Macroeconomic Theory 2
ECON 621

Markus Poschke

McGill University
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Course Objectives

This course is the second in a two-course sequence in macroeconomics. It will start with an introduction to dynamic programming, a powerful method for solving dynamic problems such as a firm's investment decision or a household's savings decision. Always building from microfoundations, we will then turn to applications that give an introduction to some of the central issues in modern macroeconomics. Topics to be covered include asset pricing, consumer theory, optimal policy, unemployment, and productivity and technical change. We will address questions such as "What explains the size of the excess return of equity over bonds?", "How can consumers insure against idiosyncratic shocks and what does this imply for macroeconomic variables and for inequality?", "What should the government tax to finance its expenditure?" and others. Although the course is mainly theoretical in nature, the model-based quantitative technique of calibration will also be introduced, and we will probably see some applied papers in the presentation section.

Where you can go from here: check this out:
`http://editorialexpress.com/conference/SED2012/program/SED2012.html` or
`http://www.cireqmontreal.com/view/4419/26e-rencontre-annuelle-du-groupe-canadien-detudes-en-macroeconomie-developpements-recents-en-macroeconomie`.

From these examples and from the course content you can see that methods covered in the course are not just essential for doing and understanding research in macroeconomics, but also very useful for research in many other areas like labour economics, IO or development.

Administrative Issues

3 credits
2 lectures per week, Mon and Wed 1:05-2:25pm in Leacock 424

Contact:
email: markus.poschke@mcgill.ca
office hours: Wed 9.30-10.30am in Leacock 320.

Requirements: The course will build on 620, so some familiarity with the issues and techniques covered there, in particular the neoclassical growth model and optimization techniques, will be assumed. Dynamic programming will be introduced in the course, so it is NOT a prerequisite.

Textbook: There will not be a main textbook, but there are three main sources. In *Dynamic Economics*, MIT Press 2003, Jérôme Adda and Russell Cooper (AC) give an excellent treatment of dynamic programming that also conveys a lot of intuition. They also cover some applications. The method and a vast array of macroeconomic applications are also covered in *Recursive Macroeconomic Theory* by Lars Ljungqvist and Thomas Sargent (LS), MIT Press 2004. (Any edition is fine; the newer ones contain more applications.) A detailed technical treatment of dynamic programming with a few applications is given in *Recursive Methods in Economic Dynamics* by Nancy Stokey and Robert Lucas with Edward Prescott (SL), Harvard University Press 1989. The latter text is advisable for PhD students. All three books are on reserve in the library. In addition, we will rely on articles for some topics. I will also make some rough notes available.

Grading: Final exam (45%), midterm (25%), presentation (25%), problem sets (5%). The midterm will be in class on Feb 13. Final exam time and location: *tba*. If you miss the midterm for medical reasons, its weight will be added to that of the final exam, if and only if you provide me with a valid medical note on or before Friday Feb 15. If you miss your presentation for medical reasons, it will be rescheduled, if and only if you provide me with a valid medical note within two days of the presentation.

In case of absence at the final exam for medical reasons, please refer to the University Regulations Concerning Final Examinations. Note: In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

Problem Sets: There will be four problem sets. You are encouraged to work in groups of up to three students. (Hand in one solution per group.) No late problem sets will be accepted. Tentative due dates are Jan 23, Feb 6, Feb 27 and Mar 27. I will post the problems on WebCT about a week before the due date.

Presentation: Presentations will take place in the last two to three weeks of the course. Depending on final enrolment, each student will have around 20-30 minutes to present and discuss a relevant paper from the literature. The deadline for choosing a paper to present is Monday March 11. (If you do not choose a paper by then, I will assign one.) You find a list of possible papers and presentation guidelines below.

WebCT: I will use WebCT for posting relevant materials such as readings and problem sets and for making announcements. You should therefore regularly check the course's WebCT page.

Academic Integrity: McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the code of student conduct and disciplinary procedures (see `http://www.mcgill.ca/integrity/` for more information). Note: According to Senate regulations, instructors are not permitted to make special arrangements for final exams. Please consult the Calendar, section 4.7.2.1, General University Information and Regulations at `www.mcgill.ca`.

Course Outline

This course outline is ambitious, so we might not be able to cover everything. Therefore, I maintain discretion regarding changes in this outline. The list of readings is not yet complete but the essentials, in particular the textbook chapters, are there. Where they do not stand alone, articles are complementary to the material discussed in the textbooks and in class.

1. Introduction (Lucas 1976)
2. Dynamic Programming (AC Ch. 2, 5, LS Ch. 3)
   (a) examples
   (b) theory
   (c) application to the neoclassical growth model
3. Asset Pricing (LS Ch. 13, Lucas (1978), Mehra and Prescott (1985))
   (a) theory
   (b) the equity premium puzzle
   (c) calibration
4. Introduction to Business Cycle analysis (Kydland and Prescott 1982, Prescott 1986, Plosser 1989, Mankiw 1989, Campbell 1994)
5. Consumption (AC Ch. 6, LS Ch. 16, 17, Aiyagari (1994), Huggett (1993))
   (a) precautionary savings
   (b) introduction to incomplete markets
   (c) inequality
6. Optimal Policy (LS Ch. 15, 20, Kydland and Prescott (1977), Chamley (1986))
   (a) taxes
   (b) time (in)consistency
   (c) the value of commitment
7. Unemployment (LS Ch. 6, Mortensen and Pissarides (1994), Shimer (2010))
   (a) frictions in search and matching in the labor market

(b) unemployment over the business cycle

8. Productivity and technical change
   (a) embodied technical change (Greenwood, Hercowitz and Krusell (1997))
   (b) vintage capital (*tba*)
   (c) the productivity slowdown and subsequent acceleration (Greenwood and Yorukoglu (1997), Jovanovic (1997))

Some special dates

The dates for the problem sets and presentations are estimates and therefore subject to change.

Jan 16 PS1 posted
Jan 23 PS1 due
Jan 30 PS2 posted
Feb 6 PS2 due
Feb 13 midterm exam
Feb 20 PS3 posted
Feb 27 PS3 due
Mar 4-6 break
Mar 11 deadline for choosing paper to present
Mar 20 PS4 posted
Mar 27 PS4 due
Apr 1 Easter Monday, no class
Apr 3-Apr 15 presentations (period depends on enrolment)

Papers for Presentations and Presentation Guidelines

Possible papers

- Growth theory, broadly seen: Aghion, Bloom, Blundell, Griffith and Howitt (2005), Broda and Weinstein (2006), Broda and Romalis (2008), Eeckhout and Jovanovic (2007), Krusell, Ohanian, Rios-Rull and Violante (2000), Hsieh and Ossa (2011), Song, Storesletten and Zilibotti (2011)
- Calibration: Gomme and Rupert (2007), Rogerson and Wallenius (forthcoming)
- Cycles: Hall (2008), Shimer (2007), Beaudry and Portier (2006), Christiano, Eichenbaum and Rebelo (2010), Gourio (2012)
- Monetary policy: Lagos and Wright (2005), Berentsen, Menzio and Wright (2008)
- Asset pricing: Constantinides, Donaldson and Mehra (2002), Barro (2007), Gabaix (2007), McGrattan and Prescott (2003), Gourio (2012), Lustig and Van Nieuwerburgh (2008)
- Individual behavior (consumption, labor supply): Rogerson and Wallenius (forthcoming), Prescott (1994), Bick and Fuchs-Schündeln (2012)
- Heterogeneous agents/inequality: Castaneda, Díaz Giménez and Rios-Rull (2003), Cagetti and DeNardi (2006), Huggett, Ventura and Yaron (2007), Kremer and Maskin (1996), Moscarini (2005), Krusell, Mukoyama, Rogerson and Şahin (2008), Krusell, Mukoyama, Rogerson and Şahin (2010), Low, Meghir and Pistaferri (2010)

- Health: Pashchenko and Porapakkarm (2010), Kuklik (2011), Ozkan (2011)
- Labor markets, wage inequality and unemployment: Delacroix and Wasmer (2006), Hall (2008), Ortigueira (2006), Shimer (2007), Alvarez and Shimer (2010), Kremer and Maskin (1996), Moscarini (2005), Domeij and Klein (2008), Ljungqvist and Sargent (1998), Ljungqvist and Sargent (2008), Rupert and Wasmer (2012), Krause and Uhlig (2012), Sahin, Song, Topa and Violante (2012), Herz and Van Rens (2011)
- (Optimal) taxation: Prescott (1994), Aiyagari (1995), Chamley (2001), Conesa, Kitao and Krueger (2009), Davila, Hong, Krusell and Rios-Rull (forthcoming), Guner, Kaygusuz and Ventura (2012), Bick and Fuchs-Schündeln (2012)
- Firms: Hopenhayn and Rogerson (1993), Campbell (1998), Cooley and Quadrini (2001), Clementi and Hopenhayn (2006), Restuccia and Rogerson (2008), Hsieh and Klenow (2009), Samaniego (2010)
- Regulation and aggregate outcomes: Hopenhayn and Rogerson (1993), Castro, Clementi and MacDonald (2004), Restuccia and Rogerson (2008)
- Trade: Broda and Weinstein (2006), Broda and Romalis (2008), Melitz (2003), Mendoza, Quadrini and Rull (2009), Hsieh and Ossa (2011)

Alternatively, you can propose me a different paper. Good candidates are those presented at the conferences linked to above.

Guidelines:

General points:

- You have 20 minutes for the presentation. That leaves ca. 5 minutes for discussion after the presentation.
- There will be ca. 3 papers per class. Students who are not presenting should read at least the introduction of the papers that are presented. This does wonders.
- Prepare a pdf-file with a presentation. (If you use Powerpoint, still prepare a pdf-file, like this you avoid funny characters appearing on your slides. At some point you may want to learn to use Latex plus e.g. Beamer.) Do not overload your slides.
- Target group: You are presenting to a class of macroeconomists. You know their background.

The presentation:

- Explain the context of the paper:
  - What is the question it tries to answer?
  - Why should we care?

  - What is the contribution of the paper?
  - Avoid a lengthy literature review.

- Explain the approach to the problem (methodology).
- Most papers will have a theoretical and a quantitative part.
  - Explain the ingredients of the model.
  - Point out important assumptions.
  - Use equations only where they are helpful.
  - Explain how quantitative results are obtained: data, method.
- Explain the most important results.
  - In 20 minutes you will not have time to talk about all results, mention the most important one(s).
  - Explain intuitively how they come about. Use equations/graphs if useful. If there are important figures in the paper, show them.
  - What assumptions drive the result? Do you think that they are plausible? What would happen if we changed them?
- Evaluation
  - What have we learned?
  - One item of criticism.
  - One idea for improving the paper or for extending it.
  - Is this an important paper?
- Again: Do not attempt to be complete. Instead, be focussed.

References

Aghion, P., Bloom, N., Blundell, R., Griffith, R. and Howitt, P. (2005), 'Competition and innovation: an Inverted-U relationship', *Quarterly Journal of Economics* .

Aiyagari, S. R. (1994), 'Uninsured Idiosyncratic Risk and Aggregate Saving', *The Quarterly Journal of Economics* **109**(3), 659–684.

Aiyagari, S. R. (1995), 'Optimal capital income taxation with incomplete markets, borrowing constraints, and constant discounting', *Journal of Political Economy* **103**(6), 1158–1175.

Alvarez, F. and Shimer, R. (2010), 'Search and rest unemployment', *mimeo* .

Barro, R. (2007), 'Rare disasters, asset prices, and welfare costs', *NBER Working Paper* **13690**.

Beaudry, P. and Portier, F. (2006), 'Stock prices, news and economic fluctuations', *American Economic Review* **96**, 1293–1307.

Berentsen, A., Menzio, G. and Wright, R. (2008), 'Inflation and unemployment in the long run', *mimeo* .

Bick, A. and Fuchs-Schündeln, N. (2012), 'Taxation and Labor Supply of Married Women across Countries: A Macroeconomic Analysis', *CEPR Discussion Paper* **9115**.

Broda, C. and Romalis, J. (2008), 'Inequality and prices: Does China benefit the poor in America?', *mimeo* .

Broda, C. and Weinstein, D. E. (2006), 'Globalization and the gains from variety', *Quarterly Journal of Economics* .

Cagetti, M. and DeNardi, M. (2006), 'Entrepreneurship, frictions, and wealth', *Journal of Political Economy* **114**(5), 835–870.

Campbell, J. R. (1998), 'Entry, exit, embodied technology, and business cycles', *Review of Economic Dynamics* **1**(2), 371–408.

Campbell, J. Y. (1994), 'Inspecting the mechanism: An analytical approach to the stochastic growth model', *Journal of Monetary Economics* **33**, 463–506.

Castaneda, A., Díaz Giménez, J. and Rios-Rull, J.-V. (2003), 'Accounting for the US earnings and wealth inequality', *Journal of Political Economy* **111**(4).

Castro, R., Clementi, G. and MacDonald, G. (2004), 'Investor Protection, Optimal Incentives, and Economic Growth', *Quarterly Journal of Economics* .

Chamley, C. (1986), 'Optimal Taxation of Capital Income in General Equilibrium with Infinite Lives', *Econometrica* **54**(3), 607–622.

Chamley, C. (2001), 'Capital income taxation, wealth distribution and borrowing constraints', *Journal of Public Economics* **79**, 55–69.

Christiano, L., Eichenbaum, M. and Rebelo, S. (2010), 'When is the Government Spending Multiplier Large?', *mimeo* .

Clementi, G. and Hopenhayn, H. A. (2006), 'A Theory of Financing Constraints and Firm Dynamics', *Quarterly Journal of Economics* .

Conesa, J. C., Kitao, S. and Krueger, D. (2009), 'Taxing capital? Not a bad idea after all!', *American Economic Review* **99**, 25–48.

Constantinides, G., Donaldson, J. and Mehra, R. (2002), 'Junior Can't Borrow: A New Perspective on the Equity Premium Puzzle', *Quarterly Journal of Economics* **117**(1), 269–296.

Cooley, T. and Quadrini, V. (2001), 'Financial Markets and Firm Dynamics', *American Economic Review* **91**(5), 1286–1310.

Davila, J., Hong, J., Krusell, P. and Rios-Rull, J. (forthcoming), 'Constrained Efficiency in the Neoclassical Growth Model with Uninsurable Idiosyncratic Shocks', *Econometrica* .

Delacroix, A. and Wasmer, E. (2006), 'Job and workers flows in europe and the us: Specific skills or employment protection?', *mimeo* .

Domeij, D. and Klein, P. (2008), 'Should daycare be subsidized?', *mimeo* .

Eeckhout, J. and Jovanovic, B. (2007), 'Occupational choice and development', *NBER Working Paper* **13686**.

Gabaix, X. (2007), 'Variable rare disasters: An exactly solved framework for ten puzzles in macro-finance', *mimeo* .

Gomme, P. and Rupert, P. (2007), 'Theory, Measurement and Calibration of Macroeconomic Models', *Journal of Monetary Economics* **54**(2), 460–497.

Gourio, F. (2012), 'Disaster risk and business cycles', *American Economic Review* **102**(6), 2734–2766.

Greenwood, J., Hercowitz, Z. and Krusell, P. (1997), 'Long-Run Implications of Investment-Specific Technological Change', *The American Economic Review* **87**(3), 342–362.

Greenwood, J. and Yorukoglu, M. (1997), '1974', *Carnegie-Rochester Confer. Series on Public Policy* **46**, 49–95.

Guner, N., Kaygusuz, R. and Ventura, G. (2012), 'Taxing women: A macroeconomic analysis', *Journal of Monetary Economics* **59**(1), 111–128.

Hall, R. (2008), 'Sources and mechanisms of cyclical fluctuations in the labor market', *mimeo* .

Herz, B. and Van Rens, T. (2011), 'Structural unemployment', *Mimeo, U Warwick* .

Hopenhayn, H. and Rogerson, R. (1993), 'Job Turnover and Policy Evaluation: A General Equilibrium Analysis', *Journal of Political Economy* **101**(5), 915–938.

Hsieh, C.-T. and Klenow, P. (2009), 'Misallocation and manufacturing tfp in china and india', *Quarterly Journal of Economics* **124**.

Hsieh, C.-T. and Ossa, R. (2011), 'A Global View of Productivity Growth in China', *mimeo, University of Chicago* .

Huggett, M. (1993), 'The Risk-Free Rate in Heterogeneous-Agent Incomplete-Insurance Economies', *Journal of Economic Dynamics and Control* **17**(5/6), 953–970.

Huggett, M., Ventura, G. and Yaron, A. (2007), 'Sources of lifetime inequality', *mimeo* .

Jovanovic, B. (1997), 'Learning and growth', *Advances in Economics and Econometrics: Theory and Applications: Seventh World Congress* .

Krause, M. U. and Uhlig, H. (2012), 'Transitions in the German labor market: Structure and crisis', *Journal of Monetary Economics* **59**(1), 64–79.

Kremer, M. and Maskin, E. (1996), 'Wage inequality and segregation by skill', *NBER Working Paper* **5718**.

Krusell, P., Mukoyama, T., Rogerson, R. and Şahin, A. (2008), 'Aggregate implications of indivisible labor, incomplete markets, and labor market frictions', *Journal of Monetary Economics* **55**, 961–979.

Krusell, P., Mukoyama, T., Rogerson, R. and Şahin, A. (2010), 'Aggregate labor market outcomes: The roles of choice and chance', *Quantitative Economics* **1**, 97–127.

Krusell, P., Ohanian, L. E., Rios-Rull, J.-V. and Violante, G. (2000), 'Capital-skill complementarity and inequality: a macroeconomic analysis', *Econometrica* **68**(5), 1029–1053.

Kuklik, M. (2011), 'Health Insurance Reform and Bankruptcy', *mimeo, U Rochester* .

Kydland, F. E. and Prescott, E. C. (1977), 'Rules Rather than Discretion: The Inconsistency of Optimal Plans', *The Journal of Political Economy* **85**(3), 473–492.

Kydland, F. and Prescott, E. (1982), 'Time to build and aggregate fluctuations', *Econometrica* **50**(6), 1345–1370.

Lagos, R. and Wright, R. (2005), 'A unied framework for monetary theory and policy analysis', *Journal of Political Economy* **113**(3), 463–484.

Ljungqvist, L. and Sargent, T. J. (1998), 'The european unemployment dilemma', *Journal of Political Economy* **106**(23), 514–550.

Ljungqvist, L. and Sargent, T. J. (2008), 'Two questions about european unemployment', *Econometrica* **76**(1), 1–29.

Low, H., Meghir, C. and Pistaferri, L. (2010), 'Wage risk and employment risk over the life cycle', *American Economic Review* **100**, 1432–1467.

Lucas, R. E. (1978), 'Asset Prices in an Exchange Economy', *Econometrica* **46**(6), 1429–1445.

Lucas, R. E. J. (1976), 'Econometric policy evaluation: a critique', *Carnegie-Rochester conference series on public policy* **1**(2), 19–46.

Lustig, H. and Van Nieuwerburgh, S. (2008), 'The Returns on Human Capital: Good News on Wall Street Is Bad News on Main Street', *The Review of Financial Studies* **21**(5), 2097–2137.

Mankiw, N. G. (1989), 'Real business cycles: A new keynesian perspective', *Journal of Economic Perspectives* **3**(3), 79–90.

McGrattan, E. and Prescott, E. C. (2003), 'Average debt and equity returns: Puzzling?', *American Economic Review* **93**(2), 392–397.

Mehra, R. and Prescott, E. (1985), 'The Equity Risk Premium: A Puzzle', *Journal of Monetary Economics* **15**(2), 145–61.

Melitz, M. (2003), 'The impact of trade on intra-industry reallocations and aggregate industry productivity', *Econometrica* pp. 1695–1725.

Mendoza, E. G., Quadrini, V. and Rull, J. V. R. (2009), 'Financial Integration, Financial Development, and Global Imbalances', *Journal of Political Economy* **117**(3), 371–416.

Mortensen, D. T. and Pissarides, C. A. (1994), 'Job Creation and Job Destruction in the Theory of Unemployment', *The Review of Economic Studies* **61**(3), 397–415.

Moscarini, G. (2005), 'Job matching and the wage distribution', *Econometrica* **73**(2), 481–516.

Ortigueira, S. (2006), 'The rise and fall of centralized wage bargaining', *mimeo* .

Ozkan, S. (2011), 'Income Differences and Health Care Expenditures over the Life Cycle', *mimeo, Fed Board of Governors* .

Pashchenko, S. and Porapakkarm, P. (2010), 'Quantitative Analysis of Health Insurance Reform: Separating Community Rating from Income Redistribution', *mimeo, U Uppsala* .

Plosser, C. (1989), 'Understanding real business cycles', *Journal of Economic Perspectives* **3**(3), 51–77.

Prescott, E. C. (1986), 'Theory ahead of business cycle measurement', *Federal Reserve Bank of Minneapolis Quarterly Review* pp. 9–22.

Prescott, E. C. (1994), 'Why do americans work so much more than europeans?', *Federal Reserve Bank of Minneapolis Quarterly Review* **28**(1), 2–13.

Restuccia, D. and Rogerson, R. (2008), 'Policy distortions and aggregate productivity with heterogeneous establishments', *Review of Economic Dynamics* **11**(4), 707–720.

Rogerson, R. and Wallenius, J. (forthcoming), 'Nonconvexities, Retirement and the Elasticity of Labor Supply', *The American Economic Review* .

Rupert, P. and Wasmer, E. (2012), 'Housing and the labor market: Time to move and aggregate unemployment', *Journal of Monetary Economics* **59**(1), 24–36.

Sahin, A., Song, J., Topa, G. and Violante, G. (2012), 'Mismatch unemployment', *NBER Working Paper* (w18265).

Samaniego, R. (2010), 'Entry, Exit and Investment-Specific Technical Change', *American Economic Review* pp. 164–192.

Shimer, R. (2007), 'Mismatch', *American Economic Review* **97**(4), 1074–1101.

Shimer, R. (2010), *Labor Markets and Business Cycles*, Princeton University Press.

Song, Z., Storesletten, K. and Zilibotti, F. (2011), 'Growing Like China', *American Economic Review* **101**(1), 196–233.