

Mini-Course: Financial Frictions and Macroeconomics Summer 2014

Bilkent University
Department of Economics

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Lectures: Total of 9 lectures on June 20, June 23, and June 24.

Place: Faculty of Economic, Administrative and Social Sciences, Room **MA202**.

Time: 9.00-10.30, 11.00-12.30, 13.30-15.00 everyday.

Course organization: This mini-course focuses on the effect of financial frictions on macroeconomic outcomes. Loosely speaking, financial frictions refer to the informational, behavioral, or institutional frictions that constrain the flow of resources from financiers to potential investors or consumers. This course introduces some of these frictions and analyzes their effect on investment, consumption, asset prices, financial crises, and business cycles.

Textbook: The following textbooks serve as useful references:

- Tirole, J. (2006), *The Theory of Corporate Finance*, Princeton University Press.
- Romer, D. (2006), *Advanced Macroeconomics*, McGraw-Hill, 3rd edition.

Prerequisites: The course was originally designed for second year economics PhD students in the US. Therefore, strictly speaking, the course requires the equivalent of first year PhD macro courses taught in the US. That said, the students who have taken intermediate/advanced undergraduate macro courses—especially those who also have a strong analytical background—should be able to follow much of the material.

Course Material and the Reading List

The thesis of this part is that financial frictions can generate and amplify business cycle fluctuations. This thesis is developed in three sections.

Section 1 introduces borrowing constraints generated by information asymmetries and investigates their effect on investment. This section illustrates the importance of *heterogeneity* across economic agents and *the net worth* of potential borrowers. It also illustrates that borrowing constraints generate a precautionary savings motive and a demand for insurance (by borrowers) with respect to aggregate shocks. The section concludes by offering a view of financial crises as episodes in which ex-ante insurance arrangements fail and borrowers become severely constrained.

Section 2 digs deeper into financial crises and analyzes the amplification mechanisms that operate during these episodes. The lack of insurance emphasized in Section 1 manifests itself in the common use of *leverage* arrangements that are not contingent on aggregate shocks. The section illustrates that leverage, when coupled with *asset fire sales*, could considerably exacerbate crises. Moreover, leverage can also decline precisely when it is needed the most—further contributing to the downfall. The section concludes by discussing a different strand of the finance literature that emphasizes coordination failures and bank runs as another major contributing factor to crises.

Section 3 analyzes the mechanisms by which borrowing constraints generate recessions. It first investigates the effect of borrowing constraints and uncertainty on consumption. This analysis, along with Section 1, characterizes the effect of borrowing constraints on the aggregate demand side of the economy. The rest of the section combines this analysis with New-Keynesian models of aggregate supply to obtain a demand-driven recession. This analysis emphasizes that the lower bound on the real interest rate could create a liquidity trap that could exacerbate the recession.

The (tentative) reading list below contains the papers that will be (most likely) discussed in the lecture. The papers that will be (most likely) discussed in more detail are marked with a star.

Schedule of Lectures (Tentative)

Lecture	Topic
1	Heterogeneity, net worth channel, and the financial accelerator
2	Uncertainty and the precautionary savings motive
3	Liquidity premium, underinsurance, and crises
4	Leverage, fire sales, and the asset market feedback
5	Endogenous leverage and the leverage cycle
6	Financial intermediation, credit crunch, and bank runs
7	Consumption with constraints and precautionary savings
8	Borrowing constraints in general equilibrium
9	Aggregate demand channel and the liquidity trap

1. Borrowing constraints and investment (3 Lectures)

1.1. Heterogeneity, the net worth channel, and the financial accelerator

- Mian, A. and A. Sufi (2010), “The great recession: Lessons from microeconomic data,” *American Economic Review: Papers & Proceedings*, 100, p.1-10.
- *Tirole, Chapter 3, Sections 13.2, 13.4.
- Campello, M., J. R. Graham, and C.R. Harvey (2010), “The real effects of financial constraints: Evidence from a financial crisis,” *Journal of Financial Economics*, 97, p.470–487.
- *Bernanke, B. and M. Gertler (1989), “Agency costs, net worth, and business fluctuations,” *American Economic Review*, 79, p.14-31.

Suggested further reading:

- Romer, Chapter 8.
- Brunnermeier, M.K., Eisenbach, T.M. and Sannikov, Y., (2012), “Macroeconomics with financial frictions: a survey,” Princeton University.
- Hayashi, F. (1982). “Tobin’s marginal q and average q: A neoclassical interpretation,” *Econometrica*, 50, p.213-24.
- Stein, J. C., (2003), “Agency, information, and corporate investment,” in *Handbook of the Economics of Finance*, George Constantinides, Milton Harris, and Rene Stulz, eds., Amsterdam, North-Holland.
- Hart, Oliver (2001), “Financial contracting,” *Journal of Economic Literature*.
- Fazzari, S. M. , R. G. Hubbard and B. C. Petersen (1988), “Financing constraints and corporate investment,” *Brookings Papers on Economic Activity*, p.141-195.
- Blanchard, O. J. , E. Lopez-de-Silanes and A. Shleifer (1994), “What do firms do with cash windfalls?,” *Journal of Financial Economics*, 36, p.337-360.

1.2. Uncertainty and the precautionary savings motive

- Dixit, A., (1993), *The Art of Smooth Pasting*, Harwood Academic Publishers.
- *Bolton, P., H. Chen and N. Wang (2011), “A unified theory of Tobin’s q, corporate investment, financing, and risk management,” *Journal of Finance*, 66(5), p.1545-1578.
- Bates, T., K. Kahle and R. Stulz (2009) “Why do US firms hold so much more cash than they used to?” *Journal of Finance*, 64, p,1985–2021.

Suggested further reading:

- Froot, K., D. Scharfstein, and J. Stein (1993), “Risk management, coordinating corporate investment, and financing policies,” *Journal of Finance*, 48, p.1629–1658.
- Rampini, Adriano, and S. Viswanathan (2010), “Collateral, risk management, and the distribution of debt capacity,” *Journal of Finance*, 65, p.2293-2322.

1.3. Liquidity premium, underinsurance, and crises

- *Holmstrom, B , and J. Tirole (1998), “Private and public supply of liquidity,” *Journal of Political Economy*, 106, p.1-40.

Suggested further reading:

- Tirole, Chapters 5 and 15.
- Holmstrom B. and J. Tirole (2010), *Inside and Outside Liquidity*, MIT Press.
- Woodford, M. (1990), “Public debt as private liquidity,” *American Economic Review, Papers and Proceedings*, 80, p.382-88.
- Krishnamurthy A. and A. Vissing-Jorgensen (2008), “The demand for treasury debt,” working paper, Northwestern University.

2. Financial crises and amplification mechanisms (3 Lectures)

2.1. Leverage, fire sales and the asset market feedback

- Shleifer, A. and R. W. Vishny (1992), “Liquidation values and debt capacity: A market equilibrium approach,” *Journal of Finance*, 47, p.1343-1366.
- *Kiyotaki, N. and J. Moore (1997), “Credit cycles,” *Journal of Political Economy*, 105, 2, p.211-48.

Suggested further reading:

- Tirole, Sections 14.2 and 14.3.
- Brunnermeier, M. and Y. Sannikov (2010), “A macroeconomic model with a financial sector,” Princeton University working paper.
- Di Tella, Sebastian (2013), “Uncertainty Shocks and Balance Sheet Recessions,” working paper.
- Duffie, D. (2010), “Asset price dynamics with slow-moving capital,” AFA Presidential Address, ASSA Meetings, Atlanta.
- Shleifer, A. and R. Vishny (2010), “Fire sales in finance and macroeconomics,” working paper.
- Lorenzoni, G. (2008), “Inefficient credit booms,” *Review of Economic Studies*, 75,p.809–833.
- Stein, J. (2010), “Monetary policy as financial-stability regulation,” forthcoming in the *Quarterly Journal of Economics*.

2.2. Endogenous leverage and the leverage cycle

- *Geanakoplos, J. (2009), “The leverage cycle,” in Acemoglu D., K. Rogoff, and M. Woodford, eds., *NBER Macroeconomics Annual*.
- *Simsek, A. (2011), “Belief disagreements and collateral constraints,” working paper.

Suggested further reading:

- Brunnermeier, M. and L. H. Pedersen (2009), “Market liquidity and funding liquidity,” *Review of Financial Studies*, 22, p.2201-2238.
- Adrian, T. and H. Shin (2010), “Liquidity and leverage.” *Journal of Financial Intermediation*, 19, p.418-437.
- Fostel, A. and J. Geanakoplos (2013), “Leverage and Default in Binomial Economies: A Complete Characterization,” working paper.
- Gorton, G., and A. Metrick (2011), “Securitized banking and the run on repo,” *Journal of Financial Economics*, forthcoming.
- Copeland, A., A. Martin, and M. Walker (2010), “The tri-party repo market before the 2010 reforms,” working paper, Federal Reserve Bank of New York.
- Krishnamurthy, A., S. Nagel and D. Orlov (2011), “Sizing up repo,” working paper.

2.3. Financial intermediation, liquidity provision, and bank runs

- *Diamond, D. and P. Dybvig (1983), “Bank runs, deposit insurance, and liquidity,” *Journal of Political Economy*, 91, p.401-419.
- Morris, S , and H. Shin (2001), “Rethinking multiple equilibria in macroeconomic modeling,” in B. Bernanke and K. Rogoff, eds , *NBER Macroeconomics Annual*, p.139-161.
- Shin, H. (2009), “Reflections on modern bank runs: A case study of Northern Rock,” *Journal of Economic Perspectives*, 23, p.101-19.

Suggested further reading:

- Tirole, Sections 12.2, 12.3, and 12.6.
- Jacklin, C.J. (1987), “Demand deposits, trading restrictions, and risk sharing,” in eds., E. Prescott and N. Wallace, *Contractual Arrangements for Intertemporal Trade*.
- Gorton, G. (1988), “Banking panics and business cycles,” *Oxford Economic Papers*, 40, p.751-781.
- Allen, F. and D. Gale (1998), “Optimal financial crises,” *Journal of Finance*, 53, p.1245–84.
- He, Z. and W. Xiong (2009). “Dynamic debt runs,” working paper, Princeton University.

3. Borrowing constraints and recessions (3 Lectures)

3.1. Consumption with borrowing constraints and precautionary savings

- *Romer, Chapter 7.
- *Deaton, A. (1991), “Saving and liquidity constraints,” *Econometrica*, p.1221–1248.
- Souleles, N., D. Johnson, R. McClland, and J. Parker (2011), “Consumer spending and the economic stimulus payments of 2008,” *American Economic Review*, forthcoming.

Suggested further reading:

- Carroll, C. and L. Summers (1991), “Consumption growth parallels income growth: Some new evidence,” in *National Saving and Economic Performance*, D. Bernheim and J. Shoven, eds.
- Laibson, D. (1998), “Golden eggs and hyperbolic discounting,” *Quarterly Journal of Economics*, 112, p.443–77.
- Kaplan, G., and G. L. Violante (2011), “A Model of the consumption response to fiscal stimulus payments,” NBER working paper, No. 17338.

3.2. Borrowing constraints in general equilibrium

- *Aiyagari, R. (1994), “Uninsured idiosyncratic risk and aggregate saving,” *Quarterly Journal of Economics*, 109, p.659-684.
- *Guerrieri, V., and G. Lorenzoni (2011), “Credit crises, precautionary savings and the liquidity trap,” working paper.

Suggested further reading:

- Krusell, P. and A. Smith (1998), “Income and Wealth Heterogeneity in the Macroeconomy,” *Journal of Political Economy*, October, 106, p.867-96.

3.3. Aggregate demand channel and the liquidity Trap

- *Bernanke, B., M. Gertler and S. Gilchrist (1999), “The financial accelerator in a quantitative business cycle framework,” *Handbook of Macroeconomics*, p.1341-1393.
- *Eggertson, G. and P. Krugman (2011), “Debt, deleveraging, and the liquidity trap.”
- Mian A. and A. Sufi (2011), “What explains high unemployment? The aggregate demand channel,” working paper.

Suggested further reading:

- Romer, Chapters 5 and 6.
- Gali, J. (2008), *Monetary Policy, inflation, and the Business Cycle: An introduction to the new Keynesian Framework*, Princeton University Press.

- Krugman, P. (1998), “It’s baaack: Japan’s slump and the return of the liquidity trap,” *Brookings Papers on Economic Activity*, 29, p.137–206.
- Hall, R. (2011), “The Long Slump,” *Amerian Economic Review*, 101, p.431-469.
- Correia I., E. Farhi, Nicolini J. P. and P. Teles (2011), “Unconventional fiscal policy at the zero bound,” working paper.
- Werning, I. (2011), “Managing a liquidity trap: Monetary and fiscal policy,” working paper.
- Korinek, A. and A. Simsek (2012), “Liquidity trap and excessive leverage,” working paper..