

ABSTRACT

This master thesis investigates the properties of diffusion index models which are used to forecast the Estonian headline and core inflation rate in a recursive out-of-sample framework. The diffusion indexes, also called factors, summarize the information of large numbers of macroeconomic and financial variables contained in a large data set. In a first step the indexes are constructed by a principal component analysis and are then incorporated into different parameterized vector autoregressive forecasting models.

The obtained diffusion index forecasts are compared to the forecasts from a simple univariate autoregressive benchmark model to evaluate the predictive abilities of every model. As a byproduct of the analysis, a multivariate factor analysis for different sized panel sets is provided which allows to interpret the commonalities and dynamic relations of the series in the data set.

The results indicate that factor-augmented vector autoregressive models can outperform the simple univariate autoregressive model and under certain conditions even an autoregressive moving average model. The extend to which the diffusion index forecast models perform better than alternative models depends on the number of factors and the number of lags included in the model. For the headline inflation, it is found that a model with a small number of factors and two lags is suited best for forecasting when the diffusion indexes are extracted from a big dataset. In contrast a model obtained from a small dataset with a higher number of factors and one lag outperforms the benchmark and other factor models when the Estonian core inflation is forecasted.

Keywords: Factor models, factor analysis, diffusion indexes, principal components, inflation forecasting, forecast evaluation, Estonia