

FINANCE 937
Topics in Macro Finance
Fall 2018

Professors: João F. Gomes (SHDH 2329)
Tim Landvoigt (SHDH 2324)
TAs: Alexander Belyakov (SHDH 2400)
Mehran Ebraminian (SHDH 2400)

DESCRIPTION

Finance 937 is a *semester* long course in **quantitative macro-finance theory**. It is intended for advanced doctoral students in finance, economics and related fields. The course connects five literatures: (i) firm selection, investment and growth; (ii) models of corporate, household and sovereign debt; (iii) macro models with a financial sector; (iv) dynamic banking models; and, to a lesser extent, (v) production based asset pricing.

The course is part of the Doctoral sequence in Finance. It follows logically from FNCE 924. It is intended to complement (with minimum overlap) the asset pricing courses FNCE 921 and FNCE 934. The choice of topics is also designed to appeal to economics students with an interest in Macro or IO.

Our approach is to develop and discuss in detail a set of core ideas. Course lectures summarize and combine material from several key papers, often using a consistent notation and methodology. These core insights are then used to discuss recent literature.

The reading list has two parts. It is expected that you will read the core papers and those assigned for presentation. The supplementary readings are reasonably extensive. Past students found this to be a very useful reference for the remaining of their graduate studies and beyond.

Despite the quantitative nature of the material there is only a limited time for teaching numerical methods. Students with deeper interests are encouraged to take the (excellent) classes offered in the Economics department.

CORE READINGS

1. Quantitative Corporate Finance: Investment, Leverage and Heterogeneity

- Gomes, João, Financing Investment, *American Economic Review*, 2001
- Goldstein, Robert, Ju, Nengjiu, and Leland, Hayne, An EBIT Based Model of Dynamic Capital Structure, *Journal of Business*, 2001
- Hennessy, Christopher, and Toni Whited, Debt Dynamics, *Journal of Finance*, 2005
- Chatterjee, Satyajit, and Eyigungor, Burcu, Maturity, Indebtedness, and Default Risk, *American Economic Review*, 2012
- Corbae, Dean and Pablo D'Erasmus, Capital Requirements in a Quantitative Model of Banking Industry Dynamics, working paper, Federal Reserve Bank of Philadelphia, 2014

2. Asset Pricing with Leverage

- Chen, Hui, Macroeconomic Conditions and the Puzzles of Credit Spreads and Capital Structure, *Journal of Finance*, 2011
- Chen, Long, Pierre Collin-Dufresne, and Robert Goldstein, On the Relationship Between the Credit Spread Puzzle and the Equity Premium Puzzle, *Review of Financial Studies*, 2009
- Gomes, João and Lukas Schmid, Levered Returns, *Journal of Finance*, 2010
- Gomes, João and Lukas Schmid, Equilibrium Asset Pricing with Leverage and Default, forthcoming, *Journal of Finance*, 2018

3. Macroeconomic Models with Financial Imperfections

- Bernanke, Ben, Mark Gertler and Simon Gilchrist, The Financial Accelerator in a Quantitative Business Cycle Framework, *Handbook of Macroeconomics*, 1999
- Brunnermeier, Markus and Yuliy Sannikov, A Macroeconomic Model with a Financial Sector, *American Economic Review*, 2013

4. Quantitative Macro-Finance Models

- Favilukis, Jack, Ludvigson, Sydney and Van Nieuwerburgh, Stijn, The Macroeconomic Effects of Housing Wealth, Housing Financing and Limited Risk-Sharing in General Equilibrium, *Journal of Political Economy*, 2016
- Bianchi, Javier, Efficient Bailouts?, *American Economic Review*, 2016
- Elenev, Vadim, Tim Landvoigt, and Stijn Van Nieuwerburgh, A Macroeconomic Model with Financially Constrained Producers and Intermediaries, Working Paper, 2018

FURTHER READINGS

Firm Selection, Growth and Investment

Continuous Time Tools

- Dixit, Avinash, and Pindyck, Robert, Ch. 5, 6, 10 and 11, *Investment Under Uncertainty*, Princeton University Press, 1994
- Benjamin Moll's website: <http://www.princeton.edu/~moll/notes.htm>

Optimal Investment with Frictions

- Abel, Andrew and Eberly, Janice, A Unified Model of Investment Under Uncertainty, *American Economic Review*, 1994
- Bond, Stephen, and Meghir, Costas, Dynamic Investment Models and the Firm's Financial Policy, *Review of Economic Studies*, 61, 1994
- Caballero, Ricardo, and Engel, Eduardo, Explaining the Investment Dynamics in U.S. Manufacturing: A Generalized (S,s) Dynamics, *Econometrica*, 1999
- DeMarzo, Peter, Michael Fishman, Zhiguo He, and Neng Wang, Dynamic Agency and the Q Theory of Investment, *Journal of Finance*, 2009

Mergers and Corporate Restructuring

- Gomes, João and Livdan, Dmitry, Optimal Diversification: Reconciling Theory and Evidence, *Journal of Finance*, 2004
- Jovanovic, Boyan and Rousseau, Peter, The Q-Theory of Mergers, *American Economic Review*, 2002.

Firm Selection and Growth

- Ericson, Richard and Pakes, Ariel, Markov Perfect Industry Dynamics: A Framework for Empirical Work, *Review of Economic Studies*, 1995
- Gabaix, Xavier, Granular Origins of Business Cycles, *Econometrica*, 2011
- Hopenhayn, Hugo, Entry, Exit, and Firm Dynamics in Long Run Equilibrium, *Econometrica*, 1992
- Luttmer, Erzo, Selection, Growth and the Size Distribution of Firms, *Journal of Political Economy*, 2007

Macro Investment

- Bloom, Nicholas, The Impact of Uncertainty Shocks, *Econometrica*, 2007
- Hall, Robert, The Stock Market and Capital, *American Economic Review*, 2001
- Lucas, Robert, and Prescott, Edward, Investment Under Uncertainty, *Econometrica*, 1971
- Philippon, Thomas, The Bond Market's Q, *Quarterly Journal of Economics*, 2009

IO and Macro

- Carvalho, Vasco and Grassi, Basile, Large Firms and the Business Cycle, unpublished manuscript, 2017
- Clementi, Gian Luca and Dino Palazzo, Entry, Exit, Firm Dynamics, and Aggregate Fluctuations, *American Economic Journal: Macroeconomics*, 2015

Corporate, Household and Sovereign Debt

Optimal Capital Structure of Firms

- Glover, Brent, The Expected Cost of Default, *Journal of Financial Economics*, 2014
- Leland, Hayne, Corporate Debt Value, Bond Covenants, and Optimal Capital Structure, *Journal of Finance*, 1994
- Leland, Hayne, and Klaus Toft, Optimal Capital Structure, Endogenous Bankruptcy, and the Term Structure of Credit Spreads, *Journal of Finance*, 1996
- Rampini, Adriano and S. Viswanathan, Collateral and Capital Structure, *Journal of Financial Economics*, 2013.
- Riddick, Leigh, and Whited, Toni, The Corporate Propensity to Save, *Journal of Finance*, 2009
- Shleifer, Andrei, and Robert Vishny, Liquidation Values and Debt Capacity: A Market Equilibrium Approach, *Journal of Finance*, 1992
- Strebulaev, Ilya, Do Tests of Capital Structure Theory Mean What They Say? *Journal of Finance*, 2007.

Corporate Investment with Debt

- Abel, Andrew, Investment and Leverage, Working Paper, Wharton School, 2016.
- Hennessy, Christopher, and Toni M. Whited, How Costly is External Financing? Evidence from a Structural Estimation, *Journal of Finance*, 2007.

Household and Sovereign Debt

- Arellano, Cristina, Default Risk and Income Fluctuations in Emerging Economies. *American Economic Review*, 2008
- Arellano, Cristina, and Ramanarayanan, Ananth, Default and the Maturity Structure in Sovereign Bonds, *Journal of Political Economy* 2012
- Chatterjee, Satyajit, Corbae, Dean, Nakajima, Makoto and Rios-Rull, Jose-Victor, A Quantitative Theory of Unsecured Consumer Credit with Risk of Default, *Econometrica*, 2007
- Chatterjee, S., and E. Burcu. 2012. Maturity, indebtedness, and default risk. *American Economic Review*, 2012.
- Corbae, Dean, Quintin, Erwan, Leverage and the Foreclosure Crisis, *Journal of Political Economy*, 2015
- Eaton, Jonathan, and Gersovitz, Mark, Debt with Potential Repudiation: Theoretical and Empirical Analysis, *Review of Economic Studies*, 1983
- Hatchondo, Juan Carlos, Martinez, Leonardo and Saprizza, Horacio, Quantitative Properties of Sovereign Default Models: Solution Methods Matter, *Review of Economic Dynamics* 2010
- Mendoza, Enrique, and Yue, Vivian, A General Equilibrium Model of Sovereign Default and Business Cycles, *Quarterly Journal of Economics*, 2012.

Asset Pricing with Debt

Credit Spreads

- Bhamra, Harjoat, Lars Alexander Kuehn and Ilya Strebulaev, The Levered Equity Risk Premium and Credit Spreads: A Unified Framework, *Review of Financial Studies*, 2010
- Hackbarth, Dirk, Jianjun Miao, and Erwan Morellec, Capital Structure, Credit Risk, and Macroeconomic Conditions, *Journal of Financial Economics*, 2006
- He, Zhinguo and Milbradt, Konstantin, Endogenous Liquidity and Defaultable Bonds, *Econometrica*, 2013.

Asset Pricing in General

- Gourio, Francois, Credit Risk and Disaster Risk. *American Economic Journal: Macroeconomics*, 2013.
- Favilukis, Jack, Xiaoji Lin and Xiaofei Zhao, The Elephant in the Room: the Impact of Labor Obligations on Credit Markets, working paper University of British Columbia, 2018

Macroeconomic Models with Financial Imperfections

Macro Theory Models with Financing Frictions

- Carlstrom, Charles and Fuerst, Timothy, Agency Costs, Net Worth and Business Fluctuations: A Computable General Equilibrium Approach, *American Economic Review*, 1997
- Kiyotaki, Nobuhiro and John Moore, Credit Cycles, *Journal of Political Economy*, 1999
- Bigio, Saki, Endogenous Liquidity and the Business Cycle, *American Economic Review*, 2015.
- Di Tella, Sebastian Uncertainty Shocks and Balance Sheet Recessions, *American Economic Review*, 2015
- Bianchi, Javier and Enrique Mendoza, Optimal Time-Consistent Macroprudential Policy, *Journal of Political Economy*, 2018

Macro Theory Models with “Bank Runs”

- Allen, Franklin, Elena Carletti and Douglas Gale, Money, Financial Stability and Efficiency, *Journal of Economic Theory*, 2012
- Gertler, Mark and Nobuhiro Kiyotaki, Bank Liquidity and Bank Runs in an Infinite Horizon Economy, *American Economic Review*, 2016
- Boissay, Frederic, Collard, Fabrice and Smets, Frank, Booms and Banking Crises, *Journal of Political Economy*, 2016

Quantifying Financial Frictions

- Chari, V. Kehoe, Patrick and McGrattan, Ellen, Accounting for Business Cycles, *Econometrica*, 2007
- Christiano, Lawrence, Motto, Roberto, and Rostagno, Massimo, Financial Factors in Business Cycles, working paper, Northwestern University, 2010
- Christiano, Lawrence J., Roberto Motto, and Massimo Rostagno, Risk Shocks, *American Economic Review*, 2014

- Hall, Robert, Quantifying the Forces Leading to the Collapse of GDP after the Financial Crisis, *NBER Macroeconomics Annual*, 2014
- Phillipon, Thomas, Has the U.S. Finance Industry Become Less Efficient? *American Economic Review*, 2015

Models with Heterogeneous Firms

- Khan, Aubhik and Julia K. Thomas, Credit Shocks and Aggregate Fluctuations in an Economy with Production Heterogeneity, *Journal of Political Economy*, 2014
- Crouzet, Nicolas, Corporate Debt Structure and the Macroeconomy, working paper, Columbia University, 2015

Quantitative Macro-Finance Models

Macro Models of Firm Financing Frictions

- Jermann, Urban and Quadrini, Vincenzo, Macroeconomic Effects of Financial Shocks, *American Economic Review*, 2011
- Gomes, João, Jermann, Urban and Schmid, Lukas, Sticky Leverage, *American Economic Review*, 2016

Monetary Policy and Banks

- Gertler, Mark and Peter Karadi, A Model of Unconventional Monetary Policy, *Journal of Monetary Economics*, 2011
- Bianchi, Javier and Bigio, Saki, Banks, Liquidity Management and Monetary Policy, Working Paper 2018

Mortgage Finance

- Greenwald, Daniel, The Mortgage Credit Channel of Macroeconomic Transmission, Working Paper, 2018
- Elenev, Vadim, Mortgage Credit, Aggregate Demand, and Unconventional Monetary Policy, Working Paper, 2017

Banking and Regulation

- Van den Heuvel, The Welfare Cost of Bank Capital Requirements, *Journal of Monetary Economics*, 2006
- Nguyen, Thien, Bank Capital Requirements: A Quantitative Analysis, Working Paper, Wharton School, 2014
- Begenau, Juliane, Capital Requirements, Risk Choice and Liquidity Provision in a Business Cycle Model, working paper, 2015.
- Begenau, Juliane and Tim Landoigt, Financial Regulation in a Quantitative Model of the Modern Banking System, working paper, 2018.

Sovereign Debt with Intermediaries

- Bocola, Luigi, The Pass-Through of Sovereign Risk, *Journal of Political Economy*, 2016

GRADES

Problem Set 50%

There will be two large quantitative problem sets to capture the key ideas from each half of the course. The problem sets are designed to help you understand the key issues involved in numerically solving a particular class of models. To maximize learning they should be done in teams of 2 students.

Paper Presentations 50%

At the end of each section we will assign two or three recent papers for student presentation. Everyone is expected to prepare a brief 10 slide (20 minute) summary discussion of **each** assigned paper. A student will be randomly selected to present the paper, followed by a general class discussion.

Please note: Homework and presentations should be submitted on Canvas.

There is no final exam.