Topics on Risk Sharing, Markets and Information

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Objectives of the course: The course will investigate the consequences of various kinds of 'frictions' in financial arrangements (from the absence of some markets to limited commitment, agency problems and informational asymmetries) for the properties of equilibrium allocations and risk sharing in competitive markets. The course will present first the basic 'tools' used in the analysis, and proceed then to examine various recent papers on the above topics as well as various applications.

Examination: The evaluation of students taking the course for credit will be based on: (i) a research proposal; (ii) the presentation of one paper to the class; (iii) performance in the homework assignments (iv) participation in class.

1 Risk Sharing with Complete and Incomplete Markets

1.1 Two Period Exchange Economies

- Arrow Debreu equilibria and competitive equilibria with sequential trading.
- Complete vs. incomplete financial markets.
- No arbitrage properties
- Stochastic discount factors
- Efficiency Properties of Competitive Equilibria
- Fully Insurable Risk and Sunspot Equilibria
- Value of Information

Magill, M. and W. Shafer: Incomplete Markets, in W. Hildenbrand and H. Sonneschein (eds.), *Handbook of Mathematical. Economics.*, vol. IV (ch. 30).

Magill, M. and M. Quinzii (1996): *Theory of Incomplete Markets*, MIT Press (ch. 2, 4)

Hirshleifer, J. (1971): The Private and Social Value of Information and the Reward to Inventive Activity, *American Economic Review* 61, 561-574.

1.2 Infinite Horizon Economies

- Again on the Equivalence between Arrow Debreu Equilibria and Equilibria with Sequential Trades
- Debt Constraints and Ponzi Schemes
- Risk Sharing with Incomplete Markets

Ljungqvist, L. and T. Sargent (2004): *Recursive Macroeconomic Theory*, II Ed., MIT Press (ch. 8, 13, 17).

Levine D. and W. Zame (1996): "Debt Constraints and Equilibrium in Infinite Horizon Economies with Incomplete Markets", *Journal of Mathematical Economics* 26, 103-131.

Levine D. and W. Zame (2001): Does Market Incompleteness Matter?, *Econometrica* 70, 1805-1840. [a simpler version of this paper is at http://www.dklevine.com/papers/nether2.pdf]

1.3 Firms and Corporate Finance

- Modigliani Miller Theorem
- Objective function of the firm and shareholders' unanimity when markets are incomplete

Mas-Colell, A., M. Whinston and J. Green (1995): *Microeconomic Theory,* Oxford University Press, 1995 (chapter 19.G)

Magill, M. and M. Quinzii (1996): *Theory of Incomplete Markets*, MIT Press (ch. 6)

Grossman, S.J. and O.J. Hart (1979): A Theory of Competitive Equilibrium in Stock Market Economies, *Econometrica*, 47(2), 293-329.

Carceles Poveda, E. and D. Coen-Pirani (2009): Shareholders' Unanimity with Incomplete Markets, *International Economic Review* 50.

Allen, F. and D. Gale (1988): Optimal Security Design, *Review of Financial Studies* 1 229-263.

Allen, F. and D. Gale (1991): Arbitrage, Short Sales and Financial Innovation, *Econometrica* 59 1041-1068

Bisin, A., P. Gottardi and G. Ruta (2010): Equilibrium Corporate Finance and Macroeconomics, mimeo, EUI.

1.4 Optimal Taxation with Incomplete Markets

Ljungqvist, L. and T. Sargent (2004): *Recursive Macroeconomic Theory*, II Ed., MIT Press (ch. 11).

Aiyagari, S. (1995): Optimal capital income taxation with incomplete markets, borrowing constraints, and constant discounting, *Journal of Political Economy* 103(6), 1158–75.

Atkeson, A., Chari, V. & Kehoe, P. (1999): Taxing capital income: A bad idea, *Federal Reserve Bank of Minneapolis Quarterly Review* 23(3), 3–17.

Davila, J. J. Hong, P. Krusell and V. Rios-Rull (2005): Constrained Efficiency in the Neoclassical Growth Model with Uninsurable Idiosyncratic Shocks, http://www.econ.umn.edu/~vr0j/papers/constrainedefficient2.pdf

Gottardi, P., A. Kajii and T. Nakajima (2010): Constrained Inefficiency and Optimal Taxation with Uninsurable Risks, mimeo.

2 Risk Sharing in Markets with Frictions

2.1 Limited Commitment and Default

2.1.1 Limited Punishments for Default

Dubey, P., J. Geanakoplos and M. Shubik (2005): Default and Efficiency in a General Equilibrium Model with Incomplete Markets, *Econometrica* 73, 1-37.

Chatterjee, S., D. Corbae, M. Nakajima and V. Rios-Rull (2007): A Quantitative Theory of Unsecured Consumer Credit with Risk of Default, *Econometrica* **75** (6), 1525-1589.

2.1.2 Borrowing Constraints

Kehoe, T. and D. Levine (1993): Debt Constrained Asset Markets, *Rev. Econ. Studies,* 865-888.

Kehoe, T. and D. Levine (2001): Liquidity Constrained vs. Debt Constrained Markets, *Econometrica*, 575-598

Alvarez, F. and U. Jermann (2000): Efficiency, Equilibrium, and Asset Pricing with Risk of Default, *Econometrica*, 775-798.

Hellwig, C. and G. Lorenzoni (2009): Bubbles and Self-Enforcing Debt, *Econometrica* 77(4), 1137-1164,

2.1.3 Taxes

Kehoe, P. and F. Perri (2004): Competitive Equilibria with Limited Enforcement, *Journal of Economic Theory*, vol. 119(1), pages 184-206.

2.1.4 Collateralized Lending

Chien, Y-L. and H. Lustig (2010): The Market Price of Aggregate Risk and the Wealth Distribution, *Review of Financial Studies*.

Geanakoplos, J. (2009): The Leverage Cycle, mimeo, Cowles Foundation, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1441943##

Kilenthong, W. and R.M: Townsend (2009): Market Based, Segregated Exchanges in Securities with Default Risk, http://townsend.uchicago.edu/papers/Market%20Based%20Segregated%20Exchanges.pdf.

Kiyotaki, N. and J. Moore (1997): Credit Cycles. *Journal of Political Economy*, 105(2), pp. 211-48.

Krishnamurthy, Arvind (2003): Collateral Constraints and the Amplification Mechanism, *Journal of Economic Theory* 111(2), pp. 277-292.

Kubler, F. and K. Schmedders (2003): Stationary Equilibria in Asset Pricing Models with Incomplete Markets and Collateral, *Econometrica* 71, 1767-93.

La'O, J. (2010): Collateral Constraints and Noisy Fluctuations, mimeo, MIT.

Lorenzoni, G. (2008): Inefficient Credit Booms, *Review of Economic Studies* 75 (3), 809-833

2.1.5 Agency Costs, Liquidity and Intermediation

Allen. F. and D. Gale (2004): Financial Intermediaries and Markets, *Econometrica* 72, 1023-1061.

Bernanke, B. and M. Gertler (1989): Agency Costs, Net Worth and Business Fluctuations, *American Economic Review*, 79, 14-31.

Holmstrom, B. and J. Tirole (1997): Financial Internediation, Loanable Funds and the Real Sector, *Quarterly Journal of Economics* 112, 663-691.

Kiyotaki, N. and J. Moore (2008): Liquidity, Business Cycles and Monetary Policy, http://www.princeton.edu/~kiyotaki/papers/ChiKM6-1.pdf

3 Asymmetric Information

3.1 Private Information over Aggregate States (Insider Trading)

Mas-Colell, A., M. Whinston and J. Green (1995): *Microeconomic Theory,* Oxford University Press, 1995 (chapter 19.H)

Grossman, S. and J. Stiglitz (1981): On the Impossibility of Informationally Efficient Markets, *Amer. Econ. Rev.*, 393-408.

Grossman, S. and J. Stiglitz (1976): Information and Competitive Price Systems, *Amer. Econ. Rev.*, 246-253.

3.2 Private Information over Idiosyncratic States (Markets for contracts)

Bisin, A. and P. Gottardi (2000): When Are Asymmetric Information Economies Walrasian? A Survey, mimeo.

3.2.1 Arbitrary Restrictions on Trades (Exclusive contracts)

Prescott, E. and R. Townsend (1984): Pareto Optima and Competitive Equilibria with Adverse Selection and Moral Hazard, *Econometrica*, 1799-1819.

Kocherlakota, N. (1998): The Effects of Moral Hazard on Asset Prices when Financial Markets are Complete, *J. Mon. Econ.*, 39-56.

3.2.2 Non Exclusive Contracts and Securitization

Bisin, A. and P. Gottardi (1999): Competitive Equilibria with Asymmetric Information, *J. Econ. Theory* 87(1), 1-48.

Golosov, M. and A. Tsyvinski (2007): Optimal Taxation with Endogenous Insurance Markets, *Quarterly Journal of Economics*, May, 487-534.

Kurlat, Pablo, 2010, "Lemons, Market Shutdowns and Learning, mimeo, MIT.

Parlour, C. and G. Plantin (2008): Loan Sales and Relationship Banking, Journal of Finance.

Parlour, C. and U. Rajan (2001): Competition in Loan Contracts, *American Economic Review*, 1311-1328.

3.2.3 Optimal Taxation again

Kocherlakota, N. (2005): Zero Expected Wealth Taxes: A Mirrlees Approach to Dynamic Optimal Taxation, *Econometrica* 73 (5), 1587–1621.

Gottardi, P. and N. Pavoni (2010): Optimal Taxation of Assets with Complete Markets and Asymmetric Information, mimeo.

3.2.4 Firms and Corporate Finance again

Dreze, J., E. Minelli and M. Tirelli (2007): Production and Financial Policy under Asymmetric Information, *Economic Theory* 35, 217–231

James Dow, Gary Gorton and Arvind Krishnamurthy (2005): Equilibrium Investment and Asset Prices under Imperfect Corporate Control, *American Economic Review* **95**(3), 659-681.

Gorton, G. and P. He (2006): "Agency-Based Asset Pricing", mimeo