



# **HIGH-LEVEL SUMMARY TECHNICAL ASSISTANCE REPORT**

## **BOSNIA AND HERZEGOVINA**

Technical Assistance to Develop a  
Macroeconomic Framework at the  
Central Bank of Bosnia and Herzegovina

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**ABSTRACT:** Technical assistance to develop a macroeconomic framework was delivered to the Central Bank of Bosnia and Herzegovina (CBBH) between April 2021 and December 2023. The Quarterly Macro Forecasting Framework (QMFF) developed during this project is a quarterly framework whose main behavioral equations are specified in terms of deviations of real variables from their long-run trends. The framework is a novel combination of a gap-based modeling approach and financial programming. This novel approach was custom-built for the CBBH, but it has the flexibility to be adjusted to accommodate the macroeconomic characteristics of various countries and different exchange rate regimes, as well as to incorporate backward- or forward-looking expectation formation. While considerable progress has been achieved in the operation of the QMFF, more time and resources are needed to fully utilize and integrate the QMFF as the CBBH's main policy analysis and forecasting tool.

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## Background

**The Central Bank of Bosnia and Herzegovina (CBBH) is committed to developing a macroeconomic framework to support its forecasting capacity.** In September 2020, following technical level discussions, the Governor of the CBBH requested Technical Assistance (TA) from the Institute for Capacity Development (ICD) to build a Financial Programming and Policies (FPP) framework. Subsequent discussions with the CBBH team resulted in a project proposal aiming at developing a macroeconomic framework for forecasting and analysis at the CBBH, bringing its toolkit in line with those employed by other central banks. The TA project unfolded between April 2021 and December 2023, during which the delivery team collaborated closely with the Office of the Chief Economist (OCE) staff of the CBBH.

## Summary of Achievements

**The novel Quarterly Macro Forecasting Framework (QMFF) was developed for the CBBH.** The QMFF is a quarterly framework whose main behavioral equations are specified in terms of deviations of real variables from their long-run trends. It comprises a simultaneous system of calibrated equations covering all key FPP sectors, as well as key accounting restrictions within and across these sectors. Notably, the framework is flexible to accommodate the macroeconomic characteristics of various countries and different exchange rate regimes, as well as to incorporate backward- or forward-looking expectation formation. It is implemented and operated in Matlab, with the capacity to automatically export its output to FPP-style tables in Excel format.

**The TA project successfully met its key objective: the QMFF developed during this project was custom-built for the CBBH and gradually brought to data for Bosnia and Herzegovina via a combination of empirical approaches.** It is a pilot version of a new approach to financial programming that combines gap-based modeling methodology with FPP, leveraging the advantages of both. It facilitates business cycle analysis and forecasting while maintaining the granularity and full accounting consistency of a typical FPP framework.

**The medium-term benefits of the full-fledged use of QMFF include a rapid productivity increase in producing a model-consistent macroeconomic forecast.** Specifically, the tool allows for: highly automated data-processing, sectoral reports generation; efficient forecast production; transparent integration of expert judgment and off-model information; and seamless generation of alternative and stress-test scenarios. The framework can be easily adjusted to other countries with different structural features.

**The CBBH counterparts participated actively in the development of the tool.** They were involved in all stages of building the framework. The OCE team gradually built up its ability to understand the tool.

## Summary of Recommendations

**While considerable progress has been achieved by the OCE team in the operation of the QMFF, it will need more time and resources to exploit the framework to its full potential.** OCE team members

should be given the task and the opportunity to regularly work with the model, which would help them to gain full ownership of the macroframework and to operate it efficiently. While OCE team members are enthusiastic about using the QMFF, without sufficient staffing and staff time to dedicate to the framework there is a risk that the framework will not be fully used. Proper use of the tool requires mastering of the framework's technical details, which is a time-consuming process requiring continuity and dedication. Finally, issues of staff retention and capacity should be addressed to ensure the viability of the framework as the main forecasting tool of the CBBH.

**Full utilization of the framework should be geared towards gradually making the QMFF the main policy analysis and forecasting tool of the CBBH.** The results generated by the OCE team using the tool should be integrated into policymaking discussions with senior CBBH management and eventually communicated to the public on a regular basis. Capacity building will facilitate the application of the tool for forecasting and policymaking, which will in turn further stimulate the strengthening of the analytical skills of the staff. Formalizing an internal forecast calendar would further facilitate the use of the tool and its integration into the policymaking process.