

Empirical Asset Pricing

USI - Spring 2026

Syllabus

Contact Information

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Meetings

Dates: March 4, 6, 11, 13, 25, and 27; April 1 and 3.

Time: 2 PM – 5 PM

Location: PC 04; Room A-21 (on March 4 and 6)

Course Description

This course is intended for Ph.D. students in Finance. It focuses on selected topics in empirical asset pricing. We will start with the notion and tests of Market Efficiency. Then, we discuss the theory behind the tests of Asset Pricing models, starting from CAPM. We will examine the main failures of this model (size effect, value premium, momentum, low volatility, profitability, and other anomalies) and study the debate around the existence of the anomalies. In the second part of the course, we will look at potential channels for the origin and persistence of anomalies. In particular, we will focus on the effects of institutional demand for assets and its impact on asset prices. Finally, we will discuss the literature on the limits of arbitrage and slow-moving capital.

The grading is based on a referee report on a paper of your choice on a working paper within the streams of literature discussed in class, a class presentation of this report, which highlights the contribution of the paper to the literature, its strengths, and limitations. You should also produce a replication study of the empirical analysis in a working paper of your choice. Both the referee report and the replication study can be delivered after the end of the course.

Readings

The readings for the course consist of a combination of published articles, working papers, and textbook chapters. The textbooks are:

- John H. Cochrane, *Asset Pricing*, Princeton University Press, Princeton 2001. In the reading list I will refer to this book as Cochrane.
- John Y. Campbell, Andrew W. Lo, and A. Craig MacKinlay, *The Econometrics of Financial Markets*, Princeton University Press, Princeton, 1997. I will refer to this book as CLM

- Huang, C.F., and R.H. Litzenberger (1988), *Foundations for Financial Economics*, Prentice-Hall

Course Outline

1. The Efficient Market Hypothesis
 - a. Overview of the issues in empirical asset pricing through the glasses of market efficiency
 - b. Learning and tests for market efficiency

2. Testing asset pricing models and other issues

3. The Cross-Section of Expected Returns
 - a. Early tests of CAPM: size, B/M, momentum
 - b. Multi-factor models
 - c. Kozak, Serhiy, Stefan Nagel, and Shrihari Santosh. 2018. “Interpreting Factor Models.” *Journal of Finance* 73(3): 1183–1223.
 - d. Replication crisis

4. Institutions and Asset Prices
 - a. Early Empirical Evidence on demand effects
 - b. More Recent Evidence on the Impact of Institutions on Asset Prices
 - c. Demand-based Asset Pricing

5. The limits of arbitrage
 - a. Theory
 - b. Empirical evidence

Reading List

This reading list is provisional and will be updated.

The textbooks are:

- John H. Cochrane, *Asset Pricing* (revised edition), Princeton University Press, Princeton 2006. In the reading list I will refer to this book as **Cochrane**
- John Y. Campbell, Andrew W. Lo, and A. Craig MacKinlay, *The Econometrics of Financial Markets*, Princeton University Press, Princeton, 1997. I will refer to this book as **CLM**
- Huang, C.F., and R.H. Litzenberger (1988), *Foundations for Financial Economics*, Prentice-Hall. I will refer to this book as **HL**

All the readings in this list are required.

When I denote a reading by *, I will assume knowledge of the intuition and main results (which you can often, but not always, draw from the Introduction and Conclusion, if it is an article).

The other readings are the most important ones. You will need to have a very good grasp of the entire content.

Introduction: Efficient Market Hypothesis

CLM, chapter 1

* Berk, Jonathan B., and Richard C. Green. 2004. “Mutual Fund Flows and Performance in Rational Markets.” *Journal of Political Economy* 112(6): 1269–1295.

Fama, Eugene. 1991. “Efficient Capital Markets: II.” *Journal of Finance* 46: 1575–1617.

Fama, Eugene. 2010. “My Life in Finance.” Working paper, University of Chicago.

* Franzoni, Francesco, and José M. Marín. 2006. “Pension Plan Funding and Stock Market Efficiency.” *Journal of Finance* 61(2): 921–956.

* Gârleanu, Nicolae, and Lasse Heje Pedersen. 2018. “Efficiently Inefficient Markets for Assets and Asset Management.” *Journal of Finance* 73(4): 1663–1712.

* Lewellen, Jonathan, and Jay Shanken. 2002. “Learning, Asset-Pricing Tests, and Market Efficiency.” *Journal of Finance* 57(3): 1113–1145.

* Martin, Ian W. R., and Stefan Nagel. 2022. “Market Efficiency in the Age of Big Data.” *Journal of Financial Economics* 145(1): 154–177.

Testing Asset Pricing Models: Overview

* CLM chapters 6 and 7

Cochrane, chapters 7, 12, 14, 15, 16

Cochrane, chapters 8, 9, and 13

HL, chapter 10

* Lettau, Martin, and Sydney Ludvigson. 2001. “Resurrecting the (C)CAPM: A Cross-Sectional Test When Risk Premia Are Time Varying.” *Journal of Political Economy* 109(6): 1238–1287.

* Lewellen, Jonathan, and Stefan Nagel. 2006. “The Conditional CAPM Does Not Explain Asset Pricing Anomalies.” *Journal of Financial Economics* 82(2): 289–314.

Cross-sectional anomalies: the debate

CLM section 6.6

Cochrane, section 20.2

Ang, Andrew, Robert J. Hodrick, Yuhang Xing, and Xiaoyan Zhang. 2009. “High Idiosyncratic Volatility and Low Returns: International and Further U.S. Evidence.” *Journal of Financial Economics* 91(1): 1–23.

* Bernard, Victor, and Jacob Thomas. 1990. “Evidence That Stock Prices Do Not Fully Reflect the Implications of Current Earnings for Future Earnings.” *Journal of Accounting and Economics* 13(4): 305–340.

* Chan, Louis K. C., Narasimhan Jegadeesh, and Josef Lakonishok. 1996. “Momentum Strategies.” *Journal of Finance* 51(5): 1681–1713.

* Chen, Andrew Y. 2021. “The Limits of p-Hacking: Some Thought Experiments.” *Journal of Finance* 76(5): 2447–2480.

Daniel, Kent, and Sheridan Titman. 1997. “Evidence on the Characteristics of Cross-Sectional Variation in Stock Returns.” *Journal of Finance* 52(1): 1–33.

* Davis, James, Eugene Fama, and Kenneth French. 2000. “Characteristics, Covariances, and Average Returns: 1929–1997.” *Journal of Finance* 55(1): 389–406.

* DeBondt, Werner, and Richard Thaler. 1985. “Does the Stock Market Overreact?” *Journal of Finance* 40(3): 793–808.

Fama, Eugene F., and Kenneth R. French. 2015. “A Five-Factor Asset Pricing Model.” *Journal of Financial Economics* 116(1): 1–22.

* Fama, Eugene F., and Kenneth R. French. 2016. “Dissecting Anomalies with a Five-Factor Model.” *Review of Financial Studies* 29(1): 69–103.

Fama, Eugene, and Kenneth French. 1992. "The Cross-Section of Expected Stock Returns." *Journal of Finance* 47(2): 427–465.

Fama, Eugene, and Kenneth French. 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics* 33(1): 3–56.

* Fama, Eugene, and Kenneth French. 1995. "Size and Book-to-Market Factors in Earnings and Returns." *Journal of Finance* 50(1): 131–155.

* Fama, Eugene, and Kenneth French. 1996. "Multifactor Explanations of Asset Pricing Anomalies." *Journal of Finance* 51(1): 55–84.

Frazzini, Andrea, and Lasse Heje Pedersen. 2014. "Betting Against Beta." *Journal of Financial Economics* 111(1): 1–45.

Harvey, Campbell R., Yan Liu, and Heqing Zhu. 2016. "...And the Cross-Section of Expected Returns." *Review of Financial Studies* 29(1): 5–68.

* Heaton, John, and Deborah Lucas. 2000. "Portfolio Choice and Asset Prices: The Importance of Entrepreneurial Risk." *Journal of Finance* 55(3): 1163–1198.

* Hong, Harrison, and Jeremy Stein. 1999. "A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets." *Journal of Finance* 54(6): 2143–2184.

* Hong, Harrison, Terrence Lim, and Jeremy Stein. 2000. "Bad News Travels Slowly: Size, Analyst Coverage, and the Profitability of Momentum Strategies." *Journal of Finance* 55(1): 265–295.

* Hou, Kewei, Chen Xue, and Lu Zhang. 2020. "Replicating Anomalies." *Review of Financial Studies* 33(5): 2019–2133.

Jegadeesh, Narasimhan, and Sheridan Titman. 1993. "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency." *Journal of Finance* 48(1): 65–91.

* Jegadeesh, Narasimhan, and Sheridan Titman. 2001. "Profitability of Momentum Strategies: An Evaluation of Alternative Explanations." *Journal of Finance* 56(2): 699–720.

Jensen, Theis Ingerslev, Bryan Kelly, and Lasse Heje Pedersen. 2023. "Is There a Replication Crisis in Finance?" *Journal of Finance* 78(5): 2465–2518.

* Korajczyk, Robert A., and Ronnie Sadka. 2004. "Are Momentum Profits Robust to Trading Costs?" *Journal of Finance* 59(3): 1039–1082.

Kozak, Serhiy, Stefan Nagel, and Shrihari Santosh. 2018. "Interpreting Factor Models." *Journal of Finance* 73(3): 1183–1223.

* Lakonishok, Josef, Andrei Shleifer, and Robert Vishny. 1994. "Contrarian Investment, Extrapolation, and Risk." *Journal of Finance* 49(5): 1541–1578.

* McLean, R. David, and Jeffrey Pontiff. 2016. “Does Academic Research Destroy Stock Return Predictability?” *Journal of Finance* 71(1): 5–32.

* Moskowitz, Tobias, and Mark Grinblatt. 1999. “Do Industries Explain Momentum?” *Journal of Finance* 54(4): 1249–1290.

* Novy-Marx, Robert, and Mamdouh Medhat. 2025. “Profitability Retrospective: What Have We Learned?” NBER Working Paper No. 33601.

* Novy-Marx, Robert, and Mihail Velikov. 2015. “A Taxonomy of Anomalies and Their Trading Costs.” *Review of Financial Studies* 29(1): 104–147.

* Novy-Marx, Robert, and Mihail Velikov. 2022. “Betting Against Betting Against Beta.” *Journal of Financial Economics* 143(1): 80–106.

* Stambaugh, Robert F., Jianfeng Yu, and Yu Yuan. 2015. “Arbitrage Asymmetry and the Idiosyncratic Volatility Puzzle.” *Journal of Finance* 70(5): 1903–1948.

Institutions and Asset Prices

Ben-David, Itzhak, Francesco Franzoni, and Rabih Moussawi. 2018. “Do ETFs Increase Volatility?” *Journal of Finance* 73(6): 2471–2535.

* Chincó, Alex, and Marco Sammon. 2024. “The Passive Ownership Share Is Double What You Think It Is.” *Journal of Financial Economics* 157: 103860.

* Fuchs, William, Satoshi Fukuda, and Daniel Neuhann. 2025. “A Trilemma for Asset Demand Estimation.” Working paper.

* Fuchs, William, Satoshi Fukuda, and Daniel Neuhann. 2025. “Demand-System Asset Pricing: Theoretical Foundations.” Working paper.

Greenwood, Robin, and Marco Sammon. 2025. “The Disappearing Index Effect.” *Journal of Finance* 80(2): 657–698.

Greenwood, Robin. 2005. “Short- and Long-Term Demand Curves for Stocks: Theory and Evidence on the Dynamics of Arbitrage.” *Journal of Financial Economics* 75(3): 607–649.

Haddad, Valentin, and Tyler Muir. 2025. “Market Macrostructure: Institutions and Asset Prices.” *Annual Review of Financial Economics* 17: 133–150.

Haddad, Valentin, Paul Huebner, and Erik Loualiche. 2025. “How Competitive Is the Stock Market? Theory, Evidence from Portfolios, and Implications for the Rise of Passive Investing.” *American Economic Review* 115(3): 975–1018.

Koijen, Ralph S. J., and Motohiro Yogo. 2019. “A Demand System Approach to Asset Pricing.” *Journal of Political Economy* 127(4): 1475–1515.

* Koijen, Ralph S. J., and Motohiro Yogo. 2025. “On the Theory and Econometrics of (Demand System) Asset Pricing.” Working paper.

Shleifer, Andrei. 1986. “Do Demand Curves for Stocks Slope Down?” *Journal of Finance* 41(3): 579–590.

* van Binsbergen, Jules H., Benjamin David, and Christian C. Opp. 2025. “How (Not) to Identify Demand Elasticities in Dynamic Asset Markets.” NBER Working Paper No. 34528.

Limits to Arbitrage and Fire Sales

Theory

* Abreu, Dilip, and Markus K. Brunnermeier. 2002. “Synchronization Risk and Delayed Arbitrage.” *Journal of Financial Economics* 66(2–3): 341–360.

Brunnermeier, Markus K., and Lasse H. Pedersen. 2009. “Market Liquidity and Funding Liquidity.” *Review of Financial Studies* 22(6): 2201–2238.

* Duffie, Darrell. 2010. “Presidential Address: Asset Price Dynamics with Slow-Moving Capital.” *Journal of Finance* 65(4): 1236–1267.

* Gromb, Denis, and Dimitri Vayanos. 2002. “Equilibrium and Welfare in Markets with Financially Constrained Arbitrageurs.” *Journal of Financial Economics* 66(2–3): 361–407.

Gromb, Denis, and Dimitri Vayanos. 2010. “Limits of Arbitrage: The State of the Theory.” *Annual Review of Financial Economics* 2: 251–275.

* Shleifer, Andrei, and Robert Vishny. 1992. “Liquidation Values and Debt Capacity: A Market Equilibrium Approach.” *Journal of Finance* 47(4): 343–366.

Shleifer, Andrei, and Robert W. Vishny. 1997. “The Limits of Arbitrage.” *Journal of Finance* 52(1): 35–55.

Shleifer, Andrei, and Robert W. Vishny. 2011. “Fire Sales in Finance and Macroeconomics.” *Journal of Economic Perspectives* 25(1): 29–48.

* Vayanos, Dimitri, and Paul Woolley. 2013. “An Institutional Theory of Momentum and Reversal.” *Review of Financial Studies* 26(5): 1087–1145.

Empirical Evidence

* Adrian, Tobias, Erkki Etula, and Tyler Muir. 2014. “Financial Intermediaries and the Cross-Section of Asset Returns.” *Journal of Finance* 69(6): 2557–2596.

* Aragon, George O., and Philip E. Strahan. 2012. “Hedge Funds as Liquidity Providers: Evidence from the Lehman Bankruptcy.” *Journal of Financial Economics* 103(3): 570–587.

Ben-David, Itzhak, Francesco Franzoni, and Rabih Moussawi. 2012. “Hedge Fund Stock Trading in the Financial Crisis of 2007–2009.” *Review of Financial Studies* 25(1): 1–54.

Brunnermeier, Markus K., and Stefan Nagel. 2004. “Hedge Funds and the Technology Bubble.” *Journal of Finance* 59(5): 2013–2040.

Coval, Joshua, and Erik Stafford. 2007. “Asset Fire Sales (and Purchases) in Equity Markets.” *Journal of Financial Economics* 86(2): 479–512.

Di Maggio, Marco, Francesco Franzoni, Shimon Kogan, and Ran Xing. Forthcoming. “Avoiding Idiosyncratic Volatility: Flow Sensitivity to Individual Stock Returns.” *Journal of Finance*.

* Haddad, Valentin, and Tyler Muir. 2025. “Intermediaries and Asset Prices.” NBER Working Paper No. 34146.

* He, Zhiguo, Bryan Kelly, and Asaf Manela. 2017. “Intermediary Asset Pricing: New Evidence from Many Asset Classes.” *Journal of Financial Economics* 126(1): 1–35.

* Mitchell, Mark, Lasse Heje Pedersen, and Todd Pulvino. 2007. “Slow Moving Capital.” *American Economic Review: Papers and Proceedings* 97(2): 215–220.

* Mitchell, Mark, Todd Pulvino, and Erik Stafford. 2002. “Limited Arbitrage in Equity Markets.” *Journal of Finance* 57(2): 551–584.