

# Topics in Macro and Finance

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## 1 Assignments:

1. **1st homework:** Questions 19.G.3 and 19.G.4 (with additional question stated in class), *due Tuesday, Feb. 19, 3pm*
2. **2nd homework:** *due Tuesday, March 11, 3pm.*

Answer the following question:

Consider an endowment economy populated by a large number of individuals with identical preferences

$$E \sum_{t=0}^{\infty} \beta^t u(c_t) = E \sum_{t=0}^{\infty} \beta^t (Ac_t - \frac{c_t^2}{2}), \quad \text{with } \beta = 0.8$$

With regard to endowments, individuals are divided into two types of equal size. Individual of type I receive 0 units of the (single) consumption good in state  $s = 1$  and 2 units in state  $s = 2$  in any give period, while individual of type II receive 2 units in state  $s = 1$  and 0 units in state  $s = 2$ . The probability of  $s = 1$  is 0.5 in any given period and the realization of the state is iid across periods. Thus the per capita endowment is always 1 in every period.

- (a) Consider the problem faced by a social planner aiming to maximize the weighted average of the utility of the two types of consumers, giving the same weight to each consumers' type.
  - i. Find the optimal consumption allocation (i.e. the solution of the planner's problem) in the absence of any constraint (besides feasibility)
  - ii. Suppose now consumers face a limited commitment problem, as every individual is free to walk away at any point in time from the consumption plan assigned to him, but if he does that he must then live in autarky forever after.
    - A. Find the optimal consumption allocation in the special case where the planner lacks memory (that is, the consumption of any individual in any period can only be a function of the current endowment realization)
    - B. Can the optimal consumption plan found above (in A.) be improved if we allow for history dependent consumption levels (that is the consumption in any given period and state can depend on the whole history of endowment realizations of the individual up to that point in time)?

- C. Explain how the optimal consumption plan varies when the parameter  $\beta$  goes to one. Explain how the optimal consumption plan varies when  $\beta$  goes to zero.
- (b) Show how the optimal consumption plan found above (in ii.A and ii.B) can be decentralized:
- i. A. with complete contingent markets open at date 0 only and appropriate trading restrictions
  - B. with markets opening in every period for trades in a complete set of (two) one period Arrow securities and appropriate restrictions on the trade of such assets.
  - C. with the same set of markets as in B. above but, instead of Arrow securities, with taxes on the trades of Arrow securities.
- In each of the above cases A,B,C find the equilibrium level of prices (and, in case C) also of the optimal tax rate.

## 2 Course Outline

### 2.1 Competitive Economies under Uncertainty: Symmetric Information

#### 2.1.1 Review

1. Walrasian exchange economies under uncertainty.
2. Competitive equilibria with sequential trading: complete vs. incomplete financial markets.
3. Efficiency Properties of Competitive Equilibria
4. Fully Insurable Risk
5. Sunspot Equilibria
6. Value of Information
7. Infinite Horizon Economies

*Surveys:*

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

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

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

Ljungqvist, L. and T. Sargent (2004): *Recursive Macroeconomic Theory*, II Ed., MIT Press (ch. 7).

Hart, O.D. (1975): On the Optimality of Equilibrium when the Market Structure is Incomplete, *J. Econ. Theory*, 418-443.

Newbery, D. and J. Stiglitz: Pareto Inferior Trade, *Rev. Econ. Studies*, 1984, 1-12.

Greenwald, B. and J. Stiglitz: Externalities in Economies with Imperfect Information and Incomplete Markets, *Quart. J. of Econ.*, 1986, 229-264.

### **2.1.2 Firms and Corporate Finance**

1. Shareholders' unanimity when markets are Incomplete

2. Modigliani Miller Theorem

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 (2007): Shareholders' Unanimity with Incomplete Markets (<http://ms.cc.sunysb.edu/~ecarcelespov/otherfiles/incompleteness.pdf>).

Allen, F. and D. Gale (1988): Optimal Security Design, *Review of Financial Studies* 1 (1988) 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 (2007): Equilibrium Corporate Finance and Macroeconomics, mimeo, NYU.

### 2.1.3 Default and Collateral

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

Kubler, F. and K. Schmedders (2003): Stationary Equilibria in Asset-Pricing Models with Incomplete Markets and Collateral, *Econometrica*, 71(6), 1767-1793.

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.

### 2.1.4 Borrowing Constraints and Limited Commitment

#### Constrained Efficient Allocations

Kocherlakota, N. (1996): Implications of Efficient Risk Sharing without Commitment, *Review of Economic Studies*, 595-609.

#### Alternative Decentralizations

1. Borrowing Constraints, with markets for contingent claims

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

2. Borrowing constraints, with sequential trades

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

3. Taxes

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

#### Welfare Properties of Economies with Financial Frictions

Lorenzoni, G. (2007): Inefficient Credit Booms, mimeo, MIT (<http://econ-www.mit.edu/files/1989>)

Kiyotaki, Nobuhiro and John 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.

Caballero, Ricardo J. and Arvind Krishnamurthy (2003): Excessive Dollar Debt: Financial Development and Underinsurance. *Journal of Finance*, 58(2), pp. 867-94.

## 2.2 Competitive Economies with Asymmetric Information

### 2.2.1 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.

### 2.2.2 Private Information over Idiosyncratic States (Markets for contracts)

#### Fully Observable Trades (Exclusive contracts) \_ Alternative Decentralizations

##### 1. Trading Restrictions

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

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.

##### 2. Taxes

Albanesi, S. and C. Sleet (2006): Dynamic Optimal Taxation with Private Information, *Review of Economic Studies* (73), 1-30.

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

Golosov, M., Kocherlakota, N., and Tsyvinski, A. (2003): "Optimal Indirect and Capital Taxation," *Review of Economic Studies* 70, 569-88.

Gottardi, P. and N. Pavoni (2008): Optimal Taxation of Assets with Complete Markets and Asymmetric Information

#### Imperfectly Observable Trades (Non Exclusive Contracts)

Allen, F. (1985). "Repeated Principal-Agent Relationships with Lending and Borrowing." *Economic Letters* 17, 27-31.

Bisin, A., P. Gottardi and A. Rampini (2008): Managerial Hedging and Portfolio Monitoring, *J. European Econ. Association*, March.

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

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.

### 2.2.3 Agency Problems, Corporate Finance and Equilibrium Asset Prices

you should choose the papers for the next set of presentations among the following ones:

B. Holmstrom and J. Tirole (2001): "LAPM: A Liquidity Based Asset-Pricing Model", *Journal of Finance* 56: 1837-1867.

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

Albuquerque, Rui and Neng Wang (2008): "Agency Conflicts, Investment, and Asset Pricing," *The Journal of Finance*. **63**(1), 1-40.

G. Gorton and P. He (2006): "Agency-Based Asset Pricing", <http://finance.wharton.upenn.edu/~gorton/p>

## 3 OLG Economies

### 3.1 The case of certainty (a brief review)

Ljungqvist, L. and T. Sargent (2004): *Recursive Macroeconomic Theory*, II Ed., MIT Press (ch. 9)

### 3.2 Uncertainty

Aiyagari, S.R. and D. Peled (1991): "Dominant Root Characterization of Pareto Optimality and the Existence of Optimal Equilibria in Stochastic OLG Models, *J. Econ. Theory* 54, 69-83.

Spear, S.E. (1985): "Rational Expectations in the OLG Model", *J. Econ. Theory* 35, 251-275.

Krueger, D. and F. Kubler (2006): "Intergenerational Risk Sharing via Social Security ?", *American Economic Review*, 96, 737-755.

Dutta, J. and H. Polemarchakis (1990): "Asset Markets and Equilibrium Processes", *Review of Economic Studies* **57**, 229-254.

Piero Gottardi – Felix Kubler: "Social Security and Risk Sharing", revised February 2008.