Abstract

This thesis analyzes the nowcasting of quarterly GDP growth for nine European economies using a dynamic factor model and four different machine learning models. These machine learning models are as follows: Ridge, Lasso, Elastic Net, and Random Forest. The data includes ten hard and fifteen soft indicators for each country in order to calculate GDP for each nowcasting iteration for pre-covid and covid periods. For machine learning, models are fed with the extracted factors that are obtained from the dynamic factor model, and for all nowcasting models expanding window approach is selected to estimate nowcasting iterations. The empirical finding indicates that overall machine learning models provide better forecasting accuracy compared to dynamic factor models and benchmark models for more stable periods, such as the period before Covid-19. On the other hand, for more volatile periods where the uncertainties are higher in economies, the dynamic factor model outperforms machine learning models in order to nowcast GDP growth. In addition to this, Random Forest is able to outperform all the alternative models for small economies such as Slovenia and Portugal for stable periods.

JEL Classification	C01, C33, C53, C83, E37
Keywords	Nowcasting, DFM, Ridge, Lasso, Elastic Net, Random Forest
Title	Nowcasting Real GDP Growth of the European Economies based on Machine Learning