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CCAMTAC - Regional Research Seminar Series
"Nowcasting with High Frequency Data, Google Trends and Machine Learning"
September 27, 2024

Introduction:

Mr. Norbert Funke, Director, CCAMTAC

Moderation:

Mr. Nurdaulet Abilov, Economist, CCAMTAC

Presenters:

Mr. Vakhtang Chalapeikrishvili, Head of Macroeconomic Analysis and Fiscal Policy Planning Department, Ministry of Finance of Georgia

Mr. Mikheil Mgebrishvili, Acting Head of Modeling Division, Macroeconomic Analysis and Fiscal Policy Planning Department, Ministry of Finance of Georgia

Interventions:

Mr. Islomjon Inkhomiddinov, Deputy Director, Monetary Policy Department, Central Bank of Uzbekistan

Due to the significant delay in the availability of GDP data, modern economists have developed nowcasting models to estimate the current state of economic activity in real time. Advancements in computing power and the availability of big data have led economists to use machine learning (ML) algorithms to enhance the precision of these nowcasting models. This research seminar focuses on nowcasting GDP growth and identifying its turning points for Georgia in real time by utilizing Google Trends data and ML algorithms. The forecasting performance of various ML algorithms is compared with more traditional AR(1) models and dynamic factor models (DFM).

Mr. Vakhtang Chalapeikrishvili presented the motivation for using nowcasting and ML models at the Ministry of Finance (MoF). Although MoFs do not have the same flexibility as central banks to adjust policy instruments immediately in response to shocks, they found nowcasting models with Google Trends data extremely useful for informing management about economic activity turning points and assessing its state during periods of high uncertainty (e.g., COVID-19). Additionally, the output of the nowcasting model is used to feed other benchmark medium-term and long-term forecasting models at the MoF of Georgia.

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Given the availability of high-dimensional data such as Google Trends, different ML algorithms were employed to improve the precision of nowcasting models. Mr. Mikheil Mgebrishvili presented various ML algorithms used in the research paper and provided examples of their applications in economics. The data used in their research was categorized into two types: traditional macroeconomic data and non-traditional data (i.e., Google Trends). The sample period spans from January 2012 to September 2022.

The authors produced GDP growth nowcasts in a pseudo out-of-sample forecasting exercise using different ML algorithms, AR models, and DFM models. The forecasting performance of the models was measured using the root mean squared error (RMSE) and the mean directional accuracy (MDA) indicators. The results of the research paper show that ML methods produce superior nowcasts compared to traditional econometric models such as AR(1) and DFM. Specifically, Support Vector Machine and LASSO methods outperformed all other models used to nowcast GDP growth in the pseudo out-of-sample forecasting exercise. This finding highlights the need for more active study of high-dimensional and irregular data and ML methods for near-term forecasting at public institutions.

Mr. Islomjon Inkhomiddinov made a brief intervention, commenting on the research presentation and sharing their experience at the Central Bank of Uzbekistan in adopting and using nowcasting models, including ML methods. He raised issues regarding the transformation and interpretation of high-dimensional variables and how these complex variables are communicated to management from an economic perspective. Mr. Inkhomiddinov also inquired whether ML methods with Google Trends data can perform equally well during times of low uncertainty as they do during periods of tranquility, as well as the challenges faced in incorporating these models into real-time policymaking.

In a short presentation on the experience of the CBU in adopting and using nowcasting models, Mr. Inkhomiddinov highlighted a strong correlation between selected Google Trends data and services and industrial output data. He also emphasized that they are engaged in building models based on ML methods to forecast GDP growth, inflation, and banking liquidity in the economy. Both presentations attracted significant interest from regional officials, with the virtual research seminar gathering almost 150 participants.