

## Inhalt / Contents

Guest Editorial . . . . .	5–8
<b>Abhandlungen / Original Papers</b>	
<i>Döhrn, Roland, Christoph M. Schmidt</i> , Information or Institution? On the Determinants of Forecast Accuracy . . . . .	9–27
<i>Schumacher, Christian</i> , Forecasting with Factor Models Estimated on Large Datasets: A Review of the Recent Literature and Evidence for German GDP. . . . .	28–49
<i>Lenza, Michele, Thomas Warmedinger</i> , A Factor Model for Euro-area Short-term Inflation Analysis . . . . .	50–62
<i>Krüger, Fabian, Frieder Mokinski, Winfried Pohlmeier</i> , Combining Survey Forecasts and Time Series Models: The Case of the Euribor. . . . .	63–81
<i>Carstensen, Kai, Klaus Wohlrabe, Christina Ziegler</i> , Predictive Ability of Business Cycle Indicators under Test . . . . .	82–106
<i>Lütkepohl, Helmut</i> , Forecasting Nonlinear Aggregates and Aggregates with Time-varying Weights. . . . .	107–133
<i>Halbleib, Roxana, Valeri Voev</i> , Forecasting Multivariate Volatility using the VARFIMA Model on Realized Covariance Cholesky Factors . . . . .	134–152
<i>Hofer, Helmut, Torsten Schmidt, Klaus Weyerstrass</i> , Practice and Prospects of Medium-term Economic Forecasting . . . . .	153–171
<b>Buchbesprechungen / Book Reviews</b>	
<i>Skedinger, Per</i> , Employment Protection Legislation – Evolution, Effects, Winners and Losers . . . . .	172
<i>Vogel, Harold L.</i> , Financial Market Bubbles and Crashes . . . . .	173
<i>Wickström, Bengt-Arne (Hrsg.)</i> , Finanzpolitik und Unternehmens- entscheidung. . . . .	175

## Abhandlungen / Original Papers

### Information or Institution?

#### On the Determinants of Forecast Accuracy

By Roland Döhrn and Christoph M. Schmidt, Essen

JEL C53; E27; E01

Forecast accuracy; forecast revisions; forecast horizon; economic activity.

---

#### Summary

The accuracy of macroeconomic forecast depends on various factors, most importantly the mix of analytical methods used by the individual forecasters, the way that their personal experience is shaping their identification strategies, but also their efficiency in translating new information into revised forecasts. In this paper we use a broad sample of forecasts of German GDP and its components to analyze the impact of institutions and information on forecast accuracy. We find that forecast errors are a linear function of the forecast horizon, which serves as an indicator of the information available at the time a forecast is produced. This result is robust over a variety of different specifications. As better information seems to be the key to achieving better forecasts, approaches for acquiring reliable information early seem to be a good investment. By contrast, the institutional factors tend to be small and statistically insignificant. It has to remain open, whether this is the consequence of the efficiency-enhancing competition among German research institutions or rather the reflection of an abundance of forecast suppliers.

## **Forecasting with Factor Models Estimated on Large Datasets: A Review of the Recent Literature and Evidence for German GDP**

**By Christian Schumacher, Frankfurt a.M.**

JEL E37; C53

Factor models; forecasting; large datasets; mixed-frequency data; missing observations; ragged edge; time aggregation.

---

### **Summary**

This paper provides a review of the recent literature concerned with large factor models as forecast devices. We focus on factor models that account for mixed-frequency data and missing observations at the end of the sample. These are data irregularities applied forecasters have to cope with in real time. To extract the factors from the irregular data, special factor estimation techniques are necessary, expanding on the standard approaches for balanced data such as principal components (PC). The estimation methods include variants of the Expectation-Maximisation (EM) algorithm together with PC and factor estimation using state-space models. Given the estimated factors, forecasts can be obtained from bridge equations, mixed-data sampling (MIDAS) regressions and the Kalman smoother applied to fully-fledged factor models in state-space form. Empirical applications for German GDP growth often find that forecasts based on factor models are informative only a few months ahead compared to naive benchmarks. Thus, these models can be regarded as short-term forecast tools only. However, the factor models estimated on mixed-frequency data with missing observations tend to outperform factor models based on balanced data time-aggregated from high-frequency data.

## **A Factor Model for Euro-area Short-term Inflation Analysis**

**By Michele Lenza and Thomas Warmedinger, Frankfurt a. M.**

JEL C50; C22; E31; E37

Factor model; missing data; short-term; inflation.

---

### **Summary**

This paper develops a factor model for forecasting inflation in the euro area. The model can handle variables with different timeliness, sample size and frequency. We show that the forecasts based on the factor model outperform naïve random walk forecasts, a hard to beat benchmark for euro area inflation forecasts in recent years, at horizons of and beyond nine months ahead. They are also comparable, in terms of accuracy, to the judgemental forecasts prepared in the context of the Eurosystem macroeconomic projection exercises. The factor model is therefore a very suitable tool to extract the signal on current and future euro area inflation from new data releases.

## **Combining Survey Forecasts and Time Series Models: The Case of the Euribor**

**By Fabian Krüger, Frieder Mokinski, Winfried Pohlmeier, Konstanz**

JEL C21; C51; C53

Tendency survey; forecast combination.

---

### **Summary**

This paper reinterprets Maganelli's (2009) idea of "Forecasting with Judgment" to obtain a dynamic algorithm for combining survey expectations data and time series models for macroeconomic forecasting. Existing combination approaches typically obtain combined forecasts by linearly weighting individual forecasts. The approach presented here instead uses survey forecasts in the estimation stage of a time series model. Thus an estimate of the model parameters is obtained that reflects two sources of information: a history of realizations of the variables that are involved in the time series model and survey expectations on the future course of the variable that is to be forecast. The idea at the estimation stage is to shrink parameter estimates towards values that are compatible (in an appropriate sense) with the survey forecasts that have been observed. It is exemplified how this approach can be applied to different autoregressive time series models. In an empirical application, the approach is used to forecast the three-month Euribor at a six-month horizon.

# **Predictive Ability of Business Cycle Indicators under Test**

## **A Case Study for the Euro Area Industrial Production**

**By Kai Carstensen, Klaus Wohlrabe, Munich, and Christina Ziegler, Leipzig**

JEL C32; C53; E32

Weighted loss; leading indicators; euro area; forecasting.

---

### **Summary**

In this paper we assess the information content of seven widely cited early indicators for the euro area with respect to forecasting area-wide industrial production. To this end, we use various tests that are designed to compare competing forecast models. In addition to the standard Diebold-Mariano test, we employ tests that account for specific problems typically encountered in forecast exercises. Specifically, we pay attention to nested model structures, we alleviate the problem of data snooping arising from multiple pairwise testing, and we analyze the structural stability in the relative forecast performance of one indicator compared to a benchmark model. Moreover, we consider loss functions that overweight forecast errors in booms and recessions to check whether a specific indicator that appears to be a good choice on average is also preferable in times of economic stress. We find that none of these indicators uniformly dominates all its competitors. The optimal choice rather depends on the specific forecast situation and the loss function of the user. For 1-month forecasts the business climate indicator of the European Commission and the OECD composite leading indicator generally work well, for 6-month forecasts the OECD composite leading indicator performs very good by all criteria, and for 12-month forecasts the FAZ-Euro indicator published by the Frankfurter Allgemeine Zeitung is the only one that can beat the benchmark AR(1) model.

## Forecasting Nonlinear Aggregates and Aggregates with Time-varying Weights

By Helmut Lütkepohl, Firenze

JEL C32

Forecasting; stochastic aggregation; autoregression; moving average; vector autoregressive process.

---

### Summary

Despite the fact that many aggregates are nonlinear functions and the aggregation weights of many macroeconomic aggregates are time-varying, much of the literature on forecasting aggregates considers the case of linear aggregates with fixed, time-invariant aggregation weights. In this study a framework for nonlinear contemporaneous aggregation with possibly stochastic or time-varying weights is developed and different predictors for an aggregate are compared theoretically as well as with simulations. Two examples based on European unemployment and inflation series are used to illustrate the virtue of the theoretical setup and the forecasting results.

## Forecasting Multivariate Volatility using the VARFIMA Model on Realized Covariance Cholesky Factors\*

By Roxana Halbleib , Bruxelles, and Valeri Voev , Aarhus

JEL C32; C53; G11

Forecasting; fractional integration; stochastic dominance; portfolio optimization; realized covariance.

---

### Summary

This paper analyzes the forecast accuracy of the multivariate realized volatility model introduced by Chiriac and Voev (2010), subject to different degrees of model parametrization and economic evaluation criteria. By modelling the Cholesky factors of the covariance matrices, the model generates positive definite, but biased covariance forecasts. In this paper, we provide empirical evidence that parsimonious versions of the model generate the best covariance forecasts in the absence of bias correction. Moreover, we show by means of stochastic dominance tests that any risk averse investor, regardless of the type of utility function or return distribution, would be better-off from using this model than from using some standard approaches.



## Practice and Prospects of Medium-term Economic Forecasting

By Helmut Hofer, Wien, Torsten Schmidt, Essen, and Klaus Weyerstrass, Wien\*

JEL C53; E32; E37; E66

Econometric models; macroeconomic forecasts; aggregate production function; Austria.

---

### Summary

Government agencies and other national and international institutions are asked to perform forecasts over the medium term. In particular, the EU Stability and Growth Pact contains the obligation to formulate stability programmes over four years, covering a general economic outlook as well as the projected development of public finances. However, the current practice of performing medium-term economic projections is unsatisfactory from a methodological point of view as the applied methodology has been developed for short-run forecasting and it is questionable whether these methods are useful for the medium term. In particular, currently medium-term projections are mostly based on the neoclassical Solow growth model with an aggregate production function with labour, capital and exogenous technological progress. It might be argued, however, that for medium-run projections endogenous growth models might be better suited. In this paper we give an overview of currently used methods for medium-term macroeconomic projections. Then we analyse the performance of medium-term forecasts for Austria to illustrate the strengths and weaknesses of the typical approach. In particular, the five-year projections of real GDP growth, inflation and the unemployment rate are investigated. Finally, we describe some approaches to improve medium-run projections.