

Finance 395 4 – Empirical Methods in Asset Pricing

(Unique # 04050)
Fall 2016

Professor	Travis Johnson
E-mail	travis.johnson@mcombs.utexas.edu
Office	CBA 5.158
Office Hours	By appointment
Phone	512-232-6860
Course webpage	via Canvas, http://canvas.utexas.edu

Course Objectives

This course is an in-depth study of existing empirical work in asset pricing, including econometric and statistical methods. The focus is on the fundamental economic questions in asset pricing, how to answer them empirically, what we've learned about these answers in existing research, and what we still don't know. The course should prepare you to understand and produce cutting-edge empirical asset pricing research.

Course Outline

The course will have 14 lectures:

8/24/2016	Overview of empirical asset pricing
8/31/2016	Preference-based asset pricing
9/7/2016	Consumption-based asset pricing
9/14/2016	Time-series predictability 1 (techniques)
9/21/2016	Time-series predictability 2 (evidence)
9/28/2016	Term structure of interest rates
10/5/2016	Cross-section 1 (testing CAPM)
10/12/2016	Cross-section 2 (other factors)
10/19/2016	Volatility
10/26/2016	Options
11/2/2016	Imperfections and liquidity
11/9/2016	Investor behavior and heterogeneity
11/16/2016	Mutual funds and hedge funds
11/30/2016	Frontiers of research

Course Requirements and Grading

Your grade in the course will be determined by a weighted average of your scores on the final exam, homework, and participation. The weights I will use are:

Final exam	40%
Homework	40%
Presentation	10%
Participation	10%

Since this is a PhD course, conditional on passing your actual grade is not very important. Your goal should be to maximize the amount you learn. With that in mind, my hope is that the comments and grades I provide will be a good indication of how much you are learning.

Exam Schedule

There will be a 12-hour take-home final sometime during finals week. I will coordinate with you to find a day that works well.

Materials

Lecture Notes

I will provide a handout each class day with copies of the slides I use. I will also put electronic copies on the course website, but this does **not** mean attendance is optional. The lecture notes will not be nearly as valuable without my accompanying explanation.

Textbooks

I will regularly assign readings from three different textbooks. If you decide not to buy them you will need to check them out from the library, borrow them from another student, or find some other way to do the reading.

- *The Econometrics of Financial Markets* by John Campbell, Andrew Lo, and Craig MacKinley, ISBN 0691043019.
- *Empirical Dynamic Asset Pricing: Model Specification and Econometric Assessment* by Kenneth Singleton, ISBN 0691122970.
- *Asset Pricing* by John Cochrane, ISBN 0691121370. This will be a secondary reference, but you should already have a copy from Theoretical Asset Pricing.

Data access

You will need access to the data available via Wharton Research Data Services (WRDS). If you do not already have a WRDS account, you should register as soon as possible.

Prerequisites

Graduate standing and Asset Pricing Theory course (Finance 395 3).

Description of Requirements

Final Exam

There will be a take-home final exam that tests your ability to solve problems in empirical asset pricing. Some of the problems will be comps-style written problems, others will require you to analyze data I provide. You will have 12 hours to complete the exam and return it to me.

Homework

I will give 4 homework assignments during the course of the semester, each due two weeks after they are assigned. The assignments will also be a mix of problem solving, data analysis, and some replication of existing research. Your solutions should be written up clearly in MS Word or, ideally, LaTeX. Like papers, they should explain your answers in words and provide tables and figures when called for. **Hand-written homework assignments will not be accepted.**

The homework and final will require coding and estimation using a language of your choice. I use Matlab, but R and Python are also good choices. Purely statistical packages like SAS and STATA are useful for basic stuff but are nearly impossible to use for some of the applications in this course, particularly when writing your own likelihood functions.

Presentation

Each of you to with give a 30-minute presentation of a recent paper at the end of a lecture. Your job will be to summarize the results and techniques, offer your opinion on its strengths and weaknesses, and answer audience questions about the paper.

Participation

Part of your grade will be based on the **quality (not quantity)** of your contributions to class discussions. Show up to class on time, ask questions, and participate in discussions.

Continuous Feedback

If you have any feedback about the course or my teaching at any time during the semester, please send it to travis.johnson@mcombs.utexas.edu. I am eager to hear about any ways I can make it the best possible experience for my students.

In case you are not comfortable sending me negative feedback directly, I have created an anonymous gmail account (username: johnson.teaching.feedback, password: HookEmHorns) for you to send me feedback. However, you should also feel free to send non-anonymous feedback; your grading for the course will be mechanical and I will certainly not hold any feedback against you.

Students with Disabilities

Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259, <http://diversity.utexas.edu/disability/>.

Religious Holidays

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

Policy on Scholastic Dishonesty

The McCombs School of Business has no tolerance for acts of scholastic dishonesty. The responsibilities of both students and faculty with regard to scholastic dishonesty are described in detail in the BBA Programs Statement on Scholastic Dishonesty at <http://my.mcombs.utexas.edu/BBA/Code-of-Ethics>. By teaching this course, I have agreed to observe all faculty responsibilities described there. By enrolling in this class, you have agreed to observe all student responsibilities described there. If the application of the Statement on Scholastic Dishonesty to this class or its assignments is unclear in any way, it is your responsibility to ask me for clarification. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since dishonesty harms the individual, all students, the integrity of the University, and the value of our academic brand, policies on scholastic dishonesty will be strictly enforced. You should refer to the Student Judicial Services website at <http://deanofstudents.utexas.edu/sjs/> to access the official University policies and procedures on scholastic dishonesty as well as further elaboration on what constitutes scholastic dishonesty.

As specific guidance for this course, you should consider the homework assignments and final exam to be an individual effort. You are allowed to use textbooks, data sources, your computer, your notes, and any other resources that do not involve assistance from anyone but me.

Campus Safety

Please note the following recommendations regarding emergency evacuation, provided by the Office of Campus Safety and Security, 512-471-5767, <http://www.utexas.edu/safety>:

- Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation should inform the instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors.
- Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- Behavior Concerns Advice Line (BCAL): 512-232-5050 (or <https://operations.utexas.edu/units/csas/bcal>)
- Further information regarding emergency evacuation routes and emergency procedures can be found at: <http://www.utexas.edu/emergency>.

Reading List

The bullets indicate the importance of the readings:

- A solid bullet means that you should read this material thoroughly and make sure that you understand exactly what is being done.
- An empty bullet means that I will cover the paper in class but you do not need to read in advance. You should, however, use them as a reference for topics you are interested in or having trouble understanding. Student presentations will be on one of these papers.

Session 1: Overview of empirical asset pricing

Overview of the course and review of key concepts: stochastic discount factor, preference-based restrictions, no-arbitrage restrictions

- Cochrane, Chapter 1
- Singleton, Chapter 1

Serial correlation in asset returns

- Singleton, Chapter 9
- Campbell, Lo, MacKinlay (CLM), Chapters 2 and 3
- Fama, Eugene F and Kenneth R French, 1988b, Permanent and temporary components of stock prices, *The Journal of Political Economy* 246–273
- Lo, Andrew W and Archie Craig MacKinlay, 1988, Stock market prices do not follow random walks: Evidence from a simple specification test, *Review of Financial Studies* 1, 41–66
- Poterba, James M and Lawrence H Summers, 1988, Mean reversion in stock prices: Evidence and implications, *Journal of Financial Economics* 22, 27–59
- Richardson, Matthew and Tom Smith, 1994, A unified approach to testing for serial correlation in stock returns, *Journal of Business* 371–399

Session 2: Preference-based asset pricing

Empirical bounds on the pricing kernel

- Cochrane, Section 5.6
- Hansen, Lars Peter and Ravi Jagannathan, 1991, Implications of security market data for models of dynamic economies, *The Journal of Political Economy* 99, 225–262
- Hansen, Lars Peter, John Heaton, and Erzo Gerrit Jan Luttmer, 1995, Econometric evaluation of asset pricing models, *Review of Financial Studies* 8, 237–274

Conditioning information

- Cochrane, Chapter 8
- Hansen, Lars Peter and Scott F Richard, 1987, The role of conditioning information in deducing testable restrictions implied by dynamic asset pricing models, *Econometrica* 587–613
- Bekaert, Geert and Jun Liu, 2004, Conditioning information and variance bounds on pricing kernels, *Review of Financial Studies* 17, 339–378

Tests of preference-based models

- Singleton, Chapter 10
- Hansen, Lars Peter and Kenneth J Singleton, 1982, Generalized instrumental variables estimation of nonlinear rational expectations models, *Econometrica* 1269–1286
- Epstein, Larry G and Stanley E Zin, 1989, Substitution, risk aversion, and the temporal behavior of consumption and asset returns: A theoretical framework, *Econometrica* 937–969
- Bansal, Ravi, Dana Kiku, and Amir Yaron, 2012, An empirical evaluation of the long-run risks model for asset prices, *Critical Finance Review* 1, 183–221

Session 3: Consumption-based asset pricing

Equity premium puzzle

- Cochrane, Chapter 21
- Mehra, Rajnish and Edward C Prescott, 1985, The equity premium: A puzzle, *Journal of Monetary Economics* 15, 145–161

Habit formation

- Campbell, John Y and John H Cochrane, 1999, By force of habit: A consumption-based explanation of aggregate stock market behavior, *Journal of Political Economy* 107
- Campbell, John Y and John H Cochrane, 2000, Explaining the poor performance of consumption-based asset pricing models, *The Journal of Finance* 55, 2863–2878

Long-run risk

- Bansal, Ravi and Amir Yaron, 2004, Risks for the long run: A potential resolution of asset pricing puzzles, *The Journal of Finance* 59, 1481–1509
- Bansal, Ravi, Dana Kiku, and Amir Yaron, 2012, An empirical evaluation of the long-run risks model for asset prices, *Critical Finance Review* 1, 183–221
- Parker, Jonathan A and Christian Julliard, 2005, Consumption risk and the cross section of expected returns, *Journal of Political Economy* 113, 185–222

Other potential resolutions

- Vissing-Jørgensen, Annette, 2002, Limited asset market participation and the elasticity of intertemporal substitution, *Journal of Political Economy* 110, 825–853
- Piazzesi, Monika, Martin Schneider, and Selale Tuzel, 2007, Housing, consumption and asset pricing, *Journal of Financial Economics* 83, 531–569
- Savov, Alexi, 2011, Asset pricing with garbage, *The Journal of Finance* 66, 177–201

Session 4: Time-series predictability 1 (techniques)

OLS

- Stambaugh, Robert F, 1999, Predictive regressions, *Journal of Financial Economics* 54, 375–421
- Hodrick, Robert J, 1992, Dividend yields and expected stock returns: Alternative procedures for inference and measurement, *Review of Financial studies* 5, 357–386
- Fama, Eugene F and Kenneth R French, 1988a, Dividend yields and expected stock returns, *Journal of Financial Economics* 22, 3–25

VAR estimates

- CLM, Chapter 7
- Cochrane, John H, 2008, The dog that did not bark: A defense of return predictability, *Review of Financial Studies* 21, 1533–1575
- Campbell, John Y, 1991, A variance decomposition for stock returns, *Economic Journal* 101, 157–79
- Cochrane, Section 20.1
- Campbell, John Y and Robert J Shiller, 1988, The dividend-price ratio and expectations of future dividends and discount factors, *Review of financial studies* 1, 195–228
- Fama, Eugene F and Kenneth R French, 1988a, Dividend yields and expected stock returns, *Journal of Financial Economics* 22, 3–25
- Summers, Lawrence H, 1986, Does the stock market rationally reflect fundamental values?, *The Journal of Finance* 41, 591–601

Session 5: Time-series predictability 2 (evidence)

Equity returns

- Welch, Ivo and Amit Goyal, 2008, A comprehensive look at the empirical performance of equity premium prediction, *Review of Financial Studies* 21, 1455–1508
- Campbell, John Y and Samuel B Thompson, 2008, Predicting excess stock returns out of sample: Can anything beat the historical average?, *Review of Financial Studies* 21, 1509–1531
- Johannes, Michael, Arthur Korteweg, and Nicholas Polson, 2014, Sequential learning, predictive regressions, and optimal portfolio returns, *Journal of Finance* 3, 161–174
- Lettau, Martin and Sydney Ludvigson, 2001a, Consumption, aggregate wealth, and expected stock returns, *the Journal of Finance* 56, 815–849
- Drechsler, Itamar and Amir Yaron, 2011, What's vol got to do with it, *Review of Financial Studies* 24, 1
- Boudoukh, Jacob, Roni Michaely, Matthew Richardson, and Michael R Roberts, 2007, On the importance of measuring payout yield: Implications for empirical asset pricing, *The Journal of Finance* 62, 877–915

Bond returns

- CLM, Chapter 10
- Cochrane, John H and Monika Piazzesi, 2005, Bond risk premia, *The American Economic Review* 95, 138–160
- Ludvigson, Sydney C and Serena Ng, 2009, Macro factors in bond risk premia, *The Review of Financial Studies* 5027–5067
- Cieslak, Anna and Pavol Povala, 2015, Expected returns in treasury bonds, *Review of Financial Studies* hhv032

Exchange rates

- Brunnermeier, Markus K, Stefan Nagel, and Lasse H Pedersen, 2008, Carry trades and currency crashes, *NBER Macroeconomics Annual* 23, 313–347
- Lustig, Hanno, Nikolai Roussanov, and Adrien Verdelhan, 2011, Common risk factors in currency markets., *Review of Financial Studies* 24
- Hansen, Lars Peter and Robert J Hodrick, 1980, Forward exchange rates as optimal predictors of future spot rates: An econometric analysis, *The Journal of Political Economy* 829–853
- Fama, Eugene F, 1984, Forward and spot exchange rates, *Journal of Monetary Economics* 14, 319–338

Session 6: Term structure of interest rates

Term structure models

- Singleton, Chapter 12
- CLM, Section 11.1
- Dai, Qiang and Kenneth J Singleton, 2000, Specification analysis of affine term structure models, *The Journal of Finance* 55, 1943–1978
- Joslin, Scott, Kenneth J Singleton, and Haoxiang Zhu, 2011, A new perspective on gaussian dynamic term structure models, *Review of Financial Studies* 24, 926–970

Estimating term structure models

- Singleton, Chapter 13
- CLM, Section 11.2
- Duffee, Gregory R, 2011, Information in (and not in) the term structure, *Review of Financial Studies* 24, 2895–2934
- Dai, Qiang and Kenneth J Singleton, 2002, Expectation puzzles, time-varying risk premia, and affine models of the term structure, *Journal of Financial Economics* 63, 415–441
- Joslin, Scott, Marcel Pribsch, and Kenneth J Singleton, 2014, Risk premiums in dynamic term structure models with unspanned macro risks, *The Journal of Finance* 69, 1197–1233

Session 7: Cross-section 1 (testing CAPM)

Methods and evidence

- Cochrane, Chapters 12 and 13
- Singleton, Chapter 11
- Gibbons, Michael R, Stephen A Ross, and Jay Shanken, 1989, A test of the efficiency of a given portfolio, *Econometrica* 1121–1152
- Hansen, Lars Peter and Ravi Jagannathan, 1997, Assessing specification errors in stochastic discount factor models, *The Journal of Finance* 52, 557–590
- Fama, Eugene F and James D MacBeth, 1973, Risk, return, and equilibrium: Empirical tests, *The Journal of Political Economy* 607–636
- Shanken, Jay, 1992, On the estimation of beta-pricing models, *Review of Financial Studies* 5, 1–55

Modifying CAPM

- Jagannathan, Ravi and Zhenyu Wang, 1996, The conditional capm and the cross-section of expected returns, *The Journal of Finance* 51, 3–53
- Campbell, John Y and Tuomo Vuolteenaho, 2004, Bad beta, good beta, *American Economic Review* 1249–1275
- Lettau, Martin, Matteo Maggiori, and Michael Weber, 2014, Conditional risk premia in currency markets and other asset classes, *Journal of Financial Economics* Forthcoming

Session 8: Cross-section 2 (other factors)

Basic facts

- Fama, Eugene F and Kenneth R French, 1992, The cross-section of expected stock returns, *Journal of Finance* 47, 427–465
- Fama, Eugene F and Kenneth R French, 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3–56
- Jegadeesh, Narasimhan and Sheridan Titman, 1993, Returns to buying winners and selling losers: Implications for stock market efficiency, *The Journal of Finance* 48, 65–91
- Jegadeesh, Narasimhan, 1990, Evidence of predictable behavior of security returns, *The Journal of Finance* 45, 881–898
- Bernard, Victor L and Jacob K Thomas, 1989, Post-earnings-announcement drift: delayed price response or risk premium?, *Journal of Accounting Research* 1–36
- Amihud, Yakov, 2002, Illiquidity and stock returns: cross-section and time-series effects, *Journal of Financial Markets* 5, 31–56

Factor-model explanations

- Lettau, Martin and Sydney Ludvigson, 2001b, Resurrecting the (c) capm: A cross-sectional test when risk premia are time-varying, *Journal of Political Economy* 109, 1238–1287
- Lewellen, Jonathan and Stefan Nagel, 2006, The conditional capm does not explain asset-pricing anomalies, *Journal of Financial Economics* 82, 289–314
- Lewellen, Jonathan, Stefan Nagel, and Jay Shanken, 2010, A skeptical appraisal of asset pricing tests, *Journal of Financial Economics* 96, 175–194
- Kogan, Leonid and Dimitris Papanikolaou, 2013, Firm characteristics and stock returns: The role of investment-specific shocks, *Review of Financial Studies* 26, 2718–2759

Behavioral explanations

- Daniel, Kent and Sheridan Titman, 1997, Evidence on the characteristics of cross sectional variation in stock returns, *The Journal of Finance* 52, 1–33
- Hong, Harrison and Jeremy C Stein, 1999, A unified theory of underreaction, momentum trading, and overreaction in asset markets, *The Journal of Finance* 54, 2143–2184

Session 9: Volatility

ARCH/GARCH

- CLM, Section 12.1
- Singleton, Chapter 7
- Bollerslev, Tim, 1986, Generalized autoregressive conditional heteroskedasticity, *Journal of Econometrics* 31, 307–327
- Engle, Robert F, 1982, Autoregressive conditional heteroscedasticity with estimates of the variance of united kingdom inflation, *Econometrica* 987–1007

Realized volatility

- Andersen, Torben G, Tim Bollerslev, Francis X Diebold, and Heiko Ebens, 2001, The distribution of realized stock return volatility, *Journal of Financial Economics* 61, 43–76
- Andersen, Torben G, Tim Bollerslev, Francis X Diebold, and Paul Labys, 2003, Modeling and forecasting realized volatility, *Econometrica* 71, 579–625
- Hansen, Peter R and Asger Lunde, 2006, Realized variance and market microstructure noise, *Journal of Business & Economic Statistics* 24, 127–161

Risk-return tradeoff

- Ghysels, Eric, Pedro Santa-Clara, and Rossen Valkanov, 2005, There is a risk-return trade-off after all, *Journal of Financial Economics* 76, 509–548
- French, Kenneth R, G William Schwert, and Robert F Stambaugh, 1987, Expected stock returns and volatility, *Journal of Financial Economics* 19, 3–29

Causes of volatility

- French, Kenneth R and Richard Roll, 1986, Stock return variances: The arrival of information and the reaction of traders, *Journal of Financial Economics* 17, 5–26
- Schwert, G William, 1989, Why does stock market volatility change over time?, *The Journal of Finance* 44, 1115–1153
- Roll, Richard, 1984, Orange juice and weather, *The American Economic Review* 861–880

Session 10: Options

Model estimation

- Singleton, Chapter 15
- Pan, Jun, 2002, The jump-risk premia implicit in options: Evidence from an integrated time-series study, *Journal of Financial Economics* 63, 3–50
- Bates, David S, 2003, Empirical option pricing: A retrospection, *Journal of Econometrics* 116, 387–404

Risk premia in options

- Broadie, Mark, Mikhail Chernov, and Michael Johannes, 2009, Understanding index option returns, *Review of Financial Studies* 22, 4493–4529
- Goyal, Amit and Alessio Saretto, 2009, Cross-section of option returns and volatility, *Journal of Financial Economics* 94, 310–326

Information in options markets

- Bates, David S, 1991, The crash of '87: Was it expected? the evidence from options markets, *The Journal of Finance* 46, 1009–1044
- Zhang, Xiaoyan, Rui Zhao, and Yuhang Xing, 2010, What does the individual option volatility smirk tell us about future equity returns?, *Journal of Financial and Quantitative Analysis* 45, 641–662
- Cremers, Martijn and David Weinbaum, 2010, Deviations from put-call parity and stock return predictability, *Journal of Financial and Quantitative Analysis* 45, 335–367
- Johnson, Travis L and Eric C So, 2012, The option to stock volume ratio and future returns, *Journal of Financial Economics* 106, 262–286

Session 11: Imperfections and liquidity

Liquidity and expected returns

- Krishnamurthy, Arvind, 2002, The bond/old-bond spread, *Journal of Financial Economics* 66, 463–506
- Amihud, Yakov and Haim Mendelson, 1986, Asset pricing and the bid-ask spread, *Journal of Financial Economics* 17, 223–249
- Amihud, Yakov, 2002, Illiquidity and stock returns: cross-section and time-series effects, *Journal of Financial Markets* 5, 31–56

Liquidity risk and expected returns

- Pastor, Lubos and Robert R Stambaugh, 2003, Liquidity risk and expected stock returns, *Journal of Political Economy* 111
- Chordia, Tarun, Richard Roll, and Avanidhar Subrahmanyam, 2001, Market liquidity and trading activity, *The Journal of Finance* 56, 501–530
- Acharya, Viral V and Lasse Heje Pedersen, 2005, Asset pricing with liquidity risk, *Journal of Financial Economics* 77, 375–410

Price impact of asset supply

- Coval, Joshua and Erik Stafford, 2007, Asset fire sales (and purchases) in equity markets, *Journal of Financial Economics* 86, 479–512
- Garleanu, Nicolae, Lasse Heje Pedersen, and Allen M Poteshman, 2009, Demand-based option pricing, *Review of Financial Studies* 22, 4259–4299
- Shleifer, Andrei, 1986, Do demand curves for stocks slope down?, *The Journal of Finance* 41, 579–590

Market segmentation, slow movement of capital, and limits to arbitrage

- Adrian, Tobias and Hyun Song Shin, 2010, Liquidity and leverage, *Journal of Financial Intermediation* 19, 418–437
- Nagel, Stefan, 2012, Evaporating liquidity, *Review of Financial Studies* 25, 2005–2039
- Brunnermeier, Markus K and Stefan Nagel, 2004, Hedge funds and the technology bubble, *The Journal of Finance* 59, 2013–2040
- Mitchell, Mark, Lasse Heje Pedersen, and Todd Pulvino, 2007, Slow moving capital, *The American Economic Review* 97, 215–220
- Duffie, Darrell, 2010, Presidential address: Asset price dynamics with slow-moving capital, *The Journal of Finance* 65, 1237–1267

Session 12: Investor behavior and heterogeneity

Limited stock market participation and consumption risk

- Grinblatt, Mark, Matti Keloharju, and Juhani Linnainmaa, 2011, Iq and stock market participation, *The Journal of Finance* 66, 2121–2164
- Hong, Harrison, Jeffrey D Kubik, and Jeremy C Stein, 2004, Social interaction and stock-market participation, *The Journal of Finance* 59, 137–163
- Mankiw, N Gregory and Stephen P Zeldes, 1991, The consumption of stockholders and non-stockholders, *Journal of Financial Economics* 29, 97–112
- Brav, Alon, George M Constantinides, and Christopher C Geczy, 2002, Asset pricing with heterogeneous consumers and limited participation: Empirical evidence, *Journal of Political Economy* 110, 793–824

Household asset allocation

- Brunnermeier, Markus K and Stefan Nagel, 2008, Do wealth fluctuations generate time-varying risk aversion? micro-evidence on individuals' asset allocation, *The American Economic Review* 713–736
- Campbell, John Y, 2006, Household finance, *The Journal of Finance* 61, 1553–1604
- Vissing-Jorgensen, Annette, 2003, Perspectives on behavioral finance: Does “irrationality” disappear with wealth? evidence from expectations and actions, *NBER Macroeconomics Annual* 18, 139–208
- Malmendier, Ulrike and Stefan Nagel, 2011, Depression babies: Do macroeconomic experiences affect risk taking?, *Quarterly Journal of Economics* 126

Individual investor trading behavior and performance

- Linnainmaa, Juhani T, 2010, Do limit orders alter inferences about investor performance and behavior?, *The Journal of Finance* 65, 1473–1506
- Barber, Brad M, Yi-Tsung Lee, Yu-Jane Liu, and Terrance Odean, 2009, Just how much do individual investors lose by trading?, *Review of Financial studies* 22, 609–632
- Odean, Terrance, 1998, Are investors reluctant to realize their losses?, *The Journal of Finance* 53, 1775–1798
- Odean, Terrance, 1999, Do investors trade too much?, *The American Economic Review* 89, 1279–1298
- Barber, Brad M and Terrance Odean, 2001, Boys will be boys: Gender, overconfidence, and common stock investment, *Quarterly Journal of Economics* 261–292

Session 13: Mutual funds and hedge funds

Mutual fund performance

- Sharpe, William F, 1966, Mutual fund performance, *The Journal of Business* 39, 119–138
- Daniel, Kent, Mark Grinblatt, Sheridan Titman, and Russ Wermers, 1997, Measuring mutual fund performance with characteristic-based benchmarks, *The Journal of Finance* 52, 1035–1058
- Fama, Eugene F and Kenneth R French, 2010, Luck versus skill in the cross-section of mutual fund returns, *The journal of Finance* 65, 1915–1947
- Pástor, L'uboš, Robert F Stambaugh, and Lucian A Taylor, 2015, Scale and skill in active management, *Journal of Financial Economics* 116, 23–45
- Berk, Jonathan B and Jules H Van Binsbergen, 2015, Measuring skill in the mutual fund industry, *Journal of Financial Economics* 118, 1–20

Mutual fund agency conflicts

- Chevalier, Judith and Glenn Ellison, 1997, Risk taking by mutual funds as a response to incentives, *The Journal of Political Economy* 105, 1167–1200
- Chevalier, Judith, Glenn Ellison et al., 1999, Career concerns of mutual fund managers, *The Quarterly Journal of Economics* 114, 389–432

Mutual funds as data-rich laboratories

- Sirri, Erik R and Peter Tufano, 1998, Costly search and mutual fund flows, *The Journal of Finance* 53, 1589–1622
- Hong, Harrison, Jeffrey D Kubik, and Jeremy C Stein, 2005, Thy neighbor's portfolio: Word-of-mouth effects in the holdings and trades of money managers, *The Journal of Finance* 60, 2801–2824

Hedge funds

- Aiken, Adam L, Christopher P Clifford, and Jesse Ellis, 2013, Out of the dark: Hedge fund reporting biases and commercial databases, *Review of Financial Studies* 26, 208–243
- Griffin, John M and Jin Xu, 2009, How smart are the smart guys? a unique view from hedge fund stock holdings, *Review of Financial Studies* 22, 2531–2570
- Panageas, Stavros and Mark M Westerfield, 2009, High-water marks: High risk appetites? convex compensation, long horizons, and portfolio choice, *The Journal of Finance* 64, 1–36

Session 14: Frontiers of research

Zoo of factors

- Cochrane, John H, 2011, Presidential address: Discount rates, *The Journal of Finance* 66, 1047–1108
- McLean, R David and Jeffrey Pontiff, 2016, Does academic research destroy stock return predictability?, *The Journal of Finance* 71, 5–32

Microstructure matters

- Hendershott, Terrence and Mark S Seasholes, 2007, Market maker inventories and stock prices, *The American economic review* 210–214
- Comerton-Forde, Carole, Terrence Hendershott, Charles M Jones, Pamela C Moulton, and Mark S Seasholes, 2010, Time variation in liquidity: The role of market-maker inventories and revenues, *The Journal of Finance* 65, 295–331
- Hendershott, Terrence, Charles M Jones, and Albert J Menkveld, 2011, Does algorithmic trading improve liquidity?, *The Journal of Finance* 66, 1–33
- Brogaard, Jonathan, Terrence Hendershott, and Ryan Riordan, 2014, High-frequency trading and price discovery, *Review of Financial Studies* Forthcoming
- Johnson, Travis L and Eric C So, 2016, Asymmetric trading costs prior to earnings announcements: Implications for price discovery and returns, *Massachusetts Institute of Technology Working Paper*

Economics of β

- Papanikolaou, Dimitris, 2011, Investment shocks and asset prices, *Journal of Political Economy* 119, 639–685
- Kogan, Leonid and Dimitris Papanikolaou, 2014, Growth opportunities, technology shocks, and asset prices, *The Journal of Finance* 69, 675–718
- Donangelo, Andres, 2014, Labor mobility: Implications for asset pricing, *The Journal of Finance* 69, 1321–1346

Intermediary-based asset pricing

- He, Zhiguo and Arvind Krishnamurthy, 2013, Intermediary asset pricing, *The American Economic Review* 103, 732–770
- Adrian, Tobias, Erkki Etula, and Tyler Muir, 2014, Financial intermediaries and the cross-section of asset returns, *The Journal of Finance* 69, 2557–2596