

Machine Learning For Macroeconomic Nowcasting

Abstract

This study investigates the application of machine learning models for GDP nowcasting, the process of predicting current and near-future economic activity based on high-frequency data. Particularly, the focus is set on their predictive accuracy and interpretability. The performance of various machine learning algorithms, including neural networks, random forests, boosted trees, support vector regression, and K-nearest neighbors, is compared in forecasting Argentina's monthly GDP indicator. The results indicate that machine learning models can enhance predictive accuracy compared to traditional econometric models, aligning with existing literature. Several interpretability techniques are also explored, aiming to understand what insights can be effectively retrieved from these models. It is revealed that the methods are limited in their ability to answer questions related to the functional forms of relationships between variables, but are well-suited to explain the drivers of specific predictions, which is a more important issue in nowcasting. Additionally, a framework for assessing the impact of revisions on predicted estimates is proposed. Ultimately, it is recommended that central banks incorporate machine learning models into their forecasting suites to improve prediction accuracy, while also being mindful of the models' limitations and complexities.