

## **EKONOMI MAKRO TERAPAN**

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Sesi : **7, 8, 9**

### **Silabus**

Tujuan utama kursus ini adalah untuk memperkenalkan alat-alat makroekonomi terapan. Penekanannya adalah pada teknik ekonometrik dan komputasi. Karena cara terbaik untuk belajar alat adalah dengan mempraktikkannya, Anda akan diminta untuk melakukan sejumlah latihan yang luas.

Daftar bacaan tidak dirancang untuk menjadi komprehensif. Sebaliknya, silabus berisi beberapa referensi berpengaruh untuk topik yang dipilih ditambah pilihan perlakuan mengarahkan topik. Anda diharapkan untuk membaca makalah untuk diskusi terlebih dahulu dan bersiap untuk membahasnya.

Perhatikan bahwa saya tidak akan memberikan solusi yang ditetapkan pada masalah atau komentar ekstensif pada set masalah individual. Pada dasarnya, saya hanya akan memastikan Anda melakukannya. Sebagai bagian dari pekerjaan rumah reguler, saya juga akan mengharuskan Anda untuk menulis proyek komputer. Proyek komputer dapat dilakukan dalam kelompok kecil (tidak lebih dari tiga siswa per kelompok), tetapi setiap pekerjaan rumah harus diserahkan secara individual. Bahasa pemrograman yang saya gunakan adalah MATLAB. Anda dapat menggunakan bahasa apa pun yang Anda sukai (GAUSS, FORTRAN90, C ++, dll.), tetapi saya akan memberi Anda bantuan dengan kode MATLAB saja.

Grade:

- 15% = Three referee reports (four pages, 1.5 spaced).
- 45% = Weekly homework assignments. Grading is check, check plus, check minus. Acceptable homework must have both report and code. The code should be self-contained so that anyone can run it. You should plan that each homework assignment takes about a day or more to complete. For each assignment, homework with the fastest code (in Matlab) receives a 50% premium.

- 40% = Project (replicate a paper or own idea). Deadline is May 12. No exceptions. Code must be provided with the project. Possible papers for replication (other papers are subject to instructor's approval):
  - o Klenow and Willis, JME 2007. Bernanke and Mihov, QJE 1998. Dotsey, King, Wolman, QJE 1999. Beaudry and Portier, AER 2006. Bernanke, Boivin, Elias, QJE 2005. Stock and Watson, JASA 2002.
  - o Cooper and Haltiwanger, REStud 2006.
  - o Prerequisites: first year graduate sequence in econometrics and macroeconomics.

Buku Teks Utama : David Romer. 2012. *Advanced Macroeconomics*. 4<sup>th</sup> ed. NY: The McGraw-Hill Series in Economics.

Buku Teks tambahan :

1. Fabio Canova. 2007. *Methods for Applied Macroeconomic Research*. Princeton University Press.

Disarankan

2. James Hamilton, 1994. *Time Series Analysis*. Princeton University Press.

3. Mario Miranda and Paul Fackler, 2002. *Applied Computational Economics and Finance*. MIT Press.

4. David De Jong and Chetan Dave, 2007. *Structural Macroeconometrics*. Princeton University Press.

5. Carlo Favero, 2001. *Applied Macroeconometrics*. Oxford University Press. Burkhard Heer and Alfred Maussner, 2005. *Dynamic General Equilibrium Modelling*. Springer.

6. Jerome Adda and Russell Cooper, 2003. *Dynamic Economics: Quantitative Methods and Applications*. MIT Press.

7. Helmut Lutkepohl, 1993. *Introduction to Multiple Time Series Analysis*. Springer-Verlag.

8. Fumio Hayashi, 2000. *Econometrics*. Princeton University Press.

9. Thomas Sargent and Lars Ljungqvist, 2004. *Recursive Macroeconomic Theory*, 2nd ed. MIT Press 2004.

10. Walter Enders, 2004. *Applied Econometric Time Series*. Wiley.

### Pembahasan:

Sesi	Bab	Materi
1	1	Introduction (LH)
2	2	The Solow Growth Model
3	3	Infinitive Horizon Overlapping Generation
4	4	Cross Country Income Differences
5	5	Endogenous Growth
6	6	Real Business Cycle
7	7	Nominal Rigidity
8		UTS
9	8	Dynamic Stochastic
10	9	Consumption
11	10	Investment
12	11	Unemployment

13	12	Inflation and Monetary Policy
14	13	Budget Deficit and Fiscal Policy
15	14	Penutup (Crisis Global) (KR)
16		UAS

## Tentative topics

### Introduction:

1. Univariate time series
  - a. ARIMA, estimation, lag selection,
  - b. Spectrum, filters, trend-cycle decompositions
2. Vector autoregressions
  - a. Estimation and inference
  - b. Impulse response, confidence intervals
  - c. Variance decomposition
  - d. Structural VAR: short-run and long-run identification
  - e. Cointegration
3. State space models, Kalman filter and dynamic factor models
4. DSGE
  - a. Linearization
  - b. Solution
  - c. Analysis and estimation: calibration, GMM, MLE, QBE, SMM
5. Dynamic programming
  - a. Introduction
  - b. Approximations and numerical solution
  - c. Uncertainty
  - d. Estimation
6. Models with heterogeneous agents (time permitting)

### Bacaan:

Larry Summers, 1991. "The Scientific Illusion of Empirical Macroeconomics," *Scandinavian Journal of Economics* 93(2): 129-148.

### 1. Univariate time series

- a. Theory
  - Hamilton, Chapters 3 and 6. Canova, Chapter 3.
  - DeJong and Chate, Chapter 3.
- b. Applications
  - Charles Nelson and Charles Plosser, 1982. "Trends and Random Walks in Macroeconomic Time Series: Some Evidence and Implications," *JME* 10(2): 139–162. [\[link\]](#)
  - Pierre Perron, 1989. "The Great Crash, the Oil Price Shock, and the Unit Root Hypothesis," *Econometrica* 57 (6): 1361-1401. [\[link\]](#)

- Marianne Baxter and Robert King, 1999. “Measuring Business Cycles: Approximate Bandpass Filters for Economic Time Series,” *REStat* 81(4):575–593. [[link](#)]
- Andrew Harvey and A. Jaeger, 1993, “Detrending, Stylized Factors, and the Business Cycle,” *Journal of Applied Econometrics* 8(3): 231–247. [[link](#)] Timothy Cogley and James Nason, 1995. “Effects of the Hodrick-Prescott Filter on Trend and Difference Stationary Time Series: Implications for Business Cycle Research,” *JEDC* 19(1-2): 253–278. [[link](#)]
- James Stock and Mark Watson, 1999. “Business Cycle Fluctuations in U.S. Macroeconomic Time Series,” *Handbook of Macroeconomics*, Chapter 1 (also available as NBER WP 6258).

## 2. Vector autoregressions

### a. Theory

- Canova, Chapter 4.
- Hamilton, Chapters 10, 11, and 19. Favero, Chapter 6.
- Lutkepohl, Chapters 2, 3 and 4.
- Lawrence J. Christiano, Martin Eichenbaum and Charles L. Evans, 1999. “Monetary policy shocks: What have we learned and to what end?” In *Handbook of Macroeconomics*, pp. 65-148. [[link](#)]

### b. Applications

- Matthew Shapiro and Mark Watson, 1988. “Sources of Business Cycle Fluctuations,” *NBER Macroeconomics Annual*, Vol. 3, pp. 111-148. [[link](#)]
- Olivier Blanchard and Danny Quah, 1988. “The Dynamic Effects of Aggregate Demand and Supply Disturbances,” *AER* 79(4), 655-673. [[link](#)]
- Jordi Gali, 1999. “Technology, Employment, and the Business Cycle: Do Technology Shocks Explain Aggregate Fluctuations?” *AER* 89(1), pp. 249-271. [[link](#)]
- Paul Beaudry and Franck Portier, 2006. “Stock Prices, News, and Economic Fluctuations,” *AER* 96 (4): 1293-1307. [[link](#)]
- Ben Bernanke and Ilian Mihov, 1998. “Measuring Monetary Policy,” *QJE* 113(3), pp. 869-902. [[link](#)]
- Ben Bernanke and Alan Blinder, 1992. “The Federal Funds Rate and the Channels of Monetary Transmission,” *AER* 82(4), pp. 901-921. [[link](#)]
- Robert King, Charles Plosser, James Stock, and Mark Watson, 1991. “Stochastic Trends and Economic Fluctuations,” *AER* 81(4), pp. 819-840. [[link](#)]
- Lawrence J. Christiano, Martin Eichenbaum and Charles L. Evans, 1999. “Monetary policy shocks: What have we learned and to what end?” In *Handbook of Macroeconomics*, pp. 65-148. [[link](#)]
- V. V. Chari, Patrick Kehoe, and Ellen McGrattan, 2005. “A Critique of Structural VARs Using Real Business Cycle Theory,” *Federal Reserve Bank of Minneapolis, Working Paper #631* [[link](#)]
- Lawrence Christiano, Martin Eichenbaum and Robert Vigfusson, 2006. “Assessing Structural VARs,” *NBER Macroeconomics Annual*, Vol. 21. [[link](#)]
- Christopher Sims, 1992. “Interpreting the Macroeconomic Time Series Facts: The Effects of Monetary Policy,” *EER* 36(5): 975-1000. [[link](#)]
- Christopher Sims, 1980. “Macroeconomics and reality,” *Econometrica* 48(1): 1-48. [[link](#)]

- Yuriy Gorodnichenko. 2006. “Reduced rank identification of structural shocks in VARs” [[link](#)]
- Jon Faust and John H. Rogers, 2003. “Monetary policy's role in exchange rate behavior,” *JME* 50(7): 1403-1424. [[link](#)]
- Lutz Kilian, 1999. “Small sample confidence intervals for impulse response functions,” *REStat* 80(2): 218-230. [[link](#)]

### 3. Kalman filter and dynamic factor models

#### a. Theory

- Hamilton, Chapter 13. Lutkepohl, Chapter 13. Canova, Chapter 11.1.
- Andrew Harvey, 1991. *Forecasting, Structural Time Series Models and the Kalman Filter*. Cambridge University Press.
- B.D.O. Anderson and J.B. Moore, 1979, *Optimal filtering*, Dover Publications, New York (reprinted in 2005).

#### b. Applications

- Jean Boivin and Marc Giannoni, 2006. “DSGE models in a data-rich environment,” mimeo. [[link](#)]
- James Stock and Mark Watson, 2002. “Forecasting using principal components from a large number of predictors,” *JASA* 97(460): 1167 -1179 [[link](#)]
- Mario Forni, Marc Hallin, Marco Lippi, and Lucrezia Reichlin (2000), “The Generalized Dynamic Factor Model: Identification and Estimation,” *REStat* 82(4): 540-554. [[link](#)]
- Ben Bernanke, Jean Boivin, and Piotr Eliaszc, 2005. “Measuring the effects of monetary policy: A factor-augmented vector autoregressive (FAVAR) approach,” *QJE* 120 (1): 387-422. [[link](#)]
- James Stock and Mark Watson, 2002. “Macroeconomic forecasting using diffusion indexes,” *JBES* 20 (2): 147-162.
- James Stock and Mark Watson, 1989. “New Indexes of Coincident and Leading Economic Indicators,” *NBER Macroeconomics Annual*.
- John Geweke, 1977. “The dynamic factor analysis of economic time series models,” in D.J. Aigner and A.S. Goldberger, Editors, *Latent variables in socio-economic models*, North-Holland, Amsterdam (1977), pp. 365–383 Chapter 19.
- Robert Townsend, 1983. “Forecasting the Forecasts of Others,” *JPE* 91(4): 546-588. [[link](#)]
- Guido Lorenzoni, 2006. *A Theory of Demand Shocks*. Mimeo. [[link](#)]
- Michael Woodford, 2002, “Imperfect Common Knowledge and the Effects of Monetary Policy,” in P. Aghion, R. Frydman, J. Stiglitz, and M. Woodford, eds., *Knowledge, Information, and Expectations in Modern Macroeconomics: In Honour of Edmund S. Phelps*, Princeton: Princeton University Press.
- Todd E. Clark and Kwanho Shin, 2000. “The Sources of Fluctuations within and across Countries,” in *Intranational Macroeconomics*, Gregory D. Hess and Eric van Wincoop, eds. Cambridge University Press.
- Ayhan Kose, Christopher Otrok, and Charles Whiteman, 2003. “Internasional Business Cycles: World, Region, and Country-Specific Factors,” *AER* 93(4): 1216-1239. [[link](#)]

- Gregory Connor and Robert Korajczyk, 1988. “Risk and return in an equilibrium APT: Application of a new test methodology,” *Journal of Financial Economics* 21(2): 255-289.

#### 4. DSGE

##### a. Theory

- Heer and Maussner, Chapter 2. Canova, Chapter 2.
- Favero, Chapter 8.
- DeJong and Chate, Chapter 2.
- Roger Farmer, 1999. *Macroeconomics of Self-fulfilling Prophecies*. MIT Press, Chapters 2 and 3.

##### b. Estimation and inference

- Canova, Chapters 5.4, 6.4, 7.
- De Jong and Chate, Chapters 6, 7 and 8.
- Victor Chernozhukov and Han Hong, 2003. “An MCMC approach to classical estimation,” *Journal of Econometrics* 115(2), pp 293-346. [\[link\]](#)
- Francisco Ruge-Murcia, 2007, “Methods to Estimate Dynamic Stochastic General Equilibrium Models,” *JEDC* 31 (8): 2599-2636. [\[link\]](#)
- Lecture notes from Frank Schorfheide (<http://www.econ.upenn.edu/~schorf/> )

##### c. Applications

- Finn E. Kydland; Edward C. Prescott, 1982. “Time to Build and Aggregate Fluctuations,” *Econometrica*. 50(6), pp. 1345-1370. [\[link\]](#)
- Frank Smets and Rafael Wouters, 2007. “Shocks and frictions in US business cycles: A Bayesian DSGE approach,” *AER* 97 (3): 586-606 [\[link\]](#)
- Peter Ireland, 2004. “Technology shocks in the New Keynesian model,” *REStat* 86 (4): 923-936 [\[link\]](#)
- Lawrence Christiano, Martin Eichenbaum, and Charles Evans, 2005. “Nominal rigidities and the dynamic effects of a shock to monetary policy,” *JPE* 113(1): 1-45. [\[link\]](#)
- Frank Smets and Rafael Wouters, 2002. “An Estimated Dynamic Stochastic General Equilibrium Model of the Euro Area,” *JEEA* 1(5): 1123-1175 [\[link\]](#)
- Craig Burnside, Martin Eichenbaum and Sergio Rebelo, 1993. “Labor Hoarding and the Business Cycle,” *JPE* 101, 245–273. [\[link\]](#)
- Richard Clarida, Jordi Gali, and Mark Gertler, 2000. “Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory,” *QJE* 115, 147–180. [\[link\]](#)
- Marco Del Negro, Frank Schorfheide, Frank Smets, and Raf Wouters, 2007, “On the Fit and Forecasting Performance of New Keynesian Models,” *JBES* 25, 123–143. [\[link\]](#)
- Christopher House and Matthew Shapiro, 2006. “Phased-in tax cuts and economic activity,” *AER* 96(3): 1835-1849. [\[link\]](#)
- Yuriy Gorodnichenko and Serena Ng, 2007. Estimation of DSGE models when data are persistent. Mimeo. [\[link\]](#)
- Jesus Fernandez-Villaverde, Juan Rubio-Ramirez, Tom Sargent, and Mark Watson, 2007. “ABCs (and Ds) of understanding VARs,” *AER* 97 (3): 1021-1026. [\[link\]](#)

#### 5. Dynamic programming

a. Theory, computation and estimation

- Miranda and Fackler, Chapters 6, 7, and 9. Adda and Cooper, Chapters 2 and 3.
- Heer and Maussner, Chapter 4.

b. Applications

- Russell Cooper and John Haltiwanger, 2006. “On the nature of capital adjustment costs,” *REStud* 73 (3): 611-633. [\[link\]](#)
- Margaret Slade, 1998. “Optimal pricing with costly adjustment: Evidence from retail-grocery prices,” *REStud* 65 (1): 87-107. [\[link\]](#)
- Glenn Hubbard, Jonathan Skinner and Stephen Zeldes , 1995. “Precautionary Saving and Social Insurance,” *JPE* 103(2): 360-399. [\[link\]](#)
- Christopher Carroll, 1994. “How Does Future Income Affect Current Consumption?” *QJE* 109(1): 111-147. [\[link\]](#)
- Pierre-Olivier Gourinchas and Jonathan Parker, 2002. “Consumption over the Life Cycle,” *Econometrica* 70(1): 47-89.
- Susumu Imai, Neelam Jain, and Andrew Ching, 2007. “Bayesian Estimation of Dynamic Discrete Choice Models,” mimeo [\[link\]](#)
- Edward Knotek, 2005. “Convenient Prices, Currency, and Nominal Rigidity: Theory with Evidence from Newspaper Prices,” Kansas Fed WP, [\[link\]](#)
- Andriy Norets, 2006. “Inference in Dynamic Discrete Choice Models with Serially Correlated Unobserved State Variables,” mimeo. [\[link\]](#)

## 6. Models with heterogeneous agents

a. Theory

- Heer and Maussner, Chapters 5 and 6.
- Victor Rios-Rull, 1995. “Models with Heterogeneous Agents,” in T. Cooley, ed., *Frontiers of Business Cycle Research*, Princeton University Press.
- Per Krusell and Antony Smith, 1998. “Income and wealth heterogeneity in the macroeconomy,” *JPE* 106(5): 867-896. [\[link\]](#)

b. Applications

- Per Krusell and Antony Smith, 1998. “Income and wealth heterogeneity in the macroeconomy,” *JPE* 106(5): 867-896. [\[link\]](#)
- Peter Klenow and Jonathan Willis, 2007. “Sticky information and sticky prices,” *JME* forthcoming [\[link\]](#)
- Mikhail Golosov and Robert Lucas, 2007. “Menu costs and Phillips curves,” *JPE* 115(2): 171-199. [\[link\]](#)
- Julia Thomas, 2002. “Is lumpy investment relevant for the business cycle?” *JPE* 110(3): 508-534. [\[link\]](#)
- Virgiliu Midrigan, 2006. “Menu Costs, Multi-Product Firms, and Aggregate Fluctuations,” mimeo. [\[link\]](#)
- Michael Dotsey, Robert King and Alexander Wolman, 1999. “State-dependent pricing and the general equilibrium dynamics of money and output,” *QJE* 114 (2): 655-690. [\[link\]](#)