

**University of Kansas**  
**Department of Economics**

**Economics 911**  
**Applied Macroeconomics**

**Fall 2009**  
**Professor Keating**

Office Hours: Mondays and Wednesdays from 2 to 3:30 (or longer if needed and I am able);  
Otherwise I am often available by appointment.

**Course Description:** This is an advanced PhD-level course in macroeconomics. We will study macroeconomic issues using various tools of applied economic analysis. The course will focus on developing empirical techniques that are primarily, though not exclusively, applications of the structural VAR model. These tools are used to provide answers to important macroeconomic questions. In contrast to a course in time series econometrics, this class will emphasize issues pertaining to structural identification and de-emphasize, though not ignore, issues pertaining to statistical inference.

**Student Interests:** Feel free to give me feedback regarding topics you find appealing that are excluded from this syllabus or topics listed on the syllabus that you either like a lot a lot or don't like very much. You can send your opinions by e-mail or by hard copy in my mailbox (this second option gives you anonymity if you don't sign your name). If you want to express any preferences, please do so ASAP.

**Grading** is based on a midterm examination and possibly also a paper. If you don't hand in a paper then your course grade will be one letter grade lower than your midterm grade. If you also hand in a paper, then the paper and the midterm are given equal weight in your grade for the course.

**Midterm:** The midterm examination will be an open book test. Once you have picked up the test you are not permitted to communicate about this exam with anyone else using any means. I intend for this test to be a take-home (24 hour) exam and for it to be given some time near the end of the semester. Test questions may be drawn from any material covered in class prior to the examination. We will try to arrange a mutually agreeable date for the exam, but if unable to agree on a date, then the midterm will be administered in the final exam period (see the course schedule for time and date). In this case you would only be allowed about 3 hours to take the exam.

**Paper:** There are three paper options: (1) Option A: write a paper that includes some original research; (2) Option B: present someone else's high quality research in class; or (3) NO PAPER OPTION: don't write a paper or present research in class. As soon as possible discuss with me the option you are choosing and your paper topic, unless you are choosing this last option. If you want to present a paper in class (Option B), then we need to try to put this into the schedule reasonably soon. If you tell me you have chosen a paper option, but fail to provide me with the paper or do not provide the in-class presentation by the deadline, then by default you will have selected the No Paper Option.

**No Paper Option:** Your course grade is one letter grade below your grade on the Midterm (e.g. if you get an A on the midterm, you will be given a B for the course). This is the default option if you fail to tell me otherwise. Also, if the deadline passes and you still have not submitted your paper and established (i.e. recontracted with me) a new deadline, then by default you will have selected this option.

**Paper Option A:** The paper is due at the time our final is scheduled to conclude, Wednesday, December 16 at 1 pm. This paper serves as a final exam. I may be willing to extend this deadline somewhat, but I do need to have all papers in time to get grades done by the university's grading deadline. If you are unable to hand in the paper by that date, you must commit to me in e-mail a future deadline for handing in the paper. The paper should be based on some new research that you do on an interesting and important macroeconomic topic. You will write a paper that documents what you've accomplished, how your work is related to existing research (e.g. it may complement, question, or refute other research), what macroeconomic implications can be derived from your research, and where this research should go next. The topic can be theoretical and/or empirical on anything that interests you,

subject to the constraint that the topic be of interest to macroeconomists. Hence, the range of topics is fairly wide open. Your paper is allowed to provide a careful review of the relevant literature, but should then attempt to break new ground with some original research. Your grade for the paper will be based on how much you are trying to accomplish in your paper, how well your research plan is designed to answer the questions you address, and how well you answer those questions. Your paper should not merely review a literature. If that is the kind of paper you are thinking about writing, then I would recommend to you the next option. It is optimal for you to be writing a paper that will become a chapter in your dissertation. But that is certainly not a requirement. An easy way to perform new research is to apply an existing method to a new data set or alternatively to make some small but significant and hopefully important modification to someone else's model. If the model is theoretical then you would determine how the economy behaves differently under your new assumption and if the model is econometric you would estimate it and examine how the model is affected by your new assumptions.

**Paper Option B:** Present in class an existing paper or a selection of findings/results from a group of related papers. The presentation does not need to be based on your own research. But the paper(s) should make important contributions (in terms of theory and/or econometrics) to current research. Of course, the subject matter must be on a macroeconomic topic. The paper(s) you present need not be published. In fact, recent working papers are usually closest to the research frontier and therefore may be of more interest. Your grade for the presentation will be based on the importance of the material that you select, relevance to the material covered in this course, how well you present that material and how well you respond to questions from the audience (myself and the students in attendance) about the paper(s) you present. If a paper appears on the syllabus, that is one way to indicate relevance to the course, but that is not a necessary condition for relevancy. Keep in mind that time is a significant constraint. If you take an entire class period to present work that should only require half a class period, I must factor this inefficient use of class time into your paper grade. The topic and material that you choose must be approved by me.

If you choose Option A, your research program is well-developed and your work fits nicely with the Econ 911 topics, I may also give you the option to present your research in class. We could call this one Option AB. However, this option has never actually been taken because: (i) people who chose Option B get first choice for presentation dates; (ii) there is a limit on class time we can allocate for presentations; and (iii) by the time you make clear to me that your paper should be given this option, it may be too late to fit your presentation into our schedule.

**My Web Page:** <http://www.people.ku.edu/~jkeating/> has links to My Courses, My Working Papers, My Publications, as well as to Other Research, Resources, News, Etc.. This last selection provides links to a variety of sources for Published Articles, Working Papers, Research Resources, Teaching Resources, News Sources and some other items (ETC.). Typically, I will use my Web page to distribute important course materials (e.g. homework assignments, solutions, etc.). However, if there is something that I don't wish to make publically available, or that I am not allowed to make public, I will use BlackBoard. (I do not post grades on BlackBoard)

**Readings:** There are a great many articles and books listed in this syllabus. Perhaps no one in the whole world could read all of these selections in one semester. I only expect you to read material that I stress in class or material that you find particularly engrossing.

**Textbooks:** I have ordered a few textbooks for this semester course. There are also various other books that you should have access to. I suggest you obtain any book that will benefit you in completing your dissertation or in your professional career, of course subject to your budget constraint. In the reading list a KEYWORD is accompanied by chapter, section, etc. to indicate relevant readings from books or on-line lectures notes. The book include:

CANOVA=*Methods for Applied Macroeconometric Research*, Fabio Canova, Princeton, 2007.

HELMUT = *Introduction to Multiple Time Series Analysis*, 2<sup>nd</sup> ed., Helmut Lutkepohl, Springer, 1993;

ENDERS = *Applied Econometric Time Series*, Walter Enders, 2<sup>nd</sup> ed., Wiley, 2003.  
 TSA = *Time Series Analysis*, Jim Hamilton, Princeton University Press, 1994  
 HAYASHI = *Econometrics*, Fumio Hayashi, Princeton University Press, 2000  
 ADDACOOOPER = *Dynamic Economics: Quantitative Methods and Applications*, Jerome Adda & Russell W. Cooper, MIT Press, 2003;  
 WOODFORD = *Interest and Prices: Foundations of a Theory of Monetary Policy*, Michael Woodford, Princeton University Press, 2003;  
 WALSH = *Monetary Theory and Policy*, 2<sup>nd</sup> ed., Walsh, Carl E., MIT Press, 2003;  
 LS = *Rational Expectations and Econometric Practice*, R. Lucas and T. Sargent eds. University of Minnesota Press, 1981.  
 FAVERO = *Applied Macroeconometrics*, Favero, Carlo, Oxford University Press, 2001

**On-line Texts:** The list of on-line texts continues to grow. Some that are relevant for this course include:

PAGAN&DENNIS = [Modern Macro-Econometrics](#), a course by Adrian Pagan & Richard Dennis, taught at the Center for Applied Macroeconomic Analysis at the Australian National University.  
 COCHRANE = [Time Series for Macroeconomics and Finance](#), John Cochrane's intro to time series;  
 PAGAN = [Applied Macroeconometrics](#), a Web page for a course Adrian Pagan taught at Johns Hopkins (Pagan also has taught a 1<sup>st</sup> year course in [Econometrics](#) and provides lecture notes for that course too);  
 HANSEN = [Econometrics](#), Bruce Hansen's notes for a 1<sup>st</sup> year text in econometrics;  
 JUSELIUS = *The Cointegrated VAR Model: Econometric Methodology and Empirical Applications*, Katarina Juselius, found by going to <http://www.econ.ku.dk/okokj/>, paging down on right side of the page until you get to "Lecture plan for [Advanced Econometrics 2005](#)", then clicking on the underlined course title. This page provides links to chapters by number and by course topic;  
 OGAKI = *Structural Macroeconometrics*, by Masao Ogaki, [Kyungho Jang](#), and Hyung-Seok Lim: Click on second author and at the next page click "Book" to get to the various chapters;  
 BIERENS = [Econometrics Lecture Notes](#) for advanced course work;  
 MIT = [Time Series Analysis Lecture Notes](#) for an advanced time series econometrics course at MIT;  
 ZIVOT = [Time Series Econometrics Lecture Notes](#) by Eric Zivot, some typed, others handwritten.

Harold Uhlig at: <http://www.wiwi.hu-berlin.de/wpol/html/toolkit.htm> provides his paper "A toolkit for analyzing nonlinear economic dynamic models easily" as well as some programs for analyzing dynamic stochastic general equilibrium models. Most of the work on DSGE models requires the use of MATLAB, and Uhlig is no exception. However, Uhlig and a computer programmer have developed a package called DynaMo that will allow you to simulate and study some of the most well-known DSGE models from the literature without the need to purchase or master MATLAB.

Those of you with strong interests in financial econometrics might wish to purchase *Financial Econometrics: Problems Models and Methods* by Christian Gourieroux and Joann Jasiak, Princeton University Press, 2001 or *The Econometrics of Financial Markets*, by John Y. Campbell, Andrew W. Lo and A. Craig MacKinlay, Princeton University Press, 1997. Many of the tools we use to answer macro questions are used in these books to deal with financial applications, and some of tools used in these books are hardly used at all in macroeconometrics. Nelson Mark's *International Macroeconomics and Finance* (Blackwell 2001) is more related to the material that we cover in this course.

The syllabus has many references to National Bureau of Economic Research Working Papers (denoted NBER WP). Since the Economics Department subscribes to this series you can download these papers for yourself or use the department's hard copy (if you can find it) to make a copy for yourself. The syllabus references other working papers, some which come from other universities and some from the Federal Reserve System. Most items from the 12 Federal Reserve Banks and from the Board of Governors of the Federal Reserve System may be ordered free of charge or downloaded from the Web.

You may order items from the Web or you may call the Feds (the only toll free numbers that I know are as follows: Kansas City Fed (800)333-1010; St. Louis Fed 800-333-0810; and Dallas Fed 800-333-4460).

The University subscribes to most of the journals referenced here, and therefore many published papers are available on the Web. Another source is called JSTOR, from which you are currently able to download articles from a wide selection of journals. The primary limitation with JSTOR is that it will not allow us to download the last 5 years or so of the journal (sometimes its less that 5). Also, ECONLIT is a useful tool for tracking down papers, primarily papers that are published in relatively good journal and those that are NBER Working Papers. I believe Professor Iwata still has a useful Web page that allows people to access articles in journals.

**Statistical Programs**, should you need them to write the paper, are left to your own discretion. If you decide to use RATS programming language, you may want to order the *RATS Handbook for Econometric Time Series* (Wiley) by Walter Enders. This manual helps you easily accomplish a lot of important tasks in RATS. This book and other texts can be purchased from Estima (the producer of RATS software), the publisher or from the Web. I'm guessing most of you really like E-Views because this software package allows you to easily implement many complicated econometric techniques. But ease of use has its costs. E-Views is not very flexible for doing some things out of the ordinary. With E-Views you are often limited to standard applications of well-known procedures, and can't easily, if at all, do something too different from the standard application. Sometimes a referee (or maybe even a dissertation adviser) will ask you to do something E-Views won't easily permit. But E-Views continues to get better.

#### **Additional Abbreviations:**

ECMT=Econometrica	BPEA=Brookings Papers on Economic Activity
JMCB=Journal of Money, Credit, and Banking	AER=American Economic Review
QJE=Quarterly Journal of Economics	RESTAT=Review of Economics and Statistics
CRCS=Carnegie-Rochester Conference Series	JME=Journal of Monetary Economics
JPE=Journal of Political Economy	JFE=Journal of Financial Economics
EER=European Economics Review	JEDC=Journal of Economic Dynamics and Control
JMACRO=Journal of Macroeconomics	JECMTS=Journal of Econometrics
HBMAC=Handbook of Macroeconomics	HBECMTS=Handbook of Econometrics

## **Course Outline**

### **1. Introduction to Identification and Time Series Analysis**

Symposium on Econometric Tools, *Journal of Economic Perspectives*, Vol. 15, No. 4, Fall 2001

(in particular: "Mismeasured Variables in Econometric Analysis: Problems from the Right and Problems from the Left" by Jerry Hausman, 57-68; "Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments" by Joshua D. Angrist and Alan B. Krueger, 69-87; "Applications of Generalized Method of Moments Estimation" Jeffrey M. Wooldridge, 87-100; "Vector Autoregressions" by James H. Stock and Mark W. Watson, 101-116; "The New Econometrics of Structural Change: Dating Breaks in U.S. Labor Productivity" by Bruce E. Hansen, 117-128; "The Bootstrap and Multiple Imputations: Harnessing Increased Computing Power for Improved Statistical Tests" by David Brownstone and Robert Valletta, 129-142)

Journal of Econometrics, Volume 112, Issue 1,(January 2003):

The issue is devoted primarily to testing for causality. Authors include Clive W. J. Granger, James

Heckman, Donald B. Rubin, James M. Robins, Jerry A. Hausman, John Geweke, Kevin D. Hoover, Jean-Pierre Florens, P. Adams, M. D. Hurd, D. McFadden, A. Merrill, T. Ribeiro, Jérôme Adda, Tarani Chandola, Michael Marmot, James M. Poterba and Fabrizia Mealli.

Heckman, James J., (2005) "The Scientific Model of Causality" *Sociological Methodology*, 1-98

Heckman J. "Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective" *QJE* 115(1), February 2000, p 45-97. (also NBER WP #7333)

Slutsky E. "The Summation of Random Causes as the Source of Cyclic Processes" *ECMT* 1937, 105-146

Sargent, T. J. *Macroeconomic Theory*, 1987, Academic Press, 285-288

Frisch R. "Propagation and Impulse Problems in Dynamic Economics," in R.A. Gordon and L.R. Klein, *Readings in Business Cycles*, 1965, 155-185

Haavelmo, T. "The probability approach in econometrics", *Supplement to Econometrica* 12, July 1944

JUSELIUS: 1,2

## **2. Tools for Dynamic Analysis**

CANOVA: 1,3,4

HELMUT: 1,2,3,4

COCHRANE: 1,2,3,4,5,6,7

OGAKI: 1,2,3,4,8

HAYASHI: 1,2,3,4,6,8.4 through 8.7

ENDERS: 1,2,5

TSA: 1,2,3,4,10,11

FAVERO: 1,2,3,4,5,6

Canova F. "Vector Autoregressive Models: Specification, Estimation, Inference and Forecasting" in *Handbook of Applied Econometrics: Macroeconomics* ed. Pesaran and Wickens, Blackwell 1995

Canova F. "The Economics of VAR Models" in *Macroeconometrics: Developments, Tensions and Prospects* ed K.D. Hoover, Kluwer 1995

Sims, Christopher A. "Macroeconomics and Reality," *ECMT* 1980, 1-48

Cooley, T. and S. LeRoy "Atheoretical Macroeconomics: A Critique" *JME* 1985, 283-308

Keating J. "Structural Approaches to Vector Autoregressions," *St. Louis Fed Review* 1992, 37-57

Watson M. "Vector Autoregressions and Cointegration" *HBECMTS* chapter 47, section 4

Amisano G. and C. Giannini, *Topics in Structural VAR Econometrics*, Springer, 1997

## **2A. Bayesian VAR models**

CANOVA: 9,10

HELMUT: 5.4

TSA: 12

Doan, T., R.Litterman and C.Sims "Forecasting and Conditional Projection Using Realistic Prior Distributions," *Econometric Reviews* 1984, 1-144

Litterman, R. "Forecasting With Bayesian Vector Autoregressions--Five Years of Experience," *Journal of Business and Economic Statistics* 1986, 25-38

Sims C. "A Nine Variable Probabilistic Macroeconomic Forecasting Model" in *Business Cycles, Indicators and Forecasting*, 1993, eds. J. Stock and M. Watson

Ingram B. and C. Whiteman "Supplanting the Minnesota prior: Forecasting Macroeconomic Time Series Using Real Business Cycle Model Priors" *JME* 1994

Robertson J. and E. Tallman "Vector Autoregressions: Forecasting and Reality" *Atlanta Fed Review* 1999, 4-18

Sims C. & T. Zha "Bayesian Methods for Dynamic Multivariate Models" *International Economic Review*; 39(4), November 1998, pages 949-68.

## **2B. Asymmetric VAR models**

Helmut: 5

Hsiao, C. "Autoregressive Modeling and Money-Income Causality Detection," *JME* 1981, 85-106

Gordon R.J. and S. King "The Output Cost of Inflation in Traditional and Vector Autoregressive Models," *BPEA* 1982, 205-44

Keating J. "Asymmetric Vector Autoregression," *American Statistical Association*, 1993 Proceedings of the Business and Economic Statistics Section, 68-73

Keating J. "Macroeconomic Modeling with Asymmetric Vector Autoregressions," *JMACRO* 2000

## **2C. Inference on a VAR's Moving Average Representation (MAR)**

Lutkepohl, Helmut "Asymptotic of Impulse responses and Forecast Error Variance Decompositions in VAR Models" *RESTAT* 1990

Mittnik S. and P. Zadzorny "Asymptotic Distributions of Impulse Responses, Step Responses, and Variance Decompositions of Estimated Linear Dynamic Models," *ECMT* 1993

Runkle, D. "Vector Autoregressions and Reality," *Journal of Business and Economic Statistics* 1987, 437-54 (Also "Comments" by Blanchard, Sims and Watson)

Kilian, L. "Small Sample Confidence Intervals for Impulse Response Functions" *RESTAT* 1998, 218-230

Horowitz, J "The bootstrap" Chapter 52 in *Handbook of Econometrics*, Volume 5

Horowitz J. "Bootstrap Methods in Econometrics: Theory and Empirical Performance" presented at Econometric Society's 7th World Congress

Bradley Efron and Robert Tibshirani *An Introduction to the Bootstrap*, Chapman & Hall, 1993

Hall, P. "Methodology and Theory for the Bootstrap" in *HBECMTS* chapter 39

Sims C. and T. Zha "Error Bands for Impulse Responses" *ECMT* 67(5), September 1999, 1113-55.

Pesavento, Elena & Barbara Rossi "Small Sample Confidence Intervals for Multivariate Impulse Response Functions at Long Horizons" 2004 WP

Donald W. K. Andrews & Moshe Buchinsky "A Three-Step Method for Choosing the Number of Bootstrap Repetitions," *Econometrica*, 2000

Berkowitz & Kilian (2000) "Recent developments in bootstrapping time series" *Econometric Reviews*

Benkwitz, Neumann & Lütekpohl (2000) "Problems related to confidence intervals for impulse responses of autoregressive processes" *Econometric Reviews*

## **2D. VARMA Models**

Helmut: 6,7,8,9

Metaxoglou & Smith (2007) "Maximum likelihood estimation of VARMA models using a state-space EM algorithm" *Journal of Time Series Analysis*

Galbraith, Ullah & Zinde-Walsh (2002) "Estimation of the VARMA model by VAR" *Econometric Reviews*

Dufour J. & D. Pelletier" Linear estimation of weak VARMA models with a macroeconomic application"

## **2E. Local Projections**

Òscar Jordà, "Estimation and Inference of Impulse Responses by Local Projections," *The American Economic Review*, Vol. 95, No. 1, March 2005

## **2F. Seminal papers on SVAR (structural VAR) modeling**

Bernanke, B., (1986), "Alternative Explanations of the Money-Income Correlation", *Carnegie-Rochester Conference on Public Policy*, 25, 49-99.

Sims, C. (1986) "Policy analysis with econometric models" *Minneapolis Federal Reserve Bank, Quarterly Review*

Blanchard, Olivier J. and Mark Watson. "Are All Business Cycles Alike?" in *The American Business Cycle: Continuity and Change*, R.J. Gordon. Chicago: University of Chicago Press, 1986, pp. 123-156.

"Identification in Linear Simultaneous Equation Models with Covariance Restrictions: An Instrumental Variables Interpretation," J. A. Hausman and W. E. Taylor, *Econometrica*, 51, pp. 1527-1549.

### **3. Determining the Effects of a Shock to Monetary Policy**

#### **3A. Short-Run Identifying Restrictions**

Farmer R., *The Macroeconomics of Self-Fulfilling Prophecies*, Ch 11

Bernanke B. and A. Blinder "The Federal Funds Rate and the Channels of Monetary Transmission," *AER* 1992, 901-21

Leeper, E and D Gordon, "In Search of the Liquidity Effect," *JME* 1992

Christiano L., M. Eichenbaum and C. Evans "The Effects of Monetary Policy Shocks: Evidence from the Flow of Funds," *RESTAT* 1996, 16-34

Christiano L., M. Eichenbaum and C. Evans "Monetary Policy Shocks: What Have We Learned?" Chapter 2 *Handbook of Macroeconomics* (also NBER WP #6400)

Keating J. "Structural Information in Recursive VAR Orderings," *JEDC* 1996, 1557-1580

Eichenbaum, Martin and Charles Evans "Some Empirical Evidence on the Effects of Monetary Policy Shocks on Exchange Rates," *QJE*, 1995.

Soyoung Kim and Nouriel Roubini, Exchange rate anomalies in the industrial countries: A solution with a structural VAR approach, *Journal Of Monetary Economics* (45)3 (2000) pp. 561-586

Strongin, Steven "The Identification of Monetary Policy Disturbances: Explaining the Liquidity Puzzle" *JME* 1995, 463-97

Bernanke B. and I. Mihov "Measuring Monetary Policy" *QJE* 113(3), August 1998, pages 869-902 (also NBER WP #5145)

Leeper E. "Reducing Our Ignorance About Monetary Policy Effects" *Atlanta Fed Econ Review* 1995

Rudebusch G. "Do Measures of Monetary Policy in a VAR Make Sense?" *International Economic Review* 39(4), November 1998

Sims C. "Comment on Glenn Rudebusch's Do Measures of Monetary Policy in a VAR Make Sense?" *International Economic Review* 39(4), November 1998, pages 933-41

Evans C. and K.Kuttner "Can VARs Describe Monetary Policy?" Chicago Fed WP

Cover, J. "Asymmetric Effects of Positive and Negative Money-Supply Shocks" *QJE* 1992, 1261-82



Canova F. and G. De Nicro “Monetary Disturbances matter for Business Cycle Fluctuations in the G-7” JME, Volume 49, Issue 6, (September 2002) Pages 1131-1159 (also Board of Governors, International Finance Discussion Paper #660)

Dwyer M. “Impulse Response Priors for Discriminating Structural Vector Autoregressions” UCLA WP

Bagliano F. and C.Favero “Measuring Monetary Policy with VARs: An Evaluation” EER 1998, 1069-1112

Kim S. “Does Monetary Policy Matter in the G-7 Countries?: Using Common Identifying Assumptions about Monetary Policy Across Countries” *Journal of International Economics* 1999, 387-412

Leeper E. and T. Zha “Modest Policy Interventions” Atlanta Fed WP

Leeper E. and T. Zha “Assessing Simple Policy Rules: A View from a Complete Macroeconomic Model” St. Louis Fed Review, July 2001, 83-110

Bernanke B. & I. Mihov “The Liquidity Effect and Long-run Neutrality” CRCS 49, Dec. 1998, p 149-94

Jean Boivin & Marc Giannoni “Has Monetary Policy Become More Effective?” 2003, NBER WP 9459

Jordi Galí, J. David López-Salido and Javier Vallés, (2003) “Technology shocks and monetary policy: Assessing the Fed's performance”, AER Volume 50, Issue 4, May, Pages 723-743

Soyoung Kim, "International transmission of U.S. monetary policy shocks: Evidence from VAR's", JME, Volume 48, Issue 2,(October 2001), Pages 339-372

Andrew Ang and Monika Piazzesi, “A no-arbitrage vector autoregression of term structure dynamics with macroeconomic and latent variables”, JME Volume 50, Issue 4,(May 2003) Pages 745-787

Kenneth N. Kuttner “Monetary policy surprises and interest rates: Evidence from the Fed funds futures market”, JME, Volume 47, Issue 3,(June 2001) Pages 523-544

Cecchetti, Stephen G. & Georgios Karras, “Sources of output fluctuations during the interwar period: Further evidence on the causes of the Great Depression”, *Review of Economics and Statistics*, Vol.76,Issue 1, (Feb 1994), 80-102

Cochrane, John H. and Monika Piazzesi, “The Fed and Interest Rates – a High Frequency Identification” 2002 AER 92, 90-95.

Dueker, Mike, The monetary policy innovation paradox in VARs, A discrete explanation, St. Louis Fed Review, 2002.

Giordani, P. (2004) “An alternative explanation of the price puzzle” JME, 1271-1296

Hanson M. (2004) “The ‘price puzzle’ reconsidered” JME, 1385-1413

Brissimis & Magginas (2006) “Forward-looking information in VAR models & the price puzzle” JME

### **3B. Searching for Structure**

Demiralp S. and K. Hoover (2003) "Searching for the Causal Structure of a Vector Autoregression" *Oxford Bulletin of Economics and Statistics*, 745-67

Swanson N. and H. White "Impulse Response Functions Based on a Causal Approach to Residual Orthogonalization in Vector Autoregressions" *Journal of the American Statistical Association*; 92(437), March 1997, pages 357-67.

### **3C. Using Sign Restrictions**

Uhlig H. "What are the Effects of Monetary Policy on Output? Results from an Agnostic Identification Procedure" *JME* 2005, 381-419.

Faust J. "The Robustness of Identified VAR Conclusions about Money" CRCS 1998 (Also Uhlig's comments)

### **3D. The Narrative Approach**

Romer C. and D. Romer "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz," *NBER Macroeconomics Annual* 1989

Romer C. and D. Romer "New evidence on the monetary transmission mechanism," *BPEA* 1990

Boschen, J and L. Mills, "The Relation between Narrative and Money Market Indicators of Monetary Policy" *Economic Inquiry* 1995, 24-44

Shapiro, M. "Federal reserve policy: Cause and effect" Ch:9 in *Monetary Policy*, ed. G. Mankiw,

Hoover K. and S. Perez "Post Hoc Ergo Propter Hoc Once More: An Evaluation of Does Monetary Policy Matter? in the Spirit of James Tobin," *JME* 1994 (Also the response of Romer and Romer)

Leeper E. "Narrative and VAR Approaches to Monetary Policy: Common Identification Problems" *JME* 1997, 641-657 (Also the response of Romer and Romer)

Beaudry P. and M.Saito "Estimating the effects of monetary shocks: An evaluation of different approaches" *JME* 1998, 241-260

Christina D. Romer and David H. Romer, "A New Measure of Monetary Shocks: Derivation and Implications," *The American Economic Review*, Vol. 94, No. 4, September 2004

### **3E. Jim Hamilton's Approach**

Hamilton J. "The Daily Market for Federal Funds" *JPE* 1996, 26-56

Hamilton J. "Measuring the Liquidity Effect" *AER* 1997, 80-97

Hamilton J. "Supply and Demand for Federal Reserve Deposits" CRCS 1998 (and UCSD WP)

Hamilton, J. & O. Jorda, "A Model for the Federal Funds Rate Target" UC-Davis Econ Dept WP 98/07

Thornton, D. "Identifying the Liquidity Effect at the Daily Frequency" St. Louis Fed Review, July 2001, 59-78

Carpenter, Seth & Selva Demiralp "The Liquidity Effect in the Federal Funds Market, Evidence from daily open market operations" WP

### **3F. Long-Run Identifying Restrictions**

Keating J. "Postwar US Business Cycles in Models with Long-Run Monetary Neutrality,"

Fung B. and M.Kasumovich "Monetary Shocks in the G-6: Is There a Puzzle?" JME 1998, 575-592

Keating J. "Structural Inference with Long-Run Recursive Empirical Models" *Macroeconomic Dynamics* 2001.

Keating J. "When do Long-Run Recursive Identification Restrictions and Wold Orderings Yield Identical Results?" WP

### **3G. Introduction to Unit Roots**

HELMUT: 11

HAYASHI: 9

COCHRANE: 10

OGAKI: 13

ENDERS: 4

TSA: 15,16,17

Stock and Watson "Variable Trends in Economic Time Series," *Journal of Economic Perspectives* 1988 147-174

Stock J. "Unit Roots, Structural Breaks and Trends" HBECMTS chapter 46

Campbell, J. and P. Perron "Pitfalls and Opportunities: What Macroeconomists Should Know About Unit Roots," *NBER Macroeconomics Annual* 1991

Beveridge S. and C. Nelson "A New Approach to Decomposition of Economic Time Series into Permanent and Transitory Components with Particular Attention to Measurement of the Business Cycle," JME 1981, 151-174

Nelson, C. and C. Plosser "Trends and Random Walks in Macroeconomic Time Series: Some Evidence and Implications," JME 1982, 129-162

Phillips P. and Z.Xiao "A Primer on Unit Root Testing" *Journal of Economic Surveys* 12(5), December 1998, pages 423-69. (also Yale WP)

Dickey & Fuller "Distribution of the estimators for autoregressive time series with a unit root" JASA

1979, 427-431.

Dickey, D.A. and W.A. Fuller (1981). "Likelihood ratio statistics for autoregressive time series with a unit root," *Econometrica*, 49 1057-1052.

Phillips, PCB (1987). "Time series regression with a unit root," *Econometrica* 55, 277-301.

Phillips, PCB and P. Perron (1987). "Testing for a unit root in time series regression," *Biometrika*, 75 335-346.

D. Kwiatkowski, P. C. B. Phillips, P. Schmidt, and Y. Shin. "Testing the null hypothesis of stationarity against the alternative of a unit root" *JECMTS*, 54:159-178, 1992.

Elliot G., T.Rothenburg and J.Stock "Efficient Tests for Autoregressive Unit Root" *ECMT* 1996,813-836

Graham Elliott and James H. Stock, "Confidence intervals for autoregressive coefficients near one", *JECMTS*, Volume 103, Issues 1-2, (July 2001) Pages 155-181

Christiano L. and M. Eichenbaum "Unit Roots in Real GNP: Do We Know, and Do We Care?," *CRCS* 1990, 7-62, (and comments by J. Stock)

Dong Wan Shin and Oesook Lee "An instrumental variable approach for tests of unit roots and seasonal unit roots in asymmetric time series models" *JECMTS*, Volume 115, Issue 1, July 2003, Pages 29-52

Pierre Perron and Gabriel Rodríguez, *JECMTS*, Volume 115, Issue 1, (July 2003) "GLS detrending, efficient unit root tests and structural change", Pages 1-27

Peter C. B. Phillips, "New unit root asymptotics in the presence of deterministic trends", *JECMTS*, Volume 111, Issue 2,(December 2002) Pages 323-353

Serena Ng and Pierre Perron (2001) "Lag Length Selection and the Construction of Unit Root Tests with Good Size and Power ", *Econometrica*, 69:6, 1519-1554.

#### **4. The Effects of Aggregate Demand and Supply**

Blanchard, O.J. and D. Quah "The Dynamic Effects of Aggregate Demand and Supply Disturbances," *AER* 1989, 655-673

Gamber, E.N. and F.L. Joutz "The Dynamic Effects of Aggregate Demand and Supply Disturbances: Comment," *AER* 1993, 1387-1393

Cochrane, J "Shocks," *CRCS* December 1994, 295-364. (and Julio Rotemberg's comments)

Quah D. "The Relative Importance of Permanent and Transitory Components: Identification and Some Theoretical Bounds" *ECMT* 1992, 107-118

Gali, Jordi "How Well Does the IS-LM Model Fit Postwar U.S. Data?," *QJE* 1992, 709-38

Shapiro, M.D. and M.W. Watson "Sources of Business Cycle Fluctuations," *NBER Macroeconomics Annual* 1988, 111-148

Amed, S., B.W. Ickes, P. Wang and B.S. Yoo "International Business Cycles," *AER* 1993, 335-359

Keating J. and J. Nye "The Dynamic Effects of Aggregate Demand and Supply Disturbances in the G7 Countries," *JMACRO* 1999, 263-278

Keating J. and J. Nye "Permanent and Transitory Shocks in Real Output: Estimates from Nineteenth Century and Postwar Economies," *JMCB* 1998, 231-251

Keating J. "Interpreting Permanent and Transitory Shocks to Output When Aggregate Demand may not be Neutral in the Long Run" 2004 WP

Chang-Jin Kim, Jeremy Piger & Richard Startz "Permanent and Transitory Components of Business Cycles: Their Relative Importance and Dynamic Relationship" St. Louis Fed WP 2001-017B

King R., C. Plosser, J. Stock and M. Watson "Stochastic Trends and Economic Fluctuations" *AER* 1991

Mellander E., A. Vredin and A. Warne "Stochastic Trends and Economic Fluctuations in a Small Open Economy" *Journal of Applied Econometrics* 1992, 369-394

Johansen S. and K. Juselius "Identification of the Long-Run and the Short-Run Structure: An Application to the ISLM Model" *JECMTS* 1994

Stephen G. Cecchetti & Robert W. Rich (2001) "Structural Estimates of the U.S. Sacrifice Ratio" *Journal of Business & Economic Statistics* Volume: 19 Number: 4 Page: 416-427

#### **4A. The Debate about Using SVAR models to Assess Real Business Cycle Models**

Gali J. "Technology, Employment and the Business Cycle: Do Technology Shocks Explain Aggregate Fluctuations?" *AER* 89(1), March 1999, pages 249-71

Francis N & V. Ramey (2005) "Is the technology driven real business cycle dead: Shocks and aggregate fluctuations revisited" *JME* 1379-1399.

Chari, V., P. Kehoe & E. McGrattan, (2005) "A Critique of Structural VARs using Business Cycle Theory", FRB-Minneapolis, Staff Report 364

Kehoe P. (2006) "How to Advance Theory with Structural VARs: Use the Sims-Cogley-Nason Approach" FRB-Minneapolis, Staff Report (This paper is essentially the published comments on the following paper in *Macroeconomics Annual*)

Lawrence J. Christiano, Martin Eichenbaum & Robert Vigfusson (2007) "Assessing Structural VARs" *NBER Macroeconomics Annual* 2006, Volume 21, Daron Acemoglu, Kenneth Rogoff, and Michael Woodford, editors, The MIT Press (See also Mark Watson's comments.

Lawrence J. Christiano, Martin Eichenbaum & Robert Vigfusson (2006) "Alternative Procedures for

Estimating Vector Autoregressions Identified with Long-Run Restrictions," *Journal of the European Economic Association*, 475-483

Jesús Fernández-Villaverde, Juan F. Rubio-Ramírez, Thomas J. Sargent and Mark W. Watson, "ABCs (and Ds) of Understanding VARs," *The American Economic Review*, Vol. 97, No. 3, June 2007

Ravenna F. (2007) "Vector autoregressions and reduced form representations of DSGE models" *JME* 2048-2064

Muller U. (2007) "A theory of robust long-run variance estimation" *JECMTS*, 1331-1352

#### **4B. Introduction to Cointegration**

HAYASHI: 10

OGAKI: 14,15,16

COCHRANE: 10

JUSELIUS: 34,5,6,7,8,9,10,11,12,13,14

TSA: 18,19,20

Watson M. "Vector Autoregressions and Cointegration" *HBECMTS* chapter 47, sections 2 and 3

Hoffman D. and R.Rasche, *Aggregate Money Demand Functions*, Kluwer 1996, Chapters 3 and 4.

Engle, R.F. and CWJ Granger (1987) "Cointegration and error correction: representation, estimation and testing," *Econometrica* 55, 251-276.

Stock, J.H and M.W. Watson (1988) "Testing for common trends," *JASA* , 83 1097-1107.

Johansen, S. (1988) "Statistical analysis and cointegrating vectors," *JEDC* 12, 231-254.

Phillips, PCB (1991) "Optimal inference in cointegrated systems," *Econometrica* 59, 283-306.

Søren Johansen "A small sample correction for tests of hypotheses on the cointegrating vectors", *JECMTS*, Volume 111, Issue 2, (December 2002) Pages 195-221

Phillips P. "Impulse Response and Forecast Error Variance Asymptotics in Nonstationary VARs" *JECMTS* 1998, 21-56

Lutkepohl H. and P. Saikkonen "Impulse Response Analysis in Infinite Order Cointegrated Vector Autoregressive Processes" *JECMTS* 1997, 127-157

Davidson J. "Structural Relations, Cointegration and Identification: Some Simple Results and their Application" *JECMTS* 1998, 87-113

Hsiao C. "Cointegration and Dynamic Simultaneous Equations Models" *ECMT* 1997, 647-670

Beyaert, A. & A Medina, "Computation of the Beveridge--Nelson decomposition in the case of cointegrated systems with  $I(0)$  variables" *Economics Letters*, Sept 2001

David F. Hendry & Katarina Juselius “Explaining Cointegration Analysis: Part I and Part 2” from David Hendry’s Working Papers

Peter Reinhard Hansen “Granger’s Representation Theorem: A Closed-Form Expression for I(1) Processes” Brown University Working Paper No. 00-19, April 2002

Gonzalo J. and S. Ng “A Systematic Framework for Analyzing the Dynamic Effects of Permanent and Transitory Shocks” JEDC, October 2001 (also Boston College WP)

#### **4C. Common cycles**

Engle, Robert F & Kozicki, Sharon, “Testing for Common Features” *Journal of Business and Economic Statistics*: 1993, 11 (4) 369-80

Chang-Jin Kim and Jeremy Piger “Common stochastic trends, common cycles, and asymmetry in economic fluctuations”, *JME*, Volume 49, Issue 6,(September 2002) Pages 1189-1211

João Victor Issler and Farshid Vahid, “Common cycles and the importance of transitory shocks to macroeconomic aggregates”, *JME*, Volume 47, Issue 3,(June 2001) Pages 449-475

A. Hecq, B. F. C. Palm, C. J.-P. Urbain “Separation, Weak exogeneity & P-T decompositions in cointegrated VAR Systems with Common Features, *Econometric Reviews*

Alain Hecq, Franz C. Palm, Jean-Pierre Urbain “Testing for common cyclical features in VAR models with Cointegration, CESifo Working Paper No. 451, 2001

#### **4D. Structural Factor Models**

Forni, Mario, Marco Lippi & Lucrezia Reichlin “Opening the Black Box: Structural Factor Models versus Structural VARs” 2003 WP

Reichlin, Lucrezia “Factor models in large cross-sections of time series” 2002 WP

Stock J. & M. Watson “Understanding changes in international business cycle dynamics” NBER WP #9859, 2003

Bernanke, Ben & Jean Boivin “Monetary policy in a data rich environment” NBER WP #8379, 2001

Bernanke, Ben S., Jean Boivin, Piotr Elias, (2005) “Measuring the Effects of Monetary Policy: A Factor-Augmented Vector Autoregressive (FAVAR) Approach” *QJE*, 387-422

Forni, M., Hallin, M., Lippi, M., and Reichlin, L. (2000), “The Generalized Dynamic Factor Model: Identification and Estimation,” *The Review of Economics and Statistics*, 82, 540–552.

Forni M., Hallin M., Lippi M., and Reichlin L. (2004), “The generalized dynamic factor model consistency & rates” *JECMTS*

Giannone, D., L. Reichlin & L.Sala, “VARs, common factors&the validation of equilibrium business

cycle models,” 2002 WP

Belviso & Milani, “Structural factor augmented VAR,” 2003 WP

Lippi, Marco & Daniel L. Thornton “A Dynamic Factor Analysis of the Response of U. S. Interest Rates to News” St. Louis Fed WP 2004

Bai, J., and Ng, S. (2001), “Determining the Number of Factors in Approximate Factor Models,” *Econometrica*, 70, 191–221.

Jushan Bai & Serena Ng “A PANIC Attack on Unit Roots and Cointegration,” *Econometrica*, Volume 72 Issue 4, July 2004

Sargent, T. J., and Sims, C. A. (1977), “Business Cycle Modeling Without Pretending to Have Too Much A Priori Economic Theory,” in *New Methods in Business Cycle Research*, eds. C. Sims et al., Minneapolis: Federal Reserve Bank of Minneapolis.

#### **4E. Identifying Fundamental Shocks using Model-Based Measures**

Evans, Charles & David Marshall “Economic Determinants of the Nominal Treasury Yield Curve” WP

#### **5. Is Sticky Price Adjustment Important for the Economy?**

Keating J. "Is Sticky Price Adjustment Important for Output Fluctuations?" WP

Ng S. “Can Sticky Prices Account for the Variations and Persistence in Real Exchange Rates?” *Journal of International Money and Finance*, (also Boston College WP)

Sims C. “Stickiness” CRCS Vol 49, December 1998, pages 317-56

Cogley T. “Empirical Evidence on Nominal Wage and Price Flexibility” *QJE* 1993, 475-491

Argia M. Sbordone " Prices and unit labor costs: a new test of price stickiness", *JME*, Volume 49, Issue 2,(March 2002) Pages 265-292

Kevin X. D. Huang and Zheng Liu, "Staggered price-setting, staggered wage-setting, and business cycle persistence", *Journal of Monetary Economics*, Volume 49, Issue 2 , March 2002, Pages 405-433

Roberts, John M. (2001): "How Well Does the New Keynesian Sticky-Price Model Fit the Data?" *Finance and Economics Discussion Series*, Staff WP 2001-13, Board of Governors

Rotemberg J.J. (1996) “Prices, Output and Hours: An Empirical Analysis Based on a Sticky Price Model” *Journal of Monetary Economics* 37 (3): 505-37.

Ireland, P.N. (2001) “Sticky-Price Models of the Business Cycle: Specification and Stability”, *Journal of Monetary Economics* 47: 3-18.

Gali, J. and M. Gertler (1999). “Inflation Dynamics: A Structural Econometric Analysis”. *Journal of*



Monetary Economics, 44 (2): 195-222, October.

Fuhrer, J. C. and Moore, G. (1995) "Inflation persistence", QJE, 110(1), 127–159.

Mankiw, N. G. and Reis, R. (2002) "Sticky information versus sticky prices: A proposal to replace the New Keynesian Phillips curve", Quarterly Journal of Economics, 117(4), 1295–1328

Christopher A. Sims "Implications of rational inattention" JME, 50 (2003) 665–690

Bills, M. & P. Klenow "Some evidence on the importance of sticky prices" 2003 WP

Mikhail Golosov & Robert E. Lucas, Jr. "Menu Costs & Phillips Curves NBER WP # 10187

Michael C. Davis, James D. Hamilton "Why Are Prices Sticky? The Dynamics of Wholesale Gasoline Prices" JMCB 2004 (and NBER WP # 9741)

## **6. Testing for Causal Relationships**

### **6A. Granger Causality and Economic Causality**

Granger C. "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods," ECMT 1969, 424-438 (also in LS)

Sims, Christopher A. "Money, Income and Causality," AER 1972, 540-552. (also in LS)

Leamer, Edward "Vector Autoregressions for Causal Inference," CRCS 1985

Geweke, J. "Inference and Causality in Economic Time Series" HBECMTS chapter 19

Boudjellaba H., J. Dufour and R. Roy "Simplified Conditions for Noncausality Between Vectors in Multivariate ARMA Models" JECMTS 1994

Engle R., D. Hendry and J. F. Richard "Exogeneity," ECMT 1983, 277-304

Ericsson N., D. Hendry and G. Mizon "Exogeneity, Cointegration and Economic Policy Analysis" Board of Governors, International Finance Discussion Paper

Christiano L.J. and L. Ljungqvist "Money Does Granger Cause Output in the Bivariate Money-Output Relation," JME 1988, 217-235

Stock and Watson "Interpreting the Evidence on Money-Income Causality," JECMTS 1989

Sims, C., J. Stock and M. Watson "Inference in Linear Time Series Models with Some Unit Roots," ECMT 58(1), January 1990, pages 113-44.

Toda, H. and P. Phillips, "Vector Autoregressions and Causality," ECMT 1993

Toda, H. and T. Yamamoto "Statistical Inference in Vector Autoregressions with Possibly Integrated

Processes" JECMTS 1995

Toda, H. and P. Phillips, "Vector Autoregression and Causality: A Theoretical Overview and Simulation Study" *Econometric Reviews* 1994

Jon Vilasuso, "Causality tests and conditional heteroskedasticity: Monte Carlo evidence", JECMTS, Volume 101, Issue 1, March 2001, Pages 25-35

Dufour, Pelletier & Renault (2006) "Short run and long run causality in time series, Inference" JECMTS, 337-362

Eichler M. (2007) "Granger causality and path diagrams for multivariate time series" JECMTS, 334-353.

### **6B. Judea Pearl's Methods**

Pearl, J. *Causality: Models, Reasoning and Inference*, Cambridge Univ.Press, 2000: Chapters 1 and 5.

### **6C. Roberto Rigobon's method**

ENDERS: 3

Rigobon R. "Identification through heteroskedasticity: Measuring contagion between Argentinean and Mexican sovereign bonds" NBER WP #7493

Rigobon R. "Contagion: How to measure it?" NBER WP #8118

Radditz C. & R. Rigobon "Monetary policy and sectoral shocks: Did the Fed react properly to the high-tech crisis" NBER WP #9835

Rigobon R. "On the measurement of the international propagation of shocks" NBER WP #7354

Rigobon R. & B. Sack "The impact of monetary policy on asset prices"

Rigobon R. & B. Sack "Measuring the reaction of monetary policy to the stock market" NBER WP #8350

### **6D. Kevin Hoover's Method**

Hoover K. & M. Siegler "Taxing and spending in the long view: The causal structure of US fiscal policy, 1791-1913" Oxford Economic Papers, 2000

Hoover, K. *The Methodology of Empirical Macroeconomics*, Cambridge Univ.Press, 2001

Hoover, K. *Causality in Macroeconomics*, Cambridge Univ.Press, 2001

Hoover K. "The Logic of Causal Inference: Econometrics and the Conditional Analysis of Causation" *Economics and Philosophy* 1990

Hoover K. "The Causal Direction between Money and Prices" JME 1991

Keating J. "Using Parameter Instability to Test for Causal Relationships" WP

White (2006) "Time-series estimation of the effects of natural experiments" JECMTS

## 7. Testing for Structural Breaks

Perron, P. (1989). "The great crash, the oil price shock and the unit root hypothesis", *Econometrica*, 57, 1357-1361.

Pierre Perron "Further evidence on breaking trend functions in macroeconomic variables" JECMTS 80 (1997) 355–385

Donald W. K. Andrews "Tests for Parameter Instability and Structural Change with Unknown Change Point" *Econometrica*, 1993 (and A Corrigendum to fix Table for critical values in January 2003)

Donald W. K. Andrews and Werner Ploberger "Optimal Tests when a Nuisance Parameter is Present Only Under the Alternative" *Econometrica*, Vol. 62, No. 6 (Nov., 1994), pp. 1383-1414.

Arturo Estrella, "Critical Values and P Values of Bessel Process Distributions: Computation and Application to Structural Break Tests" 2003 WP

Jean Boivin "Revisiting the Evidence on the Stability of Monetary VARs" WP 1999

Jushan Bai & Pierre Perron "Estimating and Testing Linear Models with Multiple Structural Changes" *Econometrica*, Vol. 66, No. 1. (Jan., 1998), pp. 47-78.

Jushan Bai & Pierre Perron (2003) "Critical values for multiple structural change tests" *The Econometrics Journal* Volume 6, Number: 1 Page: 72 -- 78

Jushan Bai & Pierre Perron "Multiple Structural Change Models: A Simulation Analysis" forthcoming in *Econometric Essays in Honor of Peter Phillips*, D. Corbae, S. Durlauf and B.E. Hansen (eds.), Cambridge University Press.

Jushan Bai and Pierre Perron, "Computation and Analysis of Multiple Structural Change Models", *Journal of Applied Econometrics*, Vol. 18, No. 1, 2003, pp. 1-22

Anindya Banerjee, Stepana Lazarova & Giovanni Urga "Bootstrapping Sequential Tests for Multiple Structural Breaks" 2003

Jushan Bai "Likelihood ratio tests for multiple structural changes" JECMTS 91 (1999)

Bai, J. (1997) "Estimating multiple breaks one at a time" *Econometric Theory*, 13, 315-352.

Bai J., R. Lumsdaine & J. Stock "Testing for and dating common breaks in multivariate time series" *Review of Economic Studies*, 1998.

Peter Reinhard Hansen, JECMTS, Volume 114, Issue 2, (June 2003) "Structural changes in the cointegrated vector autoregressive model", Pages 261-295

Giorgio E. Primiceri “Time Varying Structural Vector Autoregressions and Monetary Policy”, Princeton University WP 2002

Elliott, Graham & Ulrich K. Müller “Optimally Testing General Breaking Processes in Linear Time Series Models” 2003 WP

Z. Qu & P. Perron “Estimating and testing structural changes in multivariate regressions” 2004 WP

Andreas Beyer & Roger Farmer “Identifying the Monetary Transmission Mechanism using Structural Breaks” ECB WP

Antonio E. Noreiga & Luis M. Soria “Structural Breaks, Orders of Integration & the Neutrality Hypothesis: Further Evidence” WP

Bruce E. Hansen “Testing for structural change in conditional models” *JECMTS*, 2000

Altissimo & Corradi (2003) “Strong rules for detecting the number of breaks in a time series” *JECMTS*

## **8. Limitations and Pitfalls in Structural Time Series Modeling**

Pagan A. and J. Robertson “Structural Models of the Liquidity Effect” *RESTAT* 1998, 202-217

Faust J. and E. Leeper "When Do Long-Run Identifying Restrictions Give Reliable Results?" *Journal of Business and Economic Statistics* 1997, 345-353

Sarte P. “On the identification of structural vector autoregressions” *Richmond Fed Review* 1997, 45-67

Hansen L. and T. Sargent "Two Difficulties in Interpreting Vector Autoregressions" in *Rational Expectations Econometrics*, 1991, eds. L. Hansen & T. Sargent

Lippi M. and L. Reichlin “The dynamic effects of aggregate demand and supply disturbances: Comment” *AER* 1993, 644-652.

Blanchard O. and D. Quah “The dynamic effects of aggregate demand and supply disturbances: Reply” *AER* 1993, 653-658.

Lippi M. and L. Reichlin "VAR Analysis, Nonfundamental Representations, and Blaschke Matrices" *JME* 1994

Christiano L. and M. Eichenbaum "Temporal Aggregation and Structural Inference in Macroeconomics," *CRC* 1987

Marcet A. "Temporal Aggregation of Economic Time Series" in *Rational Expectations Econometrics* 1991 eds. L. Hansen & T. Sargent

Lippi M. and L. Reichlin “Trend Cycle Decompositions and Measures of Persistence: Does Time Aggregation Matter?” *Economic Journal* 1991, 314-323

Evans, G. and L. Reichlin "Information, Forecasts and Measurement of the Business Cycle," JME 1994

Braun P. and S. Mittnik "Misspecifications in Vector Autoregressions and Their Effects on Impulse Responses and Variance Decompositions" JECMTS 1993

Lippi M., and L.Reichlin "On the Persistence of Shocks to Economic Variables: A Common Misconception" JME 1992, 87-93

Cooley T. and M.Dwyer "Business Cycle Analysis Without Much Theory - A Look at Structural VARs" JME 1998,57-88

Daniel F. Waggoner and Tao Zha "Likelihood preserving normalization in multiple equation models", JECMTS, Volume 114, Issue 2, (June 2003) Pages 329-347

James Hamilton, Daniel F. Waggoner and Tao Zha (2007) "Normalization in Econometrics" *Econometric Reviews*

### **9. Testing Neutrality and Superneutrality Propositions**

Orphanides, A. and R. Solow "Money, Inflation and Growth" Ch:6 in *Handbook of Monetary Economics*, ed. B. Friedman and F. Hahn

Bullard J. "Testing Long-Run Monetary Neutrality Propositions: Lessons from the Recent Research" *St Louis Fed Review* 1999

Andres J. and I. Hernando "Does Inflation Harm Economic Growth?: Evidence from the OECD" 1997, NBER WP #6062

Kormendi, R. Meguire, P. "Macroeconomic Determinants of Growth: Cross-Country Evidence" JME 1985, 141-63

Levine R. and D. Renelt "A Sensitivity Analysis of Cross-Country Growth Regressions," AER 1992

Boschen, J. and L. Mills "Tests of Long-Run Neutrality Using Permanent Monetary and Real Shocks" JME 1995, 25-44

Bullard J. and J. Keating "The long-run relationship between inflation and output in postwar economies," JME 1995

Keating J. "Interpreting Permanent Shocks to Inflation when Money Growth is Endogenous" WP

King R. and M. Watson "Testing Long-Run Neutrality," *Richmond Fed Review* 1997

Fisher M. and J. Seater "Long-Run Neutrality and Superneutrality in an ARIMA Framework," AER 1993

McCallum, B "On Low-Frequency Estimates of Long-Run Relationships in Macroeconomics" JME, July 1984, pages 3-14.

Sang-Kun Bae and Ronald A. Ratti "Long-run neutrality, high inflation, and bank insolvencies in Argentina and Brazil" *Journal of Monetary Economics*, Volume 46, Issue 3 , December 2000, 581-604.

Rapach, David E. (2003) "International Evidence on the Long-Run Impact of Inflation," *Journal of Money, Credit, and Banking*, February 35(1): 23-48.

## **10. Expected Monetary Policy**

Leeper E., C. Sims and T. Zha "What Does Monetary Policy Do?" BPEA 1996, pages 1-63.

Bernanke B., M.Gertler and M.Watson "Systematic Monetary Policy and the Effects of Oil Price Shocks" BPEA 1997, 91-142

McCallum B. "Analysis of the Monetary Transmission Mechanism: Methodological Issues" NBER WP

Dotsey M. "The Importance of Systematic Monetary Policy for Economic Activity" *Richmond Fed Review* 1999, 41-59

Hoover, K. & O. Jorda "Measuring Systematic Monetary Policy" *St. Louis Fed Review*, July 2001, 113-138

## **11. The Effects of Fiscal Policy**

Blanchard O. and R.Perotti "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output" NBER WP #7269

Burnside C., M Eichenbaum and J Fisher "Assessing the Effects of Fiscal Policy" Northwestern WP

Eichenbaum M., J Fisher and W. Edelberg "Understanding the Effects of Shocks to Government Expenditures" *Review of Economics Dynamics* 1999, 166-206 (also NBER WP # 6737)

Sutherland A. "Fiscal Crises and Aggregate Demand: Can High Public Debt Reverse the Effects of Fiscal Policy?" *Journal of Public Economics* 1997, 147-162

Giavazzi F., T.Jappelli and M.Pagano "Searching for Non-Keynesian Effects of Fiscal Policy" WP

Eric Engen & R. Glenn Hubbard "Federal Government Debts and Interest Rates, NBER WP# 10681

J. Cummins, K. Hassett & R.G. Hubbard "A reconsideration of investment behavior using tax reforms as natural experiments" BPEA 1994

## **12. Policy Rules**

Bernanke B. & M. Woodford eds., *The Inflation Targeting Debate*, U of Chicago Press, 2005

"Inflation Targeting" July-August 2004 issue of *Economic Review* by the FRB of St. Louis

WOODFORD

Bernanke, B. & F.S. Mishkin "Inflation Targeting: A New Framework for Monetary Policy?" *Journal of Economic Perspectives*, 11(2), Spring 1997, pages 97-116.

Bernanke B., T. Laubach, F.S. Mishkin, and A. Posen, *Inflation targeting: Lessons from the international experience*, Princeton: Princeton University Press, 1999

Monetary Policy Rules, J. Taylor ed. 1999 NBER (University Of Chicago Press)

*Reducing Inflation: Motivation and Strategy*, C. Romer and D. Romer eds. 1997 NBER (University of Chicago Press)

Clarida, R., J. Gali & M. Gertler "Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory" *QJE* 115(1), February 2000, pages 147-80.

Clarida R., J. Gali and M. Gertler "The Science of Monetary Policy: A New Keynesian Perspective" *Journal of Economic Literature* 37(4), December 1999, pages 1661-1707 (also NBER WP #7147)

Clarida R., J. Gali and M. Gertler "Monetary Policy Rules in Practice: Some International Evidence" *European Economic Review*; 42(6), June 1998, pages 1033-67. (also NBER WP #6254)

McCallum B.T. "Issues in the design of monetary policy rules" Chapter 23 *Handbook of Macroeconomics*

McCallum B. "Recent Developments in Monetary Policy Analysis: The Roles of Theory and Evidence" *Journal of Economic Methodology*; 6(2), July 1999, pages 171-98 (also NBER WP #7088)

Bennett T. McCallum "Multiple-solution indeterminacies in monetary policy analysis", *JME*, Volume 50, Issue 5, (July 2003) Pages 1153-1175 with Comment from Michael Woodford.

Levin A., V. Wieland and J. Williams "Robustness of Simple Monetary Policy Rules Under Model Uncertainty" 1998, NBER WP #6570

Tobin J "Monetary Policy: Rules, Targets and Shocks," *JMCB* 1983

Taylor J. "What Would Nominal GNP Targeting Do to the Business Cycle?," *CRCS* 1985

McCallum B. "Robustness Properties of a Rule for Monetary Policy", *CRCS* 29(0), Autumn 1988, pages 173-203

McCallum, B. "Could a Monetary Base Rule Have Prevented the Great Depression?" *JME* 26(1), August 1990, 3-26.

*Monetary Economics: Theory and Policy*, by B. McCallum, Chapter: 16

*Monetary Policy*, ed. G. Mankiw, Ch: 1,2

Taylor J. "Discretion versus Policy Rules in Practice" *CRCS* 39, December 1993, pages 195-214.

Taylor J. "How Should Monetary Policy Respond to Shocks While Maintaining Long-Run Price

Stability" in Kansas City Fed's *Achieving Price Stability* 1996

Svensson L "Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets" EER

Woodford M. "Nonstandard Indicators for Monetary Policy: Can Their Usefulness be Judged from Forecasting Regressions?" Ch:3 in *Monetary Policy*, ed. G. Mankiw

Bernanke B. and M. Woodford "Inflation Forecasts and Monetary Policy" JMCB 29(4), Part 2 November 1997, pages 653-84 (also NBER WP #6157)

### **13. Policy Analysis with Dynamic IS-LM Models**

WOODFORD

Benigno P. & M. Woodford "Optimal stabilization policy when wages&prices are sticky, The case of a distorted steady state," WP

Arseneau, D. "Expectation Traps in a New Keynesian Open Economy Model," Fed Board WP 200445

McCallum B. & E. Nelson "Targeting vs. Instrument Rules for Monetary Policy" 2004 WP

WALSH: Chapter 11

McCallum, B. E. Nelson "Monetary Policy for an Open Economy: An Alternative Framework with Optimizing Agents and Sticky Prices" Oxford Review of Economic Policy; 16(4), Winter 2000, pages 74-9

McCallum, B. E. Nelson "An Optimizing IS-LM Specification for Monetary Policy and Business Cycle Analysis" JMCB 31(3), Part 1 August 1999, pages 296-316

McCallum, B. E. Nelson "Nominal Income Targeting in an Open-Economy Optimizing Model" JME 43(3), June 1999, pages 553-78..

Fuhrer J. "Towards a Compact, Empirically-Verified Rational Expectations Model for Monetary Policy Analysis" CRCS 47 December 1997, pages 197-230..

Fuhrer J. "An Optimizing Model for Monetary Policy Analysis: Can Habit Formation Help?" Federal Reserve Bank of Boston Working Paper: 98/01, April 1998

Gali J. "Inflation Dynamics: A Structural Econometric Analysis" JME, Oct 1999, p. 195-222.

Peter N. Ireland "Technology Shocks in the New Keynesian Model", Boston College WP, June 2003

Rudd, J. and K. Whelan. "New Tests of the New Keynesian Phillips Curve." FEDS WP 2001-30, Board of Governors, July 2001.

### **14. Rational Expectations Econometrics**



Chapter 3 from Gregor Smith's [Macroeconomics Lecture Notes for a Masters Course](#)

Sargent, *Macroeconomic Theory*, Academic Press, 1987: chapter 9, pages 285-308, and chapter 14.

Hansen L. and T.Sargent "Formulating and Estimating Dynamic Linear Rational Expectations Models," JEDC 1981, 7-46. (LS)

Fuhrer J. & G. Olivei "Estimating forward looking Euler equations with GMM & maximum likelihood estimators, An optimal instruments approach," WP 2004

Soderlind P. "Solution and Estimation of Rational Expectations Macro models with Optimal Policy" EER 1999, 813-823

Gaspar J. and K.Judd "Solving Large Scale Rational Expectations Models" *Macroeconomic Dynamics* 1997, 45-75

Cogley, T. "Estimating and testing rational expectations models when the trend specification is uncertain" JEDC, October 2001

Cochrane J. "What do VARs Mean? Measuring the Output Effects of Monetary Policy" JME 1998

Keating J. "Identifying VAR Models under Rational Expectations," JME 1990, 453-476

Sarno, Lucio & Dan Thornton "The efficient market hypothesis and identification in structural VARs" St. Louis Fed Economic Review, 2004

## 15. Calibration

CANOVA: 7

FAVERO: 7,8

WALSH: Chapter 2

Dawkins, C., T.N. Srinivasan and J. Whalley, "Calibration" Chapter 58 in *Handbook of Econometrics*, Volume 5

Watson, M "Measures of Fit for Calibrated Models" JPE, 1993, pp. 1011-41.

Kim K. & Adrian Pagan "The Econometric Analysis of Calibrated Macroeconomic Models" Chapter 7 in *Handbook of Applied Econometrics Volume I: Macroeconomics*, H. Pesaran & M. Wickens Eds., Blackwell, 1999

Pagan A. "On Calibration" in D.E.A. Giles and A. Ullah, *Handbook of Applied Economic*

## 16. DSGE Models

DeJong, David with Chetan Dave (2007) *Structural Macroeconometrics*, Princeton.

CANOVA: 2,5,6,11

ADDACOOOPER

Judd K. *Numerical Methods in Economics*, MIT 1998

“Modern Macroeconomics in Practice: How Theory Is Shaping Policy” V. Chari & P. Kehoe, Minn WP

Finn E. Kydland, "Quantitative Aggregate Economics," *The American Economic Review*, Vol. 96, No. 5, December 2006

Frank Smets and Rafael Wouters, "Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach," *The American Economic Review*, Vol. 97, No. 3, June 2007

“Priors from General Equilibrium Models for VARs” Marco Del Negro and Frank Schorfheide  
FRB Atlanta Working Paper 2002-14

Ireland, Peter N. (1999): "A Method for Taking Models to the Data," Boston College Economics Department WP 421.

Leduc, S. & K. Sill “Monetary policy, oil shocks & TFP, Accounting for the decline in US volatility,”  
Phil Fed WP 2003

Ohanian L, A Stockman and L Kilian "The Effects of Real and Monetary Shocks in a Business Cycle Model with Some Sticky Prices," *JMCB* 1995

Rotemberg J. and M. Woodford "Dynamic General Equilibrium Models with Imperfectly Competitive Product Markets", 1995, in *Frontiers in Business Cycle Research* ed. T. Cooley

Yun T. "Nominal Price Rigidity, Money Supply Endogeneity, and Business Cycles," *JME* 1996, 35-70

King, R. and M. Watson, "Money, Prices, Interest Rates and the Business Cycle" *RESTAT* 1996, 35-53

Bernanke B., M. Gertler, and S. Gilcrest “The Financial Accelerator in a Quantitative Business Cycle Framework” HBMAC (also NBER WP)

### **17. Learning, Beliefs and Macroeconomics**

Primiceri G. (2006) “Why inflation rose and fell: Policymaker’s beliefs and US postwar stabilization” *QJE*, 867-901.

Thomas Sargent, Noah Williams and Tao Zha , “Shocks and Government Beliefs: The Rise and Fall of American Inflation,” *The American Economic Review*, Vol. 96, No. 4, September 2006

Sims C. “The Role of Models and Probabilities in the Monetary Policy Process” *BPEA*, 2002.

Brock W., S. Durlauf, and K. West “Policy Evaluation in Uncertain Economic Environments” *BPEA*, 2003.

*The Conquest of American Inflation*, Thomas J. Sargent, Princeton Univ. Press, 1999

*Learning and Expectations in Macroeconomics*, George Evans and Seppo Honkapohja, Princeton Univ. Press, 2001

George W. Evans & Seppo Honkapohja, "Policy interaction, expectations & the liquidity trap," 2003 WP

## **18. Large-Scale Macro Models**

Klein L., A. Welfe and W. Welfe, *Principles of Macroeconometric Modeling*, North-Holland, 1999

Taylor J., *Macroeconomic Policy in a World Economy: From Econometric Design to Practical Operation*, New York and London: Norton, 1993

Fair R., *Testing Macroeconometric Models*, Harvard, 1994

Fair R., *Estimating How the Macroeconomy Works*, Harvard, 2004 (preliminary version is at Fair's web page)

## **19. Macroeconomic Forecasting**

Stock, James H. and Watson Mark W. "Forecasting Using Principal Components From a Large Number of Predictors" *Journal of the American Statistical Association*, Dec. 2002, Vol. 97, No. 460, 1-13.

James H Stock; Mark W Watson (2002) "Macroeconomic Forecasting Using Diffusion Indexes" *Journal of Business and Economics Statistics* Volume 20 Number 2 Issue Apr 2002 , 147-162

Ben S. Bernanke & Jean Boivin "Monetary policy in a data-rich environment" *JME* 2003, 525-546

Watson, M.W. "Macroeconomic Forecasting Using Many Predictors" Princeton Univ. WP

Stock J.H. & M.W. Watson "Forecasting Output and Inflation: The Role of Asset Prices" NBER WP 8180

Stock J.H. & M.W. Watson "Forecasting Inflation" *JME*

Stock J.H. & M.W. Watson "A Comparison of Linear and Nonlinear Univariate Models for Forecasting Macroeconomic Time Series" NBER WP 6607

Diebold F. "The Past, Present, and Future of Macroeconomic Forecasting" *Journal of Economic Perspectives*, Vol. 12, No. 2, Spring 1998

Todd E. Clark and Michael W. McCracken, "Tests of equal forecast accuracy and encompassing for nested models", *JECMTS*, Volume 105, Issue 1, (November 2001) Pages 85-110

Kenneth D. West, "Encompassing tests when no model is encompassing", *JECMTS*, Volume 105, Issue 1, (November 2001) Pages 287-308

Valentina Corradi, Norman R. Swanson and Claudia Olivetti, "Predictive ability with cointegrated variables", JECMTS, Volume 105, Issue 1, (November 2001) Pages 315-358

Michael W. McCracken, "Robust out-of-sample inference", JECMTS, Volume 99, Issue 2, (December 2000) Pages 195-223

Michael Dueker "Forecasting qualitative variables with vector autoregressions: A Qual VAR model of US recessions, September 2001, St. Louis Fed WP

Amos Golan, "A simultaneous estimation and variable selection rule", JECMTS, Volume 101, Issue 1, March 2001, Pages 165-193

## **20. Oil Prices and the Macroeconomy**

James D. Hamilton, "What is an oil shock?", JECMTS, Volume 113, Issue 2, (April 2003) Pages 363-398

## **21. Nonlinear Time Series Modeling**

ENDERS: 7

Timothy Cogley and Thomas J. Sargent (2005) "Drifts and volatilities: Monetary Policies and outcomes in the post WWII US," *Review of Economics Dynamics*, 8: 262-302

Timothy Cogley and Thomas J. Sargent (2001) "Evolving Post World War II US Inflation Dynamics" NBER Macroeconomics Annual, 16: 331-373.