

## ECO 525: Financial Economics I: Asset Pricing

### Course Description:

The aim of this Ph.D. course is to provide an introduction to asset pricing under asymmetric information, to macroeconomics with financial frictions and to theory of money and capital. Module I introduces students to rational expectations models and strategic market microstructure models, especially insider trading and sequential trade models. Module II pays explicit attention to models of bubbles and limits to arbitrage. Herding models form part of this module. Module III outlines with recent liquidity models that have important implications for risk management and systemic risk measurement. Module IV covers recent developments in macroeconomics with financial frictions. Module V touches on the “Theory of Money”, while Module VI covers some aspects of the “Theory of Capital”.

### Structure of the Course:

#### I) Asymmetric Information Models [3]

1. Market Microstructure Models
  - Rational Expectations Equilibrium versus Bayesian Nash Equilibrium Concept
  - Insider Trading Models and Sequential Trade Models
  - Herding Models
2. Allocative and Informational Efficiency
3. Higher Order Uncertainty, No-Trade Theorems (optional)
4. Information Acquisition – Rational Inattention (optional)

#### II) Bubbles, Limits to Arbitrage, Systemic Risk [1]

1. Rational Bubbles – Predictability Studies
2. Noise Trader Risk (myopic versus long horizons) – Role of Hedging Demand
3. Synchronization Risk

#### III) Liquidity and Systemic Risk– Market, Funding and Technological Liquidity [2]

1. Debt Funding and Credit Frictions
  - Debt overhang, credit rationing, info insensitivity (optional)
2. Maturity Choice and Funding (Rollover) Risk
3. Liquidity Asset Pricing and Liquidity Spirals
4. Systemic Risk Measures

#### IV) Macroeconomics with Financial Frictions [2]

1. Endogenous Systemic Risk
2. Volatility Paradox

## **V) Theory of Money with Financial Frictions [1]**

1. The I Theory of Money
2. Redistributive Monetary Policy

### **References Part I: Asymmetric Information Models**

\*Brunnermeier, Markus K., 2001, Asset Pricing under Asymmetric Information - Bubbles, Technical Analysis, Herding and Crashes, Oxford University Press.  
CHAPTER 1-3, 6. (see detailed references in this book)

Vives, Xavier, 2008, Information and Learning in Markets: The Impact of Market Microstructure, Princeton University Press.

Veldkamp, Laura L., 2011, Information Choice in Macroeconomics and Finance, Princeton University Press.

Foucault, Thierry, Marco Pagano and Ailsa Roell (2015), Market Liquidity: Theory, Evidence, and Policy, Oxford University Press

O'Hara, Maureen, 1995, Market Microstructure Theory, Blackwell Publishers.)

### **References Part II: Bubbles, Limited Arbitrage and Systemic Risk**

\*Brunnermeier, Markus K. and Martin Oehmke, 2013, Bubbles, Financial Crises, and Systemic Risk, Handbook of the Economics of Finance, Vol. 2.  
[http://scholar.princeton.edu/markus/files/05b\\_Brunnermeier\\_Oehmke\\_Systemic\\_Risk\\_website.pdf](http://scholar.princeton.edu/markus/files/05b_Brunnermeier_Oehmke_Systemic_Risk_website.pdf)

\*DeLong, J. Bradford, Andrei Shleifer, Lawrence H. Summers and Robert Waldmann, 1990a, Noise Trader Risk in Financial Markets, Journal of Political Economy 98, 703-738.

\*Abreu, Dilip and Markus Brunnermeier, 2003, Bubbles and Crashes, Econometrica 71, 173-204.

\*Abreu, Dilip and Markus Brunnermeier, 2003, Synchronization Risk and Delayed Arbitrage, Journal of Financial Economics 66, 341-360.

DeLong, J.B., A. Shleifer, L. Summers and R. Waldmann, 1990b, Positive Feedback Investment Strategies and Destabilizing Rational Speculation, Journal of Finance 45, 375-395.

Friedman, M., 1953, The Case of Flexible Exchange Rates, in Essays in Positive Economics, Chicago: University of Chicago Press.

Shleifer, Andrei and Robert W. Vishny, The Limits of Arbitrage, Journal of Finance, 52(1), 35-55.

Mitchell, Mark, Todd Pulvino and Erik Stafford, 2002, Limited Arbitrage in Equity Markets, Journal of Finance 57, 551-584.

\*Markus K. Brunnermeier, Jan. 2001, Asset Pricing under Asymmetric Information - Bubbles, Technical Analysis, Herding and Crashes, Oxford University Press (CHAPTER 6).

\*Allen, F., Morris, S., Postlewaite, A., 1993. Finite Bubbles with Short Sales Constraints and Asymmetric Information. *Journal of Economic Theory* 61, 206-229.

\*Blanchard, Olivier J. and Watson, Mark W., 1982, Bubbles, Rational Expectations, and Financial Markets, in Paul Wachtel, ed., *Crises in Economic and Financial Structure*. Lexington MA: Lexington Books, 295-315.

Cutler, David M., Poterba, James M. and Summers, Lawrence H., 1989, What moves Stock Prices? *Journal of Portfolio Management* 15, 4-12.

Nagel, Stefan and Ken Singleton, 2013, Empirical Cross-Sectional Asset Pricing, *Annual Review of Financial Economics*. <http://goo.gl/lpcuGl>

\*Adrian, Tobias and Markus K. Brunnermeier, CoVaR, (see my website)

\*Markus K. Brunnermeier and Schnabel, Isabel, 2015, Bubbles and Central Banks: Historical Perspectives. (see my website)

### **References Part III: Liquidity**

Tirole, Jean, 2005, *The Theory of Corporate Finance*, Chapter 3.

Facault, Thierry, Marco Pagano and Ailsa Röell, 2013, *Market Liquidity: Theory, Evidence and Policy*, Oxford University Press

Brunnermeier, Markus K., 2009, Deciphering the Liquidity and Credit Crunch 2007-08, *Journal of Economic Perspectives*.

\*Myers, 1977, Determinants of Corporate Borrowing, *Journal of Financial Economics*, 5, 147-175.

Lamont, Owen, 1995, Corporate Debt-Overhang and Macroeconomic Expectations, *American Economic Review*, 85 (5), 1106-1117

\*Townsend, Robert, 1979, Optimal Contracts and Competitive Markets with Costly State Verification, *Journal of Economic Theory*, 21, 417-425.

Bolton, Patrick and David S. Scharfstein, 1990, A Theory of Predation Based on Agency Problems in Financial Contracting, *American Economic Review*, 80, 93-106.

\*Stiglitz, Joseph E. and Andrew Weiss, 1981, Credit Rationing in Market with Imperfect Information, *American Economic Review*, 71(3), 393-410.

\*Holmstrom, Bengt and Jean Tirole, 1997, Financial Intermediation, Loanable Funds, and the Real Sector, *Quarterly Journal of Economics*, 112, 663-691.

Rajan, Raghu, 1992, Insiders and Outsiders: The Choice between Informed and Arm's length debt, *Journal of Finance*, 47, 1367-1400.

Sharpe, S, 1990, Asymmetric Information, Bank Lending and Implicit Contracts: A Stylized Model of Customer Relationships, *Journal of Finance* 45, 1069-1087.

Diamond, Douglas and Philip Dybvig, 1993, Bank Runs, Deposit Insurance, and Liquidity, *Journal of Political Economy*.

Calomiris, Charles W. and Charles M. Kahn, The Role of Demandable Debt in Structuring Optimal Banking Arrangements, *American Economic Review*, 1991, 497-513.

\*Brunnermeier, Markus and Martin Oehmke, 2013, "Maturity Rat Race", *Journal of Finance*.

Gorton, Gary and George Pennacchi, 1990, Financial Intermediaries and Liquidity Creation, *Journal of Finance* 45, 49-72.

DeMarzo, Peter, 2005, The Pooling and Tranching of Securities: A Model of Informed Intermediation, *Review of Financial Studies*, 18, 1-35.

\*Grossman, Sandy and Merton Miller, 1988, Liquidity and Market Structure, *Journal of Finance* 43, 617-633.

\*Brunnermeier, Markus K. and Lasse Pedersen, Market Liquidity and Funding Liquidity, 2007, [www.princeton.edu/~markus/liquidity](http://www.princeton.edu/~markus/liquidity).

Genotte, Gerard and Hayne Leland, 1990, Market Liquidity, Hedging and Crashes, *American Economic Review* 80, 999-1021.

\*Shleifer, Andrei and Robert W. Vishny, Liquidation Values and Debt Capacity: A Market Equilibrium Approach, *Journal of Finance*, 47, 1343-1346.

Pedersen, Lasse H. and Nicolae B. Garleanu, 2011, "Margin-Based Asset Pricing and the Law of One Price, *Review of Financial Studies*, 24 (6), 1980-2022.

Hart (1975), On the Optimality of Equilibrium when the Market Structure is Incomplete, *Journal of Economic Theory*, 11 (3), 418–443.

Stiglitz (1982), The Inefficiency of Stock Market Equilibrium, *Review of Economic Studies*, 49, 241-261.

Geanakoplos and Polymarchakis (1986), Existence, Regularity, and Constrained Suboptimality of Competitive Allocations When the Asset Market is Incomplete, Chapter in "Uncertainty, Information and Communication", *Essays in honor of Kenneth J. Arrow*, Volume III. 65 – 95.

\*Brunnermeier, Markus K. and Lasse Pedersen, 2005, Predatory Trading, *Journal of Finance*, 60, 4, 1825-1863, [www.princeton.edu/~markus/predatory\\_trading](http://www.princeton.edu/~markus/predatory_trading).

Bruce Carlin, Miguel Lobo and S. Viswanathan, (2007), Episodic Liquidity Crisis: Cooperative and Predatory Trading, Journal of Finance.

Rajan, Raghuram, 2005, Has Financial Development Made the World Riskier? in The Greenspan Era: Lessons for the Future, Federal Reserve Bank of Kansas City.  
<http://www.kc.frb.org/PUBLICAT/SYMPOS/2005/PDF/Rajan2005.pdf>  
subsequent discussion [http://www.kc.frb.org/publicat/sympos/2005/PDF/GD5\\_2005.pdf](http://www.kc.frb.org/publicat/sympos/2005/PDF/GD5_2005.pdf)

\*Adrian, Tobias and Markus K. Brunnermeier, CoVaR, working paper  
<http://scholar.princeton.edu/markus/publications/covar>

\*Brunnermeier, Markus K., Gary Gorton and Arvind Krishnamurthy, 2012, Risk Topography, NBER Macroeconomics annual 2011, 26, 149-176,  
[http://scholar.princeton.edu/markus/files/risk\\_topography.pdf](http://scholar.princeton.edu/markus/files/risk_topography.pdf)

\*Brunnermeier, Markus K. and Martin Oehmke, 2013, Bubbles, Financial Crises, and Systemic Risk, Handbook of the Economics of Finance, Vol. 2. (Part III)  
[http://scholar.princeton.edu/markus/files/05b\\_Brunnermeier\\_Oehmke\\_Systemic\\_Risk\\_website.pdf](http://scholar.princeton.edu/markus/files/05b_Brunnermeier_Oehmke_Systemic_Risk_website.pdf)

#### **References Part IV: Macroeconomics with Financial Frictions**

See website: <http://scholar.princeton.edu/markus/MacroMoneyFinance>

Brunnermeier, Markus K., Thomas Eisenbach and Yuliy Sannikov, 2013, “Macroeconomics with Financial Frictions: A Survey”, (please study it carefully before class)

\*Brunnermeier, Markus K. and Yuliy Sannikov, 2014, “A Macroeconomic Model with a Financial Sector”, American Economic Review 104(2), pp. 379-421.

\*Brunnermeier, Markus K. and Yuliy Sannikov, 2015, International Credit Flows and Pecuniary Externalities, American Economic Journal: Macro. 7(1): pp. 297-338.

He, Zhiguo, and Arvind Krishnamurthy (2013), Intermediary Asset Pricing, American Economic Review 103(2): pp. 732-70.

He, Zhiguo, and Arvind Krishnamurthy (2012), A Model of Capital and Crises, Review of Economic Studies 79(2): pp. 735-777.

#### **References Part V: Value of Money and Capital**

\*Brunnermeier, Markus K. and Yuliy Sannikov, 2015, The I Theory of Money.

\*Brunnermeier, Markus K. and Yuliy Sannikov, 2012, Redistributive Monetary Economics. Jackson Hole.

Drechsler, Itamar, Alexi Savov and Philipp Schnabl, 2015, A Model of Monetary Policy and Risk Premia, Journal of Finance (forthcoming).

**Additional Course Material:**

Additional course material (if necessary) will be made available on the course website on Princeton blackboard.

**Preceptor:**

Fernando J. Mendo Lopez

Office: BCF 303A

E-mail: [fjlopez@princeton.edu](mailto:fjlopez@princeton.edu)

- The preceptors' job is to act as a catalytic in that process. Please **ask** him when something is not clear – if you did not understand something, the odds are that somebody else did not either

**Office hours (preliminary):**

Monday: 1:00 p.m. to 2:30 p.m.

**Grading:**

The overall grade is calculated based on the following weighting scheme:

Class Participation:	20 %
Final examination:	80 %

The final will be held in January.

Although the exams are closed book, you may bring into the exam one 8 ½ x 11 sheet of paper. You can write on both sides and as small as you wish, but I recommend using this only as a psychological support to have a formula available “just in case.” The exams won't be “fill in the blanks” exercises, nor will they rely on intensive formula-based computations. Preparing lots of pre-fabricated solutions from previous exams or assignments will only be distracting during the exam. You will be allowed to use a silent battery operated calculator during the exams.

**Appeals policy:**

Since the preceptor will grade all assignments and exams, all appeals of grades should first be addressed to the preceptor within one week. Verbal appeals of grades will not be accepted. We will be glad to regrade any assignment or exam. However, you must provide a statement in writing as to where and why there is a problem. Importantly, the entire exam or assignment will be regraded. As a result, the regraded score may increase, remain the same, or decrease. Exams or assignments written with pencil cannot be regraded.