forecast serving as an input for policy making decisions, a proper implementation of expert judgments is required, but without compromising the endogenous nature of the projected interest rate trajectory.** The FPAS, and its core model, is designed so that expert judgments can be easily imposed. While this may improve the accuracy of the projections when done well, inappropriate judgments or their overuse might distort the analytical work done. The final outcome of the forecasting exercise is an endogenous and forward-looking recommended interest rate trajectory for the central bank market operations to target. Assessing the appropriateness of that trajectory requires that it is based on a credible and plausible macroeconomic story, which again requires that the judgments imposed in the baseline forecasts are based on in-depth analyses and represent the best expert guess. Any remaining doubts by the management and the policy-makers concerning the baseline can be then efficiently handled by means of producing alternative scenarios.

15. **As the nowcast and the first quarter of a model-based projection should be re-taken from the NTF tools and sectoral experts, the sectoral experts should provide NTF covering all the required areas with the special attention to the fiscal issues.** The fiscal policy area (reflecting also the fact that main issues of the September forecasting round was linked to the fiscal policy measures and adjustments) offers a scope for a significant improvement. To properly assess the fiscal stance, a deeper analysis of fiscal policy and the quantification of a fiscal impulse are required as exogenous factors entering the QPM-based projections. A comprehensive analysis of this area by a NTF expert (who is currently missing) should help include the impact of the fiscal policy into the model framework in a more precise way. Additionally, the analyses and projection of the external environment (which is taken as exogenous by the QPM) are advised to be carried out by sector experts and not by the QPM team, as it is the current practice at the NBRB.[5]

16. **Press releases should be developed further to sharpen the policy message.** Based on the reviews of a suggested press release done by the TA mission expert, greater prominence should be given to the price stability objective and to the role of monetary policy in achieving it. There is a scope to make the language less technical, introduce forward-looking elements, and streamline the delivered message. These recommendations are valid for internal presentations as well. Moreover, in line with the recommendations of the previous TA mission, the NBRB is recommended to develop a draft of inflation report, which would utilize model-

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[5] Currently there are six sectoral experts responsible for analyzing the domestic economy development, three for fiscal policy analyses, and three for external environment analyses at the Czech National Bank. This can be considered as an optimal number of experts ensuring smooth running of this agenda and providing consistent inputs for a core projection model.

based policy analysis and projections. This report would need to be phased in when the NBRB officially moves to inflation targeting framework. The new report should usefully replace the current NBRB flagship publication "Main Tendencies in Economy and Monetary Sector in the Republic of Belarus", which lacks forward-looking policy perspective, is descriptive in nature and is published with a significant lag of two month: all these characteristics diminishing the role of this publication of being a timely policy communication tool.

17.   **Given the fact that the next forecasting round is planned for November/December and the mission is the last one of the planned eight short-term TA missions of the project, a follow-up visit should take place in early-November.** The TA mission will focus on continuing in assisting the QPM team during the forecasting round and completing all the remaining tasks; see Table 3 in Appendix A.

18.   **To further support and increase the modeling capacity at the NBRB, the modeling team is advised to continue working with the TA experts remotely in the meantime.** The continuous improvement of modeling capacities and cementing the already gained knowledge is highly desirable for the modeling team and other involved experts participating in the forecast processes. The work after this TA mission and prior to the one scheduled for the fourth quarter of 2018 should be aimed mainly at:

- Finalizing the final version of the projection based on *(i)* comments of the Board members from the meeting about the first version of the projection, *(ii)* discussion with the MPEAD management, and *(iii)* newly available data;

- Keeping updated the current version of the forecast scenario (especially before the follow-up mission in the fourth quarter), so that the impact of newly observed data can be fully understood by the forecasting team;

- Reviewing the structure of the QPM and calibrated parameters so that any potential recalibration or adjustment in model structure can be discussed (and possibly implemented) during the next TA mission.

The following table presents the project milestones. The NBRB has made substantial progress in improving its FPAS and Table 3 confirms that it is on track to meet the project main milestones and successfully finalize the whole project.

Table 3. Project Milestones

Milestone	Completion Date	Status
Review and recommendations about current status, practices and needs on the FPAS. Identification of upgrading needs of the existing QPM.	January 2017	Done; the project program was approved.
Enhancement and recalibration of the original version of the QPM to reflect the current situation in the economy, monetary policy transmission mechanism, current monetary policy regime and country specific features.	October 2017	Done; the QPM was enhanced and completely recalibrated.
Adjustment of the QPM to be flexible and to allow for *(i)* switching the operational target, *(ii)* making monetary policy more forward-looking, and *(iii)* transiting to the inflation targeting regime in the future.	December 2017	Done; part of the QPM enhancement process in 2017.
QPM-based identification, discussions and presentations of the initial conditions.	December 2017	Done; realized during the December 2017 TA mission.
Definition of role of forecasting team and its responsibilities.	February 2018	Defined in Feb 2018; reviewed and enhanced every TA mission.
Simulating a mock-up QPM-based forecast scenario that is compiled and discussed with the Board and the management of the NBRB.	March 2018	Done; the first fully-fledged forecasting round took place in March 2018.
Review, gradual and continuous improvement of near-term forecasting tools supporting the QPM.	December 2018	In process; working with experts every TA mission.
Training activities for the QPM team, practicing and operating the QPM, producing consistent forecast, scenarios, reports, presentations, and recommendations to Board every forecasting round.	December 2018	In process; the remaining TA mission in 2018 will be aimed at these activities and practicing.
Complete integration of FPAS outputs in monetary policy decisions.	December 2018	In process; the remaining TA mission will be focused on more efficient integration of the FPAS to monetary policy decisions and communication.