A Dynamic Factor Model Of The Yield Curve As A Predictor

Factor models have become the most successful tool in the analysis and forecasting of high-dimensional time series. This monograph provides an extensive account of the so-called General Dynamic Factor Model methods. The topics covered include: asymptotic representation problems, estimation, forecasting, identification of the number of factors, identification of structural shocks, volatility analysis, and applications to macroeconomic and financial data.

"This paper estimates a dynamic factor model (DFM) for nowcasting Canadian grossdomestic product. The model is estimated with a mix of soft and hard indicators, and itfeatures a high share of international data. The model is then used to generate nowcasts, predictions of the recent past and current state of the economy. In a pseudo real-timesetting, we show that the DFM outperforms univariate benchmarks as well as othercommonly used nowcasting models, such as mixed-data sampling (MIDAS) and bridge regressions"--Abstract, p. ii.

An extended formal analysis of economic forecasting co-authored by one of the world's leading econometricians.

Greater data availability has been coupled with developments in statistical theory and economic theory to allow more elaborate and complicated models to be entertained. These include factor models, DSGE models, restricted vector autoregressions, and non-linear models.

Annotation Part 6: Financial Markets and the Macroeconomy. 19. Asset prices, consumption, and the business cycle (J.Y. Campbell). 20. Human behavior and the efficiency of the financial system (R.J. Shiller). 21. The financial accelerator in a quantitative business cycle framework (B. Bernanke, M. Gertler and S. Gilchrist). Part 7: Monetary and Fiscal Policy. 22. Political economics and macroeconomic policy (T. Persson, G. Tabellini). 23. Issues in the design of monetary policy rules (B.T. McCallum). 24. Inflation stabilization and BOP crises in developing countries (G.A. Calvo, C.A. Vegh). 25. Government debt (D.W. Elmendorf, N.G. Mankiw). 26. Optimal fiscal and monetary policy (V.V. Chari, P.J. Kehoe).

Dynamic Factor ModelsEmerald Group Publishing

This paper investigates the developments in house price synchronization across countries by a dynamic factor model using a country- and city-level dataset, and examines what drives the synchronization. The empirical results indicate that: (i) the degree of synchronization has been rising since the 1970s, and (ii) a large heterogeneity in the degree of synchronization exists across countries and cities. A panel and cross-sectional regression analysis show that the heterogeneity of synchronization is partly accounted for by the progress in financial and trade openness. Also, the city-level analysis implies that the international synchronization is mainly driven by the city-level connectivity between large and international cities.

"This paper considers VAR models incorporating many time series that interact through a few dynamic factors. Several econometric issues are addressed including estimation of the number of dynamic factors and tests for the factor restrictions imposed on the VAR. Structural VAR identification based on timing restrictions, long run restrictions, and restrictions on factor loadings are discussed and practical computational methods suggested. Empirical analysis using U.S. data suggest several (7) dynamic factors, rejection of the exact dynamic factor model but

support for an approximate factor model, and sensible results for a SVAR that identifies money policy shocks using timing restrictions"--National Bureau of Economic Research web site.

Dynamic factor models and dynamic stochastic general equilibrium (DSGE) models are widely used for empirical research in macroeconomics. The empirical factor literature argues that the co-movement of large panels of macroeconomic and financial data can be captured by relatively few common unobserved factors. Similarly, the dynamics in DSGE models are often governed by a handful of state variables and exogenous processes such as preference and/or technology shocks. Boivin and Giannoni(2006) combine a DSGE and a factor model into a data-rich DSGE model, in which DSGE states are factors and factor dynamics are subject to DSGE model implied restrictions. We compare a data-richDSGE model with a standard New Keynesian core to an empirical dynamic factor model by estimating both on a rich panel of U.S. macroeconomic and financial data compiled by Stock and Watson (2008).We find that the spaces spanned by the empirical factors and by the data-rich DSGE model states are very close. This proximity allows us to propagate monetary policy and technology innovations in an otherwise non-structural dynamic factor model to obtain predictions for many more series than just a handful of traditional macro variables, including measures of real activity, price indices, labor market indicators, interest rate spreads, money and credit stocks, and exchange rates.

This volume explores dynamic factor model specification, asymptotic and finite-sample behavior of parameter estimators, identification, frequentist and Bayesian estimation of the corresponding state space models, and applications.

The paper introduces an approximate dynamic factor model based on the extraction of principal components from a very large number of leading indicators stacked at various lags. The model is designed to produce short-term forecasts that are computed with the EM algorithm implemented with the first few eigenvectors ordered by descending eigenvalues. A cross-sectional bootstrap experiment is used to shed light on the sensitivity of the factor model to factor selection and to sampling uncertainty. The empirical number of factors seems more appropriately set through an analysis of eigenvalues, bootstrapped eigenvalues or the BIC than with more sophisticated information criteria. Confidence intervals derived from bootstrapped forecasts show the extent to which the data composition can support the hypothesis of business cycle co-movements and the selected factors can account for those shocks. Pseudo real-time out-of-sample forecast experiments conducted with a dataset of about two thousand series covering the euro area business cycle show that the SLID factor model outperforms benchmark models (AR models, leading indicators equations) for one-, two- and three- quarters-ahead forecasts of GDP growth. The accuracy of coincident forecasts compared to final estimates is not significantly different from Eurostat Flash or first estimates and is slightly superior to that of CEPR Eurocoin.

Large Dimensional Factor Analysis provides a survey of the main theoretical results for large dimensional factor models, emphasizing results that have implications for empirical work. The authors focus on the development of the static factor models and on the use of estimated factors in subsequent estimation and inference. Large Dimensional Factor Analysis discusses how to determine the number of factors, how to conduct inference when estimated factors are used in regressions, how to assess the adequacy pf observed variables as proxies for latent factors, how to exploit the estimated factors to test unit

This paper studies changes in the transmission of common versus sectoral idiosyncratic shocks across different U.S. nonfarm business sectors during the Great Recession, and evaluates the cross-sectoral spillovers. Shocks are identified by dynamic factor methods. We find that the Great Recession is largely a time of heightened impact of common shocks— which accounts for 3/4 of aggregate volatility—and large

spillovers of negative financerelated shocks. Moreover, in contrast with the earlier literature that failed to find a significant role of sectoral shocks (propagated through the input-output linkages across sectors) in driving variability in aggregate industry output, this study allows spillovers of shocks to operate through other mechanisms intertemporally. We find that prior to the recession the majority of aggregate fluctuations is explained by sector-specific shocks.

We explore the concept of global liquidity based on a factor model estimated using a large set of financial and macroeconomic variables from 24 advanced and emerging market economies. We measure global liquidity conditions based on the common global factors in the dynamics of liquidity indicators. By imposing theoretically motivated sign restrictions on factor loadings, we achieve a structural identification of the factors. The results suggest that global liquidity conditions are largely driven by three common factors and can therefore not be summarised by a single indicator. These three factors can be identified as global monetary policy, global credit supply and global credit demand.

International Federation of Classification Societies The International Federation of Classification Societies (IFCS) is an agency for the dissemination of technical and scientific information concerning classification and data analysis in the broad sense and in as wide a· range of applications as possible; founded in 1985 in Cambridge (UK) from the following Scientific Societies and Groups: British Classification Society -BCS; Classification Society of North America -CSNA; Gesellschaft fUr Klassifikation -GfKl; Japanese Classification Society -JCS; Classification Group of Italian Statistical Society - COSIS; Societe Francophone de Classification -SFC. Now the IFCS includes the following Societies: Dutch-Belgian Classification Society - VOC; Polish Classification Section - SKAD; Portuguese Classification Association - CLAD; Group-at-Large; Korean Classification Society -KCS. Biannual Meeting of the Classification and Data Analysis Group of SIS The biannual meeting of the Classification and Data Analysis Group of Societa Italiana di Statistica (SIS) was held in Pescara, July 3 -4, 1997. The 69 papers presented were divided in 17 sessions. Each session was organized by a chairperson with two invited speakers and two contributed papers from a call for papers. All the works were referred. Furthermore, during the meeting a discussant was provided for each session. A short version of the papers (4 pages) was.published before the conference.

David F. Hendry is a seminal figure in modern econometrics. He has pioneered the LSE approach to econometrics, and his influence is wide ranging. This book is a collection of papers dedicated to him and his work. Many internationally renowned econometricians who have collaborated with Hendry or have been influenced by his research have contributed to this volume, which provides a reflection on the recent advances in econometrics and considers the future progress for the methodology of econometrics. Central themes of the book include dynamic modelling and the properties of time series data, model selection and model evaluation, forecasting, policy analysis, exogeneity and causality, and encompassing. The book strikes a balance between econometric theory and empirical work, and demonstrates the influence that Hendry's research has had on the direction of modern econometrics. Contributors include: Karim Abadir, Anindya Banerjee, Gunnar Bårdsen, Andreas Beyer, Mike Clements, James Davidson, Juan Dolado, Jurgen Doornik, Robert Engle, Neil Ericsson, Jesus Gonzalo, Clive Granger, David Hendry, Kevin Hoover, Søren Johansen, Katarina Juselius, Steven Kamin, Pauline Kennedy, Maozu Lu, Massimiliano Marcellino, Laura Mayoral, Grayham Mizon, Bent Nielsen, Ragnor Nymoen, Jim Stock, Pravin Trivedi, Paolo Paruolo, Mark Watson, Hal White, and David Zimmer.

In this book, highly qualified multidisciplinary scientists grasp their recent researches motivated by the importance of artificial neural networks. It addresses advanced applications and innovative case studies for the next-generation optical networks based on modulation recognition using artificial neural networks, hardware ANN for gait generation of multi-legged robots, production of high-resolution soil property ANN maps, ANN and dynamic factor models to combine forecasts, ANN parameter recognition of engineering constants in Civil Engineering, ANN electricity consumption and generation forecasting, ANN for advanced process control, ANN breast cancer detection, ANN applications in biofuels, ANN modeling for manufacturing process optimization, spectral interference correction using a large-size spectrometer and ANN-based deep learning, solar radiation ANN prediction using NARX model, and ANN data assimilation for an atmospheric general circulation model.

In this book leading German econometricians in different fields present survey articles of the most important new methods in econometrics. The book gives an overview of the field and it shows progress made in recent years and remaining problems. Inflation is regarded by the many as a menace that damages business and can only make life worse for households. Keeping it low depends critically on ensuring that firms and workers expect it to be low. So expectations of inflation are a key influence on national economic welfare. This collection pulls together a galaxy of world experts (including Roy Batchelor, Richard Curtin and Staffan Linden) on inflation expectations to debate different aspects of the issues involved. The main focus of the volume is on likely inflation developments. A number of factors have led practitioners and academic observers of monetary policy to place increasing emphasis recently on inflation expectations. One is the spread of inflation targeting, invented in New Zealand over 15 years ago, but now encompassing many important economies including Brazil, Canada, Israel and Great Britain. Even more significantly, the European Central Bank, the Bank of Japan and the United States Federal Bank are the leading members of another group of monetary institutions all considering or implementing moves in the same direction. A second is the large reduction in actual inflation that has been observed in most countries over the past decade or so. These considerations underscore the critical – and largely underrecognized - importance of inflation expectations. They emphasize the importance of the issues, and the great need for a volume that offers a clear, systematic treatment of them. This book, under the steely editorship of Peter Sinclair, should prove very important for policy makers and monetary economists alike.

This book surveys big data tools used in macroeconomic forecasting and addresses related econometric issues, including how to capture dynamic relationships among variables; how to select parsimonious models; how to deal with model uncertainty, instability, non-stationarity, and mixed frequency data; and how to evaluate forecasts, among others. Each chapter is self-contained with references, and provides solid background information, while also reviewing the latest advances in the field. Accordingly, the book offers a valuable resource for researchers, professional forecasters, and students of quantitative economics. In this note, we present the Commodities Factor Model (CFM), a dynamic factor model for a large cross-section of energy and non-energy commodity prices. The model decomposes price changes in commodities into a common "global" component, a "block" component confined to subgroups of economically related commodities and an idiosyncratic price shock component. Unlike with

ordinary factor models, these components have meaningful economic interpretations: the global component mostly relates to global commodity demand shocks, while the idiosyncratic component mostly relates to commodity-specific supply shocks. We give several examples to show that the CFM provides plausible historical decompositions.

We use a Bayesian dynamic factor model to measure Germany's pre World War I economic activity. The procedure makes better use of existing time series data than historical national accounting. To investigate industrialization we propose to look at comovement between sectors. We find that Germany's industrial sector developed earlier than stated in the literature, since after the 1860s agricultural time series do not comove with the business cycle anymore. Also, the bulk of comovement between 1820 and 1913 can be traced back to five out of 18 series representing industrial production, investment and demand for industrial inputs. Our factor is impressingly confirmed by a stock price index, leading the factor by 1-2 years. We also find evidence for early market integration in the 1820s and 1830s. Our business cycle dating aims to resolve the debate on German business cycle history. Given the often unsatisfactory quality of national accounting data for the 19th century we show the advantage of dynamic factor models in making efficient use of rare historical time series. -- Business Cycle Chronology ; Imperial Germany ; Dynamic Factor Models ; Industrialization

The paper compares the pseudo real-time forecasting performance of three Dynamic Factor Models: (i) The standard principal-component model, Stock and Watson (2002a), (ii) The model based on generalized principal components, Forni et al. (2005), (iii) The model recently proposed in Forni et al. (2015b) and Forni et al. (2015a). We employ a large monthly dataset of macroeconomic and financial time series for the US economy, which includes the Great Moderation, the Great Recession and the subsequent recovery. Using a rolling window for estimation and prediction, we find that (iii) neatly outperforms (i) and (ii) in the Great Moderation period for both Industrial Production and Inflation, and for Inflation over the full sample. However, (iii) is outperfomed by (i) and (ii) over the full sample for Industrial Production.