METHODS FOR EMPIRICAL ANALYSIS IN MACROECONOMICS
ECON 4562

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ESCUELA DE VERANO 2019

Salón: Pendiente
Fechas: 15 al 26 de julio. No hay clases los sábados
Horario: 2:00 pm a 5:00 pm

Programa sujeto a cambios

INTRODUCTION

The course is intended to fulfill two needs: (1) to provide students with applied interests with the most sophisticated and up to date techniques used in empirical time series analysis, and (2) to introduce students with more theoretical inclinations to the tools that are used to derive some of the more interesting results. The emphasis of this class is applied. For that reason, empirical applications will constitute an essential part of the course and will aid in making the material relevant for your field papers and dissertation.

TEXTBOOKS

Shumway, R.H. and Sto er, D.S. (2010), Time Series Analysis and Its Applications (3rd edition), Hamilton, J. D. (1994), Time Series Analysis and Durbin, J. and Koopman, S.J. (2012), Time Series Analysis by State Space Methods. I will rely on these books interchangeably depending on the topic.

Further references for specific topics are also provided. Additional readings for each topic can be found at the end of this document.

MATERIAL & SOFTWARE

The syllabus contains a long list of topics. Each topic corresponds to roughly two or three lectures. Due to time constrains I might skip over some of points listed to be able to cover some of the more interesting and cutting edge topics.

The empirical examples that are covered during the course are made available to the students in R. However, the empirical assignments may be done in any preferred coding language, e.g. Python, Matlab, Ox, Gauss, etc.

COURSE OUTLINE

This is a preliminary course outline, more details (page references etc) will be made available prior to the course.

• Large recap: dependence, stationarity, time series regression, arima models, forecasting, estimation, frequency domain methods.

• Vector autoregressive models: estimation, Granger-causality, impulse responses, variance decompositions.

– Primer on identification: structural vector autoregressive models and local projections with short run, long run, sign, heteroskedasticity and external instruments based identification schemes.

• State space methods: local level example, filtering, smoothing, parameter estimation, missing values, forecasting.

– Primer on dynamic factor models: state space formulation, principal components, number of factors, nowcasting.

READING LIST

• (Time series) Textbooks

– Box, G.E.P. and G.M. Jenkins (1976), Time Series Analysis: Forecasting and Control

– Brillinger, D.R. (1975). Time Series: Data Analysis and Theory.

– Brockwell, P. J. & Davis, R. A. (1991), Time Series: Theory and Methods

– Brockwell, P. J. & Davis, R. A. (2002), Introduction to Time Series and Forecasting

– Canova, F. (2007), Methods for Applied Macroeconomic Research

– Durbin, J. and Koopman, S. J.: 2012, Time Series Analysis by State Space Methods

– Gourieroux C. and A. Monfort (1997), Time Series and Dynamic Models

– Hamilton, J. D. (1994), Time Series Analysis

– Harvey, A.C. (1993), Time Series Models

– Hayashi, F. 2000. Econometrics

– Shumway, R.H. and Sto er, D.S., Time Series Analysis and Its Applications

– White, H. 2000. Asymptotic Theory for Econometrians - 2nd edition. San Diego,

California:Academic Press.

• (Structural) vector autoregressive models and identification

– Baumeister, C., Hamilton, J.D., 2015. Sign restrictions, structural vector autoregressions, and useful prior information. Econometrica 83, 1963-1999.

– Blanchard, O.J. and D. Quah (1989), "The Dynamic E ects of Aggregate Demand and Supply Disturbances," American Economic Review, 79, 655-673.

– Christiano, L.J., Eichenbaum, M.S., Evans, C.L., 1999. Monetary policy shocks: what have we learned and to what end? In: Taylor, J.B., Woodford, M. (Eds.), Handbook of Macroeconomics. Elsevier Science,North-Holland, Amsterdam.

– Clarida, Richard, Jordi Gali and Mark Gertler. 2000. Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory. The Quarterly Journal of Economics, 115(1): 147180.

– Cochrane,J.H., Piazzesi, M., 2002. The fed and interest rates: a high-frequency identification. Am. Econ.Rev. 92(May),9095.

– Cogley, Timothy, Sargent, Thomas J., 2005. Drifts and volatilities: monetary policies and outcomes in the post WWII US. Rev. Econ. Dyn. 8 (2), 262-302.

– Engle, R. F., D. F. Hendry, and J.-F. Richard, (1983), "Exogeneity," Econometrica, 51, 277-305.

– Gertler, M., and P. Karadi. 2015. Monetary Policy Surprises, Credit Costs, and Economic Activity. AEJ: Macroeconomics, 7: 44-76.

– Granger, C. W. J. (1980), "Testing for Causality: A Personal Viewpoint," Journal
of Economic Dynamics and Control, 2, 329-352

– Granger, C. W. J. (1989), Modelling Economic Series, Oxford: Oxford University Press.

– Hendry, D. F. (1995), Dynamic Econometrics, Oxford: Oxford University Press.

– Hoover, K. D. and S. M. She rin, (1992), " Causation, Spending, and Taxes: Sand in the Sandbox or Tax Collector for the Welfare State?" American Economic Review; 82(1), 225- 48.

– Jorda, Oscar. 2005. Estimation and Inference of Impulse Responses by Local Projections. The American Economic Review, 95: 161-182.

– Kilian, Lutz and Helmut Lutkepohl 'Structural Vector Autoregressive Analysis', Cambridge University Press, 2017.

– Kilian, Lutz. 2008. Exogenous Oil Supply Shocks: How Big Are They and How Much Do They Matter for the U.S. Economy? The Review of Economics and Statistics, 90(2): 216240.

– King, R.G. and M. Watson (1997), "Testing Long-Run Neutrality," Federal Reserve Bank of Richmond Economic Quarterly, Vol. 83/3.

– Mavroeidis, Sophocles, Mikkel Plagborg-Moller, and James H. Stock. 2014. Empirical Evidence on Inflation Expectations in the New Keynesian Phillips Curve. Journal of Economic Literature, 52: 124-188.

– Mertens, Karel, and Morten O. Ravn. 2013. The Dynamic E ects of Personal and Corporate Income Tax Changes in the United States. American Economic Review, 103(4): 12121247.

– Ramey, Valerie A., and Sarah Zubairy. 2018. Government Spending Multipliers in Good Times and in Bad: Evidence from U.S. Historical Data. Journal of Political Economy, 126.

– Ramey, Valery. 2016. Macroeconomic Shocks and Their Propagation. In Hand book of Macroeconomics. , ed. J. B. Taylor and H. Uhlig. Amsterdam, North Holland:Elsevier.

– Rigobon, R., 2003. Identification through heteroskedasticity. Rev. Econ. Stat.85, 777-792.

– Romer, Christina D., and David H. Romer. 2004. A New Measure of Monetary Shocks: Derivation and Implications. American Economic Review, 94: 1055-1084.

– Sarte, P-D (1997), "On the Identification of Structural Vector Autoregressions,"

– Sims, C.A. (1980), "Macroeconomics and Reality," Econometrica, 48, 1-48. Available in JSTOR.

– Sims, C.A. (1992), "Interpreting the Macroeconomic Time Series Facts: The Eects of Monetary Policy," European Economic Review.

– Swanson, N. R. and C. W. J. Granger, (1997), "Impulse Response Functions Based on a Causal Approach to Residual Orthogonalization in Vector Autoregressions," Journal of the American Statistical Association, 92(437), 357-367.

– Stock, James H., and Mark W. Watson. 2016. Chapter 8 - Dynamic Factor Models, Factor-Augmented Vector Autoregressions, and Structural Vector Autoregressions in Macroeconomics. In . Vol. 2 of Handbook of Macroeconomics, ,ed. John B. Taylor and Harald Uhlig, 415 525. Elsevier.

– Stock and Watson (2001), "Vector Autoregressions", Journal of Economic Perspectives, 15(4).

– Stock, James H., and Mark W. Watson. 2018. Identification and Estimation of Dynamic Causal Eects in Macroeconomics Using External Instruments. The Economic Journal, 128(610): 917-948.

– Uhlig, H., 2005. What are the eects of monetary policy on output? Results from an agnostic identification procedure. J. Monet. Econ. 52, 381-419.

– Watson, M. (1995), "VARs and Cointegration" chapter 47 in Handbook of Econometrics, Vol 4.

• State space methods and dynamic factor models

– Ahn, S.C., Horenstein, A.R., 2013. Eigenvalue ratio test for the number of factors. Econometrica 81, 1203-1227

– Aruoba, S.B., Diebold, F.X., Scotti, C., 2009. Real-time measurement of business conditions. J. Bus. Econ.Stat. 27, 417-427

– Bai, J., 2003. Inferential theory for factor models of large dimensions. Econometrica 71, 135172.

– Bai, J. and Ng, S.: 2002, Determining the Number of Factors in Approximate Factor Models, Econometrica 70, 191-221.

– Bai, J. and Ng, S.: 2008, Large Dimensional Factor Analysis, Foundations and Trends in Econometrics 3, 89-163.

– Bernanke, B. S., Boivin, J. and Eliasz, P.: 2005, Measuring the Eects of Monetary Policy: A Factor-Augmented Vector Autoregressive (FAVAR) Approach, Quarterly Journal of Economics 120, 387-422.

– Breitung, J., Eickmeier, S., 2011. Testing for structural breaks in dynamic factor models. J. Econ.163, 71-84.

– Breitung, J., Tenhofen, J., 2011. GLS estimation of dynamic factor models. J.Am. Stat. Assoc.106, 11501166.

– Doz, C., Giannone, D., Reichlin, L., 2011. A two-step estimator for large approximate dynamic factor models based on Kalman filtering. J. Econ. 164 (1),188-205.

– Doz, C., Giannone, D., Reichlin, L., 2012. A quasi maximum likelihood approach for large approximate dynamic factor models. Rev. Econ. Stat. 94, 1014-1024.

– Durbin, J. and Koopman, S. J.: 2012, Time Series Analysis by State Space Methods

– Engle, R.F., Watson, M.W., 1981. A one-factor multivariate time series model of metropolitan wage rates.J. Am. Stat. Assoc. 76, 774-781.

– Engle, R.F., Watson, M.W., 1983. Alternative algorithms for estimation of dynamic MIMIC, factor, andtime varying coe cient regression models. J. Econ. 23, 385-400.

– Harvey, A.C. (1993), Time Series Models

– Onatski, A.: 2009, Testing Hypotheses About the Number of Factors in Large Factor Models, Econometrica 77, 1447-1479.

– Stock, J. H. and Watson, M. W.: 2002a, Forecasting Using Principal Components From a Large Number of Predictors, Journal of the American Statistical Association 97, 1167-1179.

– Stock, J. H. and Watson, M. W.: 2002b, Macroeconomic Forecasting Using Diffusion Indexes, Journal of Business and Economic Statistics 220, 147-162.

– Stock, James H., and Mark W. Watson. 2016. Chapter 8 - Dynamic Factor Models, Factor-Augmented Vector Autoregressions, and Structural Vector Autoregressions in Macroeconomics. In . Vol. 2 of Handbook of Macroeconomics, ,ed. John B. Taylor and Harald Uhlig, 415-525. Elsevier.

This reading list is preliminary and updates will follow before the course begins.

ADDITIONAL INFORMATION*:*

The student may withdraw the course, without refund, up to one business day before the date of the final test stipulated by the teacher. The University will not return the money for tuition payed for these summer courses.