

Credit, Money and Banking: Syllabus

This course is the first part of the Credit and Money sequence. In the first year you learnt how to understand the basic theory and how to read papers. The goal of this course is to learn how to write papers in macroeconomic theory addressing important issues in real economies. We will study in great detail the essential theoretical topics and tools of modern macroeconomics and apply them to models and numerical simulation in MATLAB.

We will study optimal contracts in asymmetric information models, first in partial and then in general equilibrium. Understanding contracts is the first step to analyze credit markets and their functioning outside the Arrow-Debreu world. Then we will focus on real effects of monetary policy in economies with frictions related to information, limited commitment and limited participation. Finally, we will analyze equilibrium search models and institutions in politico-economic equilibria. From the reading list below we will cover only the most relevant and important papers for each topic. Stokey, Lucas, and Prescott (1989) is the main textbook for this course.

There will be two lectures per week on Mondays and Thursdays. The grade will be based on problem sets (30%), a midterm (30%) and a final exam (40%). The policies related to student conduct will be strictly enforced.

Topics

Asymmetric Information and Optimal Contracts Mas-Collel *et al.* (Chapter 14, 1995), Marcet and Marimon (1999), Hansen and Imrohorglu (1992), Hopenhayn and Nicolini (1997), Cooley, Marimon, and Quadrini (2001), Cooley and Quadrini (1999), Rogerson (1985), Clementi and Hopenhayn (2002), Castro, Clementi, and MacDonald (2002).

Contracts in general equilibrium with heterogeneous agents Atkeson and Lucas (1992), Atkeson and Lucas (1995) and Phelan and Townsend (1991).

Credit markets and frictions Kiyotaki and Moore (1997), Kiyotaki and Moore (2001), Fuerst (1995), Smith and Wang (2000), Gertler (1988), Gertler and Gilchrist (1994), Gentry and Hubbard (2000), Lucas (1978), Friedman and Kuttner (1993), Bernanke and Gertler (1989), Williamson (1987), Kehoe and Levine (1993), King and Levine (1993), Kashyap, Stein, and Wilcox (1993), Levine (1997), Erosa (2001), Bohacek (2003), Hamilton (2000), Jermann and Quadrini (2003), Gomes (2001), Fuerst (1992), Fazzari, Hubbard, and Petersen (1988), Gilchrist and Himmelberg (1998), Gilchrist and Himmelberg (1995), Carpenter and Petersen (2002), Quadrini (1999), Diaz-Gimenez, Prescott, Fitzgerald, and Alvarez (1992),

Real effects of monetary policy Doepke (2002), Cooley and Quadrini (1999), Chari, Christiano, and Kehoe (1991), Christiano and Eichenbaum (1992), Christiano, Eichenbaum, and Evans (1996), Christiano, Eichenbaum, and Evans (1999), Lucas (1990), Bohacek and Rodriguez-Mendizabal (2003)

Equilibrium search Lucas and Prescott (1974) and its version in Stokey, Lucas, and Prescott (1989), Alvarez and Veracierto (1999a), Alvarez and Veracierto (1999b), Veracierto (2001), Lagos (2001). Sargent (1987) and Sargent and Ljungquist (2000) provide a good survey of search.

Politico-economic equilibrium Krusell, Quadrini, and Rios-Rull (1997).

Textbooks

Stokey, Nancy L., Robert E. Lucas, Jr., and Edward C. Prescott. *Recursive Methods in Economic Dynamics*. Cambridge: Harvard University Press, 1989.

Ljungquist, Lars, and Thomas J. Sargent. *Recursive Macroeconomic Theory*. MIT Press, 2000.

Sargent, Thomas J. *Dynamic Macroeconomic Theory*. Cambridge: Harvard University Press, 1987.

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

Cooley, Thomas F., Editor. *Frontiers of Business Cycle Research*. Princeton University Press: 1995.

Mas-Collel, Andreu, Michael D. Whinston, and Jerry R. Green. *Microeconomic Theory*. Oxford University Press: New York, 1995.

Reading List

Abreu, D., D. Pearce, and E. Stacchetti (1986). Optimal cartel equilibria with imperfect monitoring. *Journal of Economic Theory* 39, 251–269.

Abreu, D., D. Pearce, and E. Stacchetti (1990). Toward a theory of discounted repeated games with imperfect monitoring. *Econometrica* 58(5), 1041–1063.

Aiyagari, R. S. (1994a). Macroeconomics with frictions. *Federal Reserve Bank of Minneapolis Staff Report* 18(3), 24–40.

Aiyagari, R. S. (1994b). Uninsured idiosyncratic risk and aggregate savings. *Quarterly Journal of Economics* 109(3), 659–684.

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

- Aiyagari, R. S. and M. Gertler (1991). Asset returns with transaction costs and uninsured individual risk. *Journal of Monetary Economics* 27, 311–331.
- Alvarez, F. and M. Veracierto (1999a). Labor market policies in an equilibrium search model. *NBER Macroeconomic Annual* (14), 265–304.
- Alvarez, F. and M. Veracierto (1999b). Severance payments in an economy with frictions. *Journal of Monetary Economics* (47), 477–498.
- Atkeson, A. (1991). International lending with moral hazard and risk of repudiation. *Econometrica* 9, 1069–1089.
- Atkeson, A. and R. E. Lucas, Jr. (1992). On efficient distribution with private information. *Review of Economic Studies* 59, 427–453.
- Atkeson, A. and R. E. Lucas, Jr. (1995). Efficiency and equality in a simple model of efficient unemployment insurance. *Journal of Economic Theory* 66, 64–98.
- Berger, A. N. and G. F. Udell (1990). Collateral, loan quality, and bank risk. *Journal of Monetary Economics* 25, 21–42.
- Berger, A. N. and G. F. Udell (1992). Some evidence on the empirical significance of credit rationing. *Journal of Political Economy* 100(5), 1047–1077.
- Bernanke, B. S. and M. Gertler (1989). Agency cost, net worth and business fluctuations. *American Economic Review* 79(1), 14–31.
- Bohacek, R. (2003). Financial constraints and entrepreneurial investment. *CERGE-EI Working Paper Series*.
- Bohacek, R. and H. Rodriguez-Mendizabal (2003). Credit markets and the propagation of monetary policy shocks. *Manuscript*.
- Carpenter, R. E. and B. C. Petersen (2002). Capital market imperfections, high-tech investment, and new equity financing. *The Economic Journal* 112, F54–72.
- Castro, R., G. L. Clementi, and G. MacDonald (2002). Investor protection, optimal incentives, and economic growth. *Working paper*.
- Chari, V. V., L. J. Christiano, and P. J. Kehoe (1991). Optimal fiscal and monetary policy: Some recent results. *Journal of Money, Credit and Banking* 23(3), 519–539.
- Christiano, L. J. and M. Eichenbaum (1992). Liquidity effects and the monetary transmission mechanism. *American Economic Review* 82(2), 346–353.
- Christiano, L. J., M. Eichenbaum, and C. L. Evans (1996). The effects of monetary policy shocks: Evidence from the flow of funds. *Review of Economics and Statistics* 78(1), 16–34.
- Christiano, L. J., M. Eichenbaum, and C. L. Evans (1999). Monetary policy shocks: What have we learned and to what end? In M. Woodford and J. Taylor (Eds.), *Handbook of Macroeconomics*. North Holland.

- Clementi, G. L. and H. A. Hopenhayn (2002). A theory of financing constraints and firm dynamics. *Working paper*.
- Cooley, T. F., G. D. Hansen, and E. C. Prescott (1995). Equilibrium business cycles with idle resources and variable capacity utilization. *Economic Theory* 6, 35–49.
- Cooley, T. F., R. Marimon, and V. Quadrini (2001). Aggregate consequences of limited contract enforceability. *Unpublished manuscript*.
- Cooley, T. F. and V. Quadrini (1999). Monetary policy and the financial decision of firms. *Unpublished manuscript*.
- Diamond, D. W. and P. H. Dybvig (1983). Bank runs, deposit insurance, and liquidity. *Journal of Political Economy* 91(3), 401–419.
- Diaz-Gimenez, J., E. C. Prescott, T. Fitzgerald, and F. Alvarez (1992). Banking in computable general equilibrium economies. *Journal of Economic Dynamics and Control* 16, 533–559.
- Doepke, M. (2002). Show me the money: Retained earnings and the real effects of monetary shocks. *Unpublished manuscript*.
- Erosa, A. (2001). Financial intermediation and occupational choice in development. *Review of Economic Dynamics* 4, 303–334.
- Fazzari, S. M., G. R. Hubbard, and B. C. Petersen (1988). Financing constraint and corporate investment. *Brookings Papers on Economic Activity* (1), 141–195.
- Friedman, B. M. and K. N. Kuttner (1993). Economic activity and the short-term credit markets: An analysis of prices and quantities. *Brookings Papers on Economic Activity* 1993(2), 193–283.
- Fuerst, T. S. (1992). Liquidity, loanable funds, and real activity. *Journal of Monetary Economics* 29, 3–24.
- Fuerst, T. S. (1995). Monetary and financial interactions in the business cycle. *Journal of Money, Credit, and Banking* 27(4), 1319–1341.
- Gentry, W. and G. Hubbard (2000). Entrepreneurship and household savings. *Unpublished manuscript*.
- Gertler, M. (1988). Financial structure and aggregate economic activity: An overview. *Journal of Money, Credit and Banking* 20(3), 559–589.
- Gertler, M. and S. Gilchrist (1994). Monetary policy, business cycles, and the behavior of small manufacturing firms. *Quarterly Journal of Economics* CIX(2), 309–340.
- Gilchrist, S. and C. Himmelberg (1995). Evidence on the role of cash flow for investment. *Journal of Monetary Economics* 36, 541–572.
- Gilchrist, S. and C. Himmelberg (1998). Investment, fundamentals and finance. *NBER Working Paper Series* (6652).

- Gomes, J. (2001). Financing investment. *American Economic Review* 91(5), 1264–1285.
- Hamilton, B. H. (2000). Does entrepreneurship pay? an empirical analysis of the returns to self-employment. *Journal of Political Economy* 108(3), 604–631.
- Hansen, G. D. and A. Imrohoroglu (1992). The role of unemployment insurance in an economy with liquidity constraint and moral hazard. *Journal of Political Economy* 100(1), 118–142.
- Hansen, G. D. and E. C. Prescott (1998). Capacity constraints, asymmetries and the business cycle. *University of Chicago Working Paper*.
- Hopenhayn, H. A. (1992a). Entry, exit, and firm dynamics in long run equilibria. *Econometrica* 60(5), 1127–1150.
- Hopenhayn, H. A. (1992b). Exit, selection, and the value of firms. *Journal of Economic Dynamics and Control* 16(3-4), 621–653.
- Hopenhayn, H. A. and J. P. Nicolini (1997). Optimal unemployment insurance. *Journal of Political Economy* 105(2), 412–438.
- Hopenhayn, H. A. and E. C. Prescott (1992). Stochastic monotonicity and stationary distributions for dynamic economies. *Econometrica* 60(6), 1387–1406.
- Hopenhayn, H. A. and R. Rogerson (1993). Job turnover and policy evaluation: A general equilibrium analysis. *Journal of Political Economy* 101(5), 915–938.
- Huggett, M. (1993). The risk-free rate in heterogeneous-agent incomplete-insurance economies. *Journal of Economic Dynamics and Control* 17, 953–969.
- Huggett, M. (1997). The one-sector growth model with idiosyncratic shocks: Steady states and dynamics. *Journal of Monetary Economics* 39, 385–403.
- Jermann, U. and V. Quadrini (2003). Stock market boom and the productivity gains of the 1990s. *Manuscript*.
- Kashyap, A., J. C. Stein, and D. W. Wilcox (1993). Monetary policy and credit conditions: Evidence from the composition of external finance. *American Economic Review* 83(1), 78–98.
- Kehoe, T. J. and D. K. Levine (1990). Determinacy of equilibria in dynamic models with finitely many consumers. *Journal of Economic Theory* 50, 1–21.
- Kehoe, T. J. and D. K. Levine (1993). Debt-constraint asset market. *Review of Economic Studies* 60, 865–888.
- King, R. G. and R. Levine (1993). Finance, entrepreneurship, and growth: Theory and evidence. *Journal of Monetary Economics* 32(3), 513–542.
- Kiyotaki, N. and J. Moore (1997). Credit cycles. *Journal of Political Economy* 105(2), 211–48.
- Kiyotaki, N. and J. Moore (2001). Liquidity, business cycles, and monetary policy. *Manuscript*.

- Kocherlakota, N. R. (1996, 595-609). Implications of efficient risk sharing without commitment. *Review of Economic Studies* 63.
- Krueger, D. (1999). Risk sharing in economies with incomplete markets. *University of Minnesota Working paper*.
- Krusell, P., V. Quadrini, and J.-V. Rios-Rull (1997). Politico-economic equilibrium and economic growth. *Journal of Economic Dynamics and Control* 21, 243–272.
- Lagos, R. (2001). An alternative approach to search frictions. *Journal of Political Economy* 108(5), 851–873.
- Leeper, E. M., C. A. Sims, and T. Zha (1996). What does monetary policy do? *Brookings Papers on Economic Activity* (2), 1–63.
- Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature* 35(2), 688–726.
- Lucas, Jr., R. E. (1972). Expectations and the neutrality of money. *Journal of Economic Theory* 4, 103–124.
- Lucas, Jr., R. E. (1978). On the size distribution of business firms. *Bell Journal of Economics* 9, 508–523.
- Lucas, Jr., R. E. (1980). Equilibrium in a pure currency economy. *Economic Inquiry* 43, 203–220.
- Lucas, Jr., R. E. (1990). Liquidity and interest rate. *Journal of Economic Theory* 50, 237–264.
- Lucas, Jr., R. E. (1992). On efficiency and distribution. *The Economic Journal* (102), 233–247.
- Lucas, Jr., R. E. and E. C. Prescott (1974). Equilibrium search and unemployment. *Journal of Economic Theory* 7, 188–209.
- Marcet, A. and R. Marimon (1992). Communication, commitment, and growth. *Journal of Economic Theory* 58, 219–249.
- Marcet, A. and R. Marimon (1999). Recursive contracts. *Unpublished manuscript*.
- Phelan, C. (1995). Repeated moral hazard and one-sided commitment. *Journal of Economic Theory* 66, 488–506.
- Phelan, C. (1998). On the long run implications of repeated moral hazard. *Journal of Economic Theory* 79, 174–191.
- Phelan, C. and R. M. Townsend (1991). Computing multi-period, information-constrained optima. *Review of Economic Studies* 58, 853–881.
- Prescott, E. C. and R. M. Townsend (1984a). General competitive analysis in an economy with private information. *International Economic Review* 25, 1–20.

- Prescott, E. C. and R. M. Townsend (1984b). Pareto optima and competitive equilibria with adverse selection and moral hazard. *Econometrica* 52(1), 21–45.
- Quadrini, V. (1999). Entrepreneurship, saving and social mobility. *Unpublished manuscript*.
- Rogerson, W. P. (1985). The first-order approach to principal-agent problems. 53(6), 1357–1368.
- Smith, Anthony A., J. and C. Wang (2000). Dynamic credit relationships in general equilibrium. *Unpublished manuscript*.
- Stokey, N. L., R. E. Lucas, Jr., and E. C. Prescott (1989). *Recursive Methods in Economic Dynamics*. Cambridge: Harvard University Press.
- Ventura, G. (1999). Flat tax reform: A quantitative exploration. *Journal of Economic Dynamics and Control* 23, 1425–1458.
- Veracierto, M. (2001). Employment flows, capital mobility, and policy analysis. *International Economic Review* 42(3), 571–595.
- Wang, C. (1995). Dynamic insurance with private information and moral hazard. *Review of Economic Studies* 62, 577–596.
- Wang, C. and S. D. Williamson (1996). Unemployment insurance with moral hazard in a dynamic economy. *Carnegie-Rochester Conference on Public Policy* 44, 1–41.
- Williamson, S. D. (1987). Financial intermediation, business failures, and real business cycles. *Journal of Political Economy* 95(6), 1196–1216.

Alvarez and Veracierto (1999a) Atkeson (1991) Atkeson and Lucas (1992) Ventura (1999)
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and Rogerson (1993) Hopenhayn (1992a) Hopenhayn (1992b)) Kocherlakota (1996) Abreu,
Pearce, and Stacchetti (1990) Krusell, Quadrini, and Rios-Rull (1997)) Lucas (1980) Phelan
and Townsend (1991) Prescott and Townsend (1984a) Abreu, Pearce, and Stacchetti (1986)
Wang and Williamson (1996) Krueger (1999) Prescott and Townsend (1984b) Hansen and
Prescott (1998) Lucas (1972) Phelan (1995) Lucas (1992), Lucas (1980), Lucas (1990) Cooley,
Hansen, and Prescott (1995) Hopenhayn and Prescott (1992) Fuerst (1992) Phelan (1998)
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