3/31/2025

Empirical Asset Pricing

USI - Spring 2025

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 explanations 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 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 paper of your choice. Both the referee report and the replication study can be delivered after the end of 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. Interpreting factor models
    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

<u>This reading list is provisional and will be updated</u>.

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.

<u>*Introduction: Efficient Market Hypothesis*</u>

CLM, chapter 1

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.

* Gârleanu, N. and Pedersen, L.H., 2018. Efficiently inefficient markets for assets and asset management. *Journal of Finance*, 73(4), pp.1663-1712.

* Berk, J.B. and Green, R.C., 2004, Mutual fund flows and performance in rational markets. Journal of Political Economy, 112(6), pp.1269-1295.

*Lewellen, J. and Shanken, J., 2002. Learning, asset-pricing tests, and market efficiency. *Journal of finance*, *57*(3), pp.1113-1145.

* Martin and Nagel, 2022, Market Efficiency in the Age of Big Data, *Journal of Financial Economics*

<u>*Testing Asset Pricing Models: Overview*</u>

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

HL, chapter 10

* CLM chapters 6 and 7

* 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, 1238 – 1287

Cochrane, chapters 8, 9, and 13

*Lewellen, J., and S. Nagel, 2006, The Conditional CAPM Does Not Explain Asset Pricing Anomalies, *Journal of Financial Economics*, November

<u>*Cross-sectional anomalies: the debate*</u>

Fama, Eugene and Kenneth French, 1992, The cross-section of expected stock returns, *Journal of Finance* 47, 427-465

Fama, Eugene and Kenneth French, 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3-56

* Lakonishok, Josef, Andrei Shleifer, and Robert Vishny, 1994, Contrarian investment, extrapolation, and risk, *Journal of Finance* 49, 1541-1578.

Daniel, Kent and Sheridan Titman, 1997, Evidence on the characteristics of cross-sectional variation in stock returns, *Journal of Finance* 52, 1-33

Kozak, Serhiy, Stefan Nagel, and Shrihari Santosh. "Interpreting factor models." *The Journal of Finance* 73, no. 3 (2018): 1183-1223.

Cochrane, section 20.2

* Fama, Eugene and Kenneth French, 1995, Size and book-to-market factors in earnings and returns, *Journa of Finance* 50, 131-155

CLM section 6.6

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

* Fama, Eugene and Kenneth French, 1996, Multifactor explanations of asset pricing anomalies, *Journal of Finance* 51, 55-84

* DeBondt, Werner and Richard Thaler, 1985, Does the stock market overreact?, *Journal of Finance* 40, 793-808.

Jegadeesh, Narasimhan and Sheridan Titman, 1993, Returns to buying winners and selling losers: Implications for stock market efficiency, *Journal of Finance* 48, 65-91

* Jegadeesh, N., Titman, S., 2001, Profitability of momentum strategies: an evaluation of alternative explanations. *Journal of Finance* 56, 699-720

* Korajczyk, Ronnie Sadka, 2004, Are Momentum Profits Robust to Trading Costs?, *Journal of Finance* 59, 1039-1082

* Chan, Louis, Narasimhan Jegadeesh, and Josef Lakonishok, 1996, Momentum strategies, *Journal of Finance* 51, 1681-1713

* 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, 305-340

* Hong, Harrison and Jeremy Stein, 1999, A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets, *Journal of Finance* 54, 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, 265-295

* Moskowitz, Tobias and Mark Grinblatt, 1999, Do Industries Explain Momentum?, *Journal of Finance* 54, 1249-1290

* Davis, James, Eugene Fama, and Kenneth French, 2000, Characteristics, covariances, and average returns: 1929 – 1997, *Journal of Finance* 55, 389-406

Ang, Andrew, Bob 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

Frazzini, Andrea and Lasse Heje Pedersen, 2014, "Betting Against Beta,". Journal of Financial Economics

* Novy-Marx, R. and Velikov, M., 2015. A taxonomy of anomalies and their trading costs. *Review of Financial Studies*, 29(1), pp.104-147

* Novy-Marx, Robert and Velikov, Mihail, 2018, Betting Against Betting Against Beta. Working Paper. University of Rochester.

* Stambaugh RF, Yu J, Yuan Y., 2015, Arbitrage asymmetry and the idiosyncratic volatility puzzle. *Journal of Finance* 70(5), 1903-48.

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.

* McLean, R. David, and Jeffrey Pontiff, 2016, Does academic research destroy stock return predictability? *Journal of Finance* 71.1: 5-32.

* Hou, K., Xue, C. and Zhang, L., 2018. Replicating anomalies, forthcoming. *Review of Financial Studies*.

* Harvey, Campbell R., Yan Liu, and Heqing Zhu, 2016, …and the cross-section of expected returns, *Review of Financial Studies* 29, 5–68.

* Jensen, Theis Ingerslev, Bryan Kelly, and Lasse Heje Pedersen, 2023. "Is there a replication crisis in finance?" *Journal of Finance* 78, no. 5: 2465-2518.

* Chen, Andrew Y., 2021, The limits of p-hacking: Some thought experiments, *Journal of Finance*, 76, 2447–2480.

<u>*Institutions and Asset Prices*</u>

Haddad, Valentin, and Tyler Muir. *Market Macrostructure: Institutions and Asset Prices*. No. w33434. National Bureau of Economic Research, 2025.

Shleifer, Andrei. "Do demand curves for stocks slope down?." *The Journal of Finance* 41, no. 3 (1986): 579-590.

Greenwood, Robin. "Short-and long-term demand curves for stocks: theory and evidence on the dynamics of arbitrage." *Journal of Financial Economics* 75, no. 3 (2005): 607-649.

* Greenwood, Robin, and Marco Sammon. "The disappearing index effect." *The Journal of Finance* (2024).

* Chinco, Alex, and Marco Sammon. "The passive ownership share is double what you think it is." *Journal of Financial Economics* 157 (2024).

Ben-David, Itzhak, Francesco Franzoni, and Rabih Moussawi. "Do ETFs increase volatility?." *Journal of Finance* 73, no. 6 (2018): 2471-2535.

Koijen, Ralph SJ, and Motohiro Yogo. "A demand system approach to asset pricing." *Journal of Political Economy* 127, no. 4 (2019): 1475-1515.

Haddad, Valentin, Paul Huebner, and Erik Loualiche. "How competitive is the stock market? theory, evidence from portfolios, and implications for the rise of passive investing.", *American Economic Review*, forthcoming.

<u>*Limits to arbitrage and Fire Sales*</u>

<u>Theory</u>

Gromb, D., and D. Vayanos, 2010, Limits of Arbitrage: The State of the Theory, Annual Review of Financial Economics 2, 251–275.

Shleifer, Andrei, and Robert W. Vishny 1997, The Limits of Arbitrage, Journal of Finance 52(1), 35-55.

*Shleifer, Andrei and Robert Vishny, 1992, Liquidation values and debt capacity: a market equilibrium approach, Journal of Finance, 47, 343–366.

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

*Gromb, Denis, and Dimitri Vayanos, 2002, Equilibrium and Welfare in Markets with Financially Constrained Arbitrageurs, Journal of Financial Economics 66, 361-407.

*Brunnermeier, Markus K. and Dilip Abreu, 2002, Synchronization Risk and Delayed Arbitrage, Journal of Financial Economics, 66, 341-360.

Brunnermeier, Markus K., and Lasse H. Pedersen, 2009, Market Liquidity and Funding Liquidity, Review of Financial Studies 22, 2201-2238.

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

*Vayanos, Dimitri, and Paul Woolley, 2013, An institutional theory of momentum and reversal *Review of Financial Studies* 26 (5), 1087–1145.

Empirical Evidence

*Mitchell, Mark, Todd Pulvino, and Erik Stafford, 2002, Limited arbitrage in equity markets, *The Journal of Finance* 57.2, 551-584.

Mitchell M, L. Pedersen, and T. Pulvino, 2007, Slow moving capital, American Economic Review Papers and Proceedings, 97, pp. 215–220

Brunnermeier, Markus K., and Stefan Nagel, 2004, Hedge Funds and the Technology Bubble, Journal of Finance 59(5), 2013-2040.

Ben-David, I., Francesco Franzoni, and Rabih Moussawi, Hedge fund stock trading in the financial crisis of 2007-2009", Review of Financial Studies, 2012, 25(1), pp. 1-54

*Aragon, George O., and Phillip Strahan, 2012, Hedge funds as liquidity providers: Evidence from the Lehman bankruptcy, Journal of Financial Economics 103, 570 – 587.

Coval, Joshua, and Erik Stafford, 2007, Asset Fire Sales (and Purchases) in Equity Markets, Journal of Financial Economics 86.

He, Z., Kelly, B. and Manela, A., 2017. Intermediary asset pricing: New evidence from many asset classes. *Journal of Financial Economics*, 126(1), pp.1-35.

* Adrian, T., Etula, E. and Muir, T., 2014. Financial intermediaries and the cross-section of asset returns. *Journal of Finance*, 69(6), pp.2557-2596.