

Empirical Methods in Corporate Finance

Finance 926

(Tentative) 2010 Syllabus

INFORMATION

Instructor: Michael Roberts

Office: 2320 SH-DH

Email: mrrobert@wharton.upenn.edu

Course WebSite: <http://finance.wharton.upenn.edu/~mrrobert/>

PREREQUISITES

You should have taken a graduate sequence in econometrics. Practically speaking, you should be comfortable with econometrics at the level of William Greene's *Econometric Analysis* and Jeffrey Wooldridge's *Econometric Analysis of Cross-Section and Panel Data*. The course will actually cover a fair amount of ground in the latter text but I expect students to be comfortable with the general concepts if not the specific details.

GOALS

Provide students with a toolbox and working knowledge of microeconomic empirical methods for use in corporate finance research. What does this mean? The “toolbox” refers to a variety of methods commonly employed in empirical research – not all but a representative sample of older and more recent econometric techniques.

The “working knowledge” means that you are going to learn these methods via a three-pronged approach. First, you will learn the econometric intuition behind each method. This will be accomplished by lectures and light econometrics readings. This is not a theory course so we will not be spending time deriving asymptotic properties of estimators or searching for UMP hypothesis tests. This is a course for end-users of econometric tools and you don't need to know how to build the tool in order to use it. However, you will learn how to use each tool properly.

Second, you will see these methods implemented by other researchers in published and working papers. I will rely on examples from corporate finance when possible, though I will also reference examples from other fields in economics including: labor, industrial organization, development, and public finance. Students will be required to read and discuss a paper that illustrates the empirical method in a (short) seminar-like setting. This exercise will not only reinforce your understanding of the material but it will also give you practice in presenting to an audience.

Finally, you will implement each method on live data – learning by doing. There will be a number of empirical exercises that will require you to manipulate and analyze data using the various econometric techniques. Since this is technically a finance course, the data and applications will typically be corporate finance related.

The “microeconometric” means that we will focus on cross-sectional and panel data methods, as opposed to time-series techniques.

LIMITATIONS

Practical limitations (i.e., time) impose certain restrictions on what we can accomplish in this course. For example, we will not cover all of the methods you might need or should know. I have listed a few such topics at the bottom of the syllabus. We also will not cover each method in excruciating detail. Arguably, you could build an entire course (research agenda) around each method. Finally, this course will not train you to do theoretical research in any of the particular topics. However, it will enable you to read most of the relevant theoretical literature.

MATERIALS

I will teach from slides, which I will make available to you (hopefully) before each class. I will be drawing from a variety of sources including various textbooks, journal articles, and working papers. As such, there is no required text but I will make note of the appropriate references for each module.

Some of the texts to which I refer below are:

- Wooldridge, Jeffrey M., 2002, *Econometric Analysis of Cross-Section and Panel Data*, MIT Press, Massachusetts.
- Angrist, Joshua D., and Jorn-Steffen Pischke, 2009, *Mostly Harmless Econometrics*, Princeton University Press, New Jersey.

Greene’s *Econometric Analysis* is a nice alternative.

There is also an extensive reading list that accompanies this syllabus. You should feel free to peruse and read papers that fit your interest.

COURSE OUTLINE

1. Linear Regression

(This will be a fast paced refresher on linear regression focusing on intuition and interpretation. It will also introduce students to a number of different literatures by way of an older visible paper, many, but not all, of which use linear regression. Additional studies can be found in the reference list for the course.)

- a. Univariate OLS
- b. Multivariate OLS
- c. Specification
- d. Inference
- e. Readings:
 - i. Methods
 1. Ch. 4 of Wooldridge.
 - ii. Capital Structure

1. Titman, Sheridan, and Roberto Wessels, 1988, [The Determinants of Capital Structure Choice](#), *Journal of Finance* 1-19.
- iii. Investment and Financing Frictions
 1. Fazzari, Steven M., R. Glenn Hubbard and Bruce C. Petersen, 1988, Financing Constraints and Corporate Investment, *Brookings Papers on Economic Activity*, 141–195.
- iv. Dividends
 1. Fama, Eugene, and Kenneth French, 2001, Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay? *Journal of Financial Economics* 60, 3-43.
- v. Product Market Competition and Finance
 1. Chevalier, Judith, 1995, [Capital Structure and Product Market Competition: Empirical Evidence from the Supermarket Industry](#), *American Economic Review* 85, 415-435.
- vi. Bank Lending and Balance Sheet Channels of Monetary Policy
 1. Gertler, Mark and Simon Gilchrist, 1994, Monetary policy, business cycles, and the behavior of small manufacturing firms, *Quarterly Journal of Economics* 109, 309-340.
- vii. The Stock Market and Investment
 1. Morck, Randal, Andrei Shleifer, and Robert Vishny, 1990, The Stock Market and Investment: Is the Market a Sideshow? *Brookings Papers on Economic Activity*, 157–215.
- viii. The Diversification Discount
 1. Berger, P., and Eli Ofek, 1995, Diversification’s Effect on Firm Value, *Journal of Financial Economics* 37, 39–65.
- ix. Costs of Financial Distress
 1. Andrade, Gregor, and Steven N. Kaplan, 1998, [How Costly is Financial \(Not Economic\) Distress? Evidence from Highly Leverage Transactions that Became Distressed](#), *Journal of Finance* 53, 1443-1493.
- x. Corporate Liquidity
 1. Opler, Timothy, Larry Pinkowitz, and Rene Stulz, 1999, [The determinants and implications of corporate cash holdings](#), *Journal of Financial Economics* 14, 1059-1082.
- xi. Corporate Ownership
 1. Morck, Randall, Andrei Shleifer, and Robert Vishny, 1988, Management ownership and market valuation: An empirical analysis, *Journal of Financial Economics* 20, 293-315.
- xii. Boards of Directors
 1. Hermalin, Benjamin, and Michael Weisbach, 1988, The determinants of board composition, *Rand Journal of Economics* 19, 589-606.
- xiii. Banking

1. Petersen, Mitchell, and Raghuram Rajan, 1995, The effect of credit market competition on lending relationships, *Quarterly Journal of Economics* 110, 407-443.
- xiv. Buyouts
 1. Kaplan, Steve, 1989, The effects of management buyouts on operating performance and value, *Journal of Financial Economics* 24, 217-254.
- xv. Executive Compensation
 1. Jensen, Michael C. and Kevin J. Murphy, 1990, Performance pay and top-management incentives, *Journal of Political Economy* 98, 225-264.
- xvi. Law and Finance
 1. La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 1998, Law and finance, *Journal of Political Economy* 106, 1113-1155.
- xvii. Risk Management
 1. Tufano, Peter, 1996, Who manages risk? An empirical examination of risk management practices in the gold mining industry, *Journal of Finance* 51, 1097-1137.

2. Linear Panel Data Models

- a. Pooled OLS
- b. Fixed Effects
- c. Random Effects
- d. Dynamic Linear Panel Data Models
 - i. MLE
 - ii. GMM
- e. Readings:
 - i. Methods:
 1. Ch. 1-4 in: Hsiao, Cheng, 2003, *Analysis of Panel Data*, 2nd Ed. Cambridge University Press.
 2. Peterson, Mitchell (2007), [Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches](#), *Review of Financial Studies* 22, 435-480.
 3. Ch. 5 in: Angrist and Pischke
 4. Ch. 10 in: Wooldridge
 5. Griliches, Zvi and Jacques Mairesse, 1995, Production functions: The search for identification, NBER Working Paper
 - ii. Capital Structure:
 1. Lemmon, Michael, Michael R. Roberts, and Jaime F. Zender, 2008, [Back to the beginning: Persistence and the cross-section of corporate capital structure](#), *Journal of Finance* 63, 1575-1608.

3. Nonparametric Methods

- a. Density estimators
- b. Regression Estimators
- c. Readings:
 - i. Methods
 1. Silverman, B. W., 1986, *Density Estimation for Statistics and Data Analysis*, Chapman & Hall, London.
 2. Green, P. J. and B. W. Silverman, 1994, *Nonparametric Regression and Generalized Linear Models*, Chapman & Hall, London.

4. Causality

- a. Potential Outcomes Notation and the Rubin Causal Model
- b. Selection Biases

5. Instrumental Variables

- a. Motivation
- b. Estimation
- c. Checking Internal Validity
- d. Readings:
 - i. Methods
 1. Chapter 5 in: Wooldridge.
 2. Chapter 4 in: Angrist and Pischke.
 3. Angrist, Josh, and Alan Krueger, 2001, Instrumental variables and the search for identification: From supply and demand to natural experiments, *Journal of Economic Perspectives* 15: 69-85.
 - ii. Banking
 1. Becker, Bo, 2007, Geographical segmentation of US capital markets, *Journal of Financial Economics* 85, 151-178.
 - iii. Corporate Ownership
 1. Bennedsen, M., K Nielsen, F. Perez-Gonzalez, and D. Wolfenzon, 2007, [Inside the family firm: The role of families in succession decisions and performance](#), *Quarterly Journal of Economics* 122, 647-691.
 - iv. Security Design
 1. Murfin, Justin, 2010 [The supply-side determinants of loan contract strictness](#), Working Paper, Yale University.
 - v. Capital Structure
 1. Roberts, Michael R and Mark T. Leary, [Do peer firms affect corporate capital structure? Working Paper](#), University of Pennsylvania.

6. Natural Experiments

- a. Motivation
- b. Estimation of Treatment Effects
- c. Checking Internal Validity

d. Readings:

i. Methods

1. Ch. 5, Angrist and Pischke.
2. Meyer, Bruce D., 1995, [Natural and quasi-natural experiments in economics](#), *Journal of Business and Economic Statistics*, 13, 151-161.
3. Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, 2004, [How much should we trust differences-in-differences estimates?](#) *Quarterly Journal of Economics* 119, 249-275.

ii. Financing Constraints:

1. Blanchard, Olivier Jean, Florencio Lopez-de-Silanes, and Andrei Shleifer, 1993, What do firms do with cash windfalls? *Journal of Financial Economics* 36, 337-360.
2. Lamont, Owen, 1997, [Cash flow and investment: Evidence from internal capital markets](#), *Journal of Finance* 52, 83-109.

iii. Capital Market Segmentation

1. Lemmon, Michael and Michael R. Roberts, 2010, The response of corporate financing and investment to changes in the supply of credit, *Journal of Financial and Quantitative Analysis*.

iv. Banking and Corporate Behavior:

1. Jayaratne, Jith, and Philip E. Strahan, 1996, [The financing-growth nexus: Evidence from bank branch deregulation](#), *Quarterly Journal of Economics* 111, 639-670.
2. Khwaja, Asim I., and Atif Mian, 2008, [Tracing the impact of bank liquidity shocks: Evidence from an emerging market](#) *American Economic Review* 98, 1413-1442.
3. Paravisini, Daniel, 2008, Local bank financial constraints and firm access to external finance, *Journal of Finance* 63,
4. Leary, Mark, 2009, [Bank loan supply, lender choice, and corporate capital structure](#), *Journal of Finance* 64, 1143-1185.

v. Agency Theory and Corporate Behavior:

1. Bertrand, Marianne and Sendhil Mullainathan, 2003, [Enjoying the quiet life? Corporate governance and managerial preferences](#), *Journal of Political Economy* 111, 1043-1075.

vi. Taxes, Transaction Costs and Stock prices:

1. Graham, John, Roni Michaely, and Michael R Roberts, 2003, [Do price discreteness and transactions costs affect stock returns? Comparing ex-dividend pricing before and after decimalization](#), *Journal of Finance* 58, 2611-2635.

vii. Law and Finance:

1. Agarwal, Ashwini, 2009, [The impact of investor protection law on corporate policy: Evidence from the blue sky laws](#), Working paper, New York University.

7. Regression Discontinuity Design

a. Motivation

- b. Estimation of Treatment Effects
- c. Checking Internal Validity
- d. Readings:
 - i. Methods:
 1. *Van der Klaauw, Wilbert, 2008, [Regression-discontinuity analysis: A survey of recent developments in economics](#), *Labour* 22, 219-245.
 2. Lee, David S. and Thomas Lemieux, 2010, [Regression discontinuity designs in economics](#), *Journal of Economic Literature* 48, 281-355.
 3. Imbens, Guido, and Thomas Lemieux, 2008, Regression discontinuity designs: A guide to practice, *Journal of Econometrics* 142, 615-635.
 4. Hahn, Jinyong, Petra Todd, and Wilbert van der Klaauw, 2001, [Identification and estimation of treatment effects with a regression-discontinuity design](#), *Econometrica* 69, 201-209.
 - ii. Corporate Investment:
 1. Chava, Sudheer and Michael R. Roberts, 2008, [How does financing impact investment? The role of debt covenants](#), *Journal of Finance* 63, 2085-2121.
 2. Bakke, Tor-Erik, and Toni Whited, 2010, [Threshold events and corporate policies](#), Working Paper, University of Rochester.
 - iii. Banking and Securitization:
 1. Keys, Benjamin, Ranmoy Mukherjee, Amit Seru, and Vikrant Vig, 2010, [Did securitization lead to lax screening? Evidence from subprime loans](#), *Quarterly Journal of Economics* 125,
 - iv. Capital Structure:
 1. Roberts, Michael R. and Amir Sufi, 2009, [Control rights and capital structure: An empirical investigation](#), *Journal of Finance* 64, 1657-1695.

8. Matching Methods

- a. Motivation
- b. Estimation of Treatment Effects
- c. Checking Internal Validity
- d. Readings:
 - i. Villalonga, Bellen, 2004,
 - ii. Li and Zhao, 2005
 - iii. Colak, Gonul and Toni Whited, 2007, [Spin-offs, divestitures, and conglomerate investment](#), *Review of Financial Studies* 20, 557-595.
 - iv. Lemmon, Michael and Michael R. Roberts, 2010, The response of corporate financing and investment to changes in the supply of credit, *Journal of Financial and Quantitative Analysis*.
 - v.

9. Discrete Choice Models

- a. Bivariate Models
- b. Multivariate Models
- c. Readings
 - i. Methods
 - 1. Ch. 15, Wooldridge
 - 2. Train, Kenneth, 2009, [Discrete Choice Methods with Simulation](#), Cambridge University Press, Massachusetts.
 - ii. Contract Renegotiation
 - 1. Roberts, Michael R. and Amir Sufi, Renegotiation of financial contracts: Evidence from private credit agreements, *Journal of Financial Economics* 93, 159-184.
 - iii. Estimating Demand Systems
 - 1. Mackinlay, Andrew, 2010,

10. Duration Models

- a. Nonparametric Methods
- b. Semiparametric Methods
- c. Parametric Methods
- d. Readings:
 - i. Method:
 - 1. Kiefer, N., 1988, Economic duration data and hazard functions, *Journal of Economic Literature*, 26: 646-679
 - ii. Capital Structure:
 - 1. Leary and Roberts, 2005, [Do firms rebalance their capital structures?](#), *Journal of Finance*, 60(6), 2575-2619
 - iii. Corporate Investment:
 - 1. Whited, Toni (2006) [External finance constraints and the intertemporal pattern of intermittent investment](#), *Journal of Financial Economics*, 81, 467-502

11. Topics

- a. Bootstrap & Jackknife
- b. SMM