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Forecasting Austrian inflation[☆]

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Abstract

In this paper we apply factor models proposed by Stock and Watson [Stock, J.H., Watson, M.W., 1999. Forecasting inflation. Journal of Monetary Economics 44 (2), 293–335.] as well as VAR and ARIMA models to generate 12-month out-of-sample forecasts of Austrian HICP inflation and its subindices. We apply a sequential forecast model selection procedure tailored to this specific task. It turns out that factor models possess the highest predictive accuracy for several subindices and that predictive accuracy can be further improved by combining the information contained in factor and VAR models for some indices. With respect to forecasting headline HICP inflation, our analysis suggests to favor the aggregation of subindices forecasts over a forecast of headline inflation itself.
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1. Introduction

The inflation rate is often seen as an important indicator for the performance of a central bank. Inflation forecasts are therefore an important element in the set of variables on which forward-looking monetary policy decisions are based. Apart from providing an input to monetary policy

deliberations, inflation forecasts also play a role in the macroeconomic policy debate: By informing the public about likely trends in inflation, forecasts can influence expectations and can therefore serve as a nominal anchor for example in the wage bargaining process or for other nominally fixed contracts like housing rents or interest rates.

Furthermore, since the appropriate reaction of monetary policy to inflationary pressures depends among other things on the sources of inflation, it is useful to monitor, analyze and forecast subindices of headline inflation which are defined at the level of product types contained in the harmonized index of consumer prices (HICP). The incorporation of information on developments in the subindices helps to give a more detailed picture of the sources of inflation and the propagation of shocks to inflation across product categories and time. The subindices covered in our analysis comprise processed food, unprocessed food, energy, non-energy industrial goods and services.

This paper compares the performance of factor models and VAR and ARIMA models for forecasting the rate of change of the Austrian HICP and its subindices. Furthermore, we compare the performance of HICP inflation forecasts based on direct modeling of the HICP with a forecast based on an aggregation of forecasts for the subindices.[1]

Starting with the contribution of Stock and Watson (1998), various authors have applied factor models to forecasting inflation. Stock and Watson (1999) use factor models to forecast U.S. inflation. Marcellino et al. (2003) and Angelini et al. (2001) evaluate the usefulness of factor models for forecasting euro area inflation. Gosselin and Tkacz (2001) evaluate factor models for forecasting inflation in Canada.

Factor models offer a convenient way to incorporate the information content of a wide range of time series. The underlying assumption is that a small number of unobservable factors is the driving force behind the series under consideration. This is an appealing feature for forecasting purposes since it allows us to concentrate on a few common factors instead of a potentially large number of explanatory variables. In particular, factor models appear to be a promising tool for forecasting HICP subindices since economic theory provides only little guidance for variable selection in this case. Hence, using factor models allows us to avoid arbitrary assumptions necessary to preserve degrees of freedom when standard time series methods are employed. However, since the usefulness of time series models has been widely documented for forecasting inflation (see e.g. Hubrich, 2005, and the references therein), we compare the forecasting performance of factor models to VAR and ARIMA models.

We find that factor models appear to possess the highest predictive accuracy for the unprocessed food, energy and industrial goods price indices. For processed food and the services index, the highest predictive accuracy is obtained using a combined forecast of factor and VAR models. Furthermore, we find that forecasts of Austrian HICP inflation based on an aggregation of the subindices forecasts appear to be somewhat more accurate than the best available forecast of the HICP itself. This indirect approach to forecasting inflation has the additional advantage of allowing a more detailed analysis of likely trends and developments in inflation.

The remainder of the paper is organized as follows: Section 2 briefly discusses factor models along with the other techniques used in the forecasts and describes the forecasting procedure. Section 3 evaluates the forecasting performance and considers forecast combination. Section 4 concludes the paper.

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[1] In related papers, Hubrich (2005) analyzes euro area HICP subindices and Fritzer et al. (2002) consider forecasting the Austrian HICP subindices using time series methods.