

# Asset Pricing Theory (and Empirical Methods in Finance)

Lindner College of Business, University of Cincinnati

Fall 2020

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**Class Room:** Lindner Hall 2375 or Team  
**Office hours:** By appointments

## COURSE DESCRIPTION:

This course introduces doctoral students in finance and related fields to the frontier theoretical and empirical asset pricing research. It covers selected topics that are essential for understanding the pricing and dynamics of financial markets. These topics include time-series stock return predictability, cross-sectional stock return predictability, the dynamics of stock market volatility, and the stock market risk-return relation across time. We will discuss each topic in three respects: (1) commonly used empirical methodologies; (2) main empirical findings; and (3) the relation between empirics and theories. Good asset pricing empirical work always requires a thorough understanding of asset pricing theories. In this course, I highlight the tension between empirical findings and economic theories, and discuss recent theoretical developments that attempt to provide a better explanation of financial market data.

To register for this course, you should have completed graduate-level courses in basic finance theory and econometrics. You should also be able to use a statistical package or you are willing to learn it quickly. Many empiricists use SAS, STATA, SPLUS, R, TSP, MATLAB, or GAUSS but you are welcome to use any statistical packages that you are most comfortable with.

By the end of the course, I expect you to be familiar with relevant economic issues and have skills required for doing empirical research. The ultimate objective is that you should be able to conduct the original research in asset pricing.

## COURSE MATERIALS:

### **Required Textbook**

1. Campbell, John, Andrew Lo, and Craig MacKinlay, 1997, *Econometrics of Financial Markets*, Princeton University Press. I will refer to this book as CLM.

### **Useful References**

2. Campbell, John, 2018, *Financial Decisions and Markets: A Course in Asset Pricing*, Princeton University Press.

3. Cochrane, John, 2005, *Asset Pricing*, Princeton University Press (revised edition).

### **Strongly recommended**

4. Greene, William, 2000, *Econometric Analysis*, Prentice Hall (5th edition)
5. Hamilton, James, 1994, *Time Series Analysis*, Princeton University Press
6. Pennacchi, George, 2008, *Theory of Asset Pricing*, Pearson Education
7. Pedersen, L., 2015, *Efficiently Inefficient: How Smart Money Invests and Market Prices Are Determined*, Princeton University Press

### **GRADING:**

- 10 quizzes from previous lectures (20%)
- 3 referee reports (18%)
- 3 in-class presentations (21%)
- 3 replication assignments (15%)
- 1 course project (26%)

### **TENTATIVE COURSE OUTLINE AND READING:**

(\* denotes required reading and # denotes surveys)

#### **Big Picture:**

- *The stock market risk-return relation is the first fundamental law of finance*
- *Mechanical relation between stock price and expected future discount rate*
- *Discount-rate variation is the central organizing question of current asset-pricing research*

I begin with the discussion of time-series stock market return predictability with emphasis of conditional stock market variance as an important predictive variable. I then introduce the classic models that explain the cross-section of stock returns, including CAPM, conditional CAPM, APT, and ICAPM. I emphasize that ICAPM imposes a theoretical link between time-series and cross-sectional expected stock returns. I discuss how extant consumption-based asset pricing models explain the stock market return predictability and other important stylized facts such as the stock market risk-return tradeoff. I also discuss how the limit of arbitrages and investor sentiment affect asset prices.

#### ***Topic 1: Overview, Efficient Market Hypothesis, and Random Walk Hypothesis***

- *Literature Overview*

\*# Cochrane, J., 2017, *Macro-Finance*, *Review of Finance*, 21, 945-985.

\*# Thaler, R., 2018, *From Cashews to Nudges: The Evolution of Behavioral Economics*, *American Economic Review*

\*# Fama, E. 2014, *Two Pillars of Asset Pricing*, *American Economic Review*

\*# Shiller, Robert, 2014, Speculative Asset Prices, American Economic Review, 104, 2014

\*# Cochrane, J., 2011, Discount Rates, Journal of Finance 66, 1047-1108

\*# Cochrane, J., 2008, Financial markets and the Real Economy, Cochrane, John H.; Handbook of the Equity Risk Premium, 237-325, Handbooks in Finance, Amsterdam and Boston: Elsevier, North-Holland

\*# Campbell, J., 2000, Asset Pricing at the Millennium, Journal of Finance, 55, 1515-1567

\* Shiller, R., 1981, Do Stock Prices Move Too Much to Be Justified by Subsequent Changes in Dividends? American Economic Review, 71, 421-436

- *Efficient Market Hypothesis and Random Walk Hypothesis*

\* CLM Chapters 1 and 2

\* Fama, E., 1970, Efficient Capital Markets: A Review of Theory and Empirical Work, Journal of Finance, 25, 383-417

\* Fama, E., 1991, Efficient Capital Markets: II, Journal of Finance, 46, 1575-1618

\* Lo, A., and C. MacKinlay, 1988, Stock Market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test, Review of Financial Studies, 1, 41-66

\* Shleifer, A. and R. Vishny, 1997, the Limits of Arbitrage, Journal of Finance, 52, 35-55

\*Wurgler, J. and M. Baker, Investor sentiment and the cross-section of stock returns, Journal of Finance, 2006

\* Stambaugh, R., J. Yu, and Y. Yuan, 2012, The Short of It: Investor Sentiment and Anomalies, Journal of Financial Economics, 104, 288-302

\* Stambaugh, R., J. Yu, and Y. Yuan, 2015, Arbitrage Asymmetry and the Idiosyncratic Volatility Puzzle, Journal of Finance, 70, 1903-1948

\* Stambaugh, R. and Y. Yuan, 2017, Mispricing Factors, Review of Financial Studies

Pedersen, L., 2015, Efficiently Inefficient: How Smart Money Invests and Market Prices Are Determined, Princeton University Press

## ***Topic 2: Microstructure Frictions and Serial Correlation in Stock Returns***

\* CLM Chapter 3 (Sections 3.1, 3.2, and 3.4)

Lo, A., and C. MacKinlay, 1990a, An Econometric Analysis of Nonsynchronous Trading, Journal of Econometrics, 45, 181-212

Lo, A., and C. MacKinlay, 1990b, When Are Contrarian Profits Due to Stock Market Overreaction? *Review of Financial Studies*, 3, 175-205

\* Roll, R, 1984, A Simple Implicit Measure of the Effective Bid-Ask Spread in an Efficient Market, *Journal of Finance*, 39, 1127-1140

\* Scholes, M. and J. William, 1977, Estimating Betas from Nonsynchronous Data, *Journal of Financial Economics*, 5, 309-327

\* Dimson, E., 1979, Risk Measurement When Shares are Subject to Infrequent Trading, *Journal of Financial Economics*, 7, 197-226

\* Stoll, H., 2000, Presidential Address: Friction, *Journal of Finance*, 55, 1479-1514.

\* Han, Y. and D. Lesmond, 2011, Liquidity biases and the pricing of cross-sectional idiosyncratic volatility, *Review of Financial Studies* 24 (5), 1590-1629 (bias in idiosyncratic volatility)

\* Amihud, Y., 2002, Illiquidity and Stock Returns: Cross-Section and Time-Series Effects, *Journal of Financial Markets*, 5, 31-56

\* Guo, H., S. Mortal, R. Savickas, and R. Wood, 2017, Market Illiquidity and Conditional Equity Premium, *Financial Management*, 743-766

\* Chen, Yong, Gregory W. Eaton, and Bradley S. Paye, 2018 “Micro (structure) before macro? The predictive power of aggregate illiquidity for stock returns and economic activity.” *Journal of Financial Economics*, 130, 48–73.

\* Amihud, Y. and H. Mendelson, 1986, Asset pricing and the bid-ask spread, *Journal of Financial Economics*, 17, 223-249.

\* Ben-Rephael, A., O. Kadan, and A. Wohl, 2015, the diminishing liquidity premium, *Journal of Financial and Quantitative Analysis*, 197-229.

O’Hara, M., 2003, Presidential Address: Liquidity and Price Discovery, *Journal of Finance*, 58, 1335-1354.

\* Pastor, L. and R. Stambaugh, 2003, Liquidity risk and expected stock returns, *Journal of Political Economy*, 111, 642–685.

\* Acharya, V. and L. Pedersen, 2005, Asset pricing with liquidity risk, *Journal of Financial Economics*, 77, 375–410.

\* Brunnermeier, M. and L. Pedersen, 2009, Market liquidity and funding liquidity, *Review of Financial Studies*, 22, 2201-2199.

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

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

\*# Amihud, Y., H. Mendelson, and L. Pedersen, 2005, Liquidity and Asset Prices, *Foundations and Trends in Finance*, 1 (4), 269-364

\*# Holden, Jacobsen, and Subrahmanyam Review Article, 2014, "The Empirical Analysis of Liquidity," *Foundations and Trends in Finance* 8, No 4, 263-365.

### ***Topic 3: Forecasting Excess Stock Market Returns Using Financial or Macro Variables***

\* CLM, Chapter 7

\* Campbell, J., 1987, Stock Returns and the Term Structure, *Journal of Financial Economics*, 18, 373-399

\* Campbell, J., and R. Shiller, 1988, The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors, *Review of Financial Studies*, 1, 195–227

\* Fama, E. and K. French, 1989, Business Conditions and Expected Returns on Stocks and Bonds, *Journal of Financial Economics*, 25, 23–49

\* Lettau, Martin, and Sydney Ludvigson, 2001, Consumption, Aggregate Wealth, and Expected Stock Returns, *Journal of Finance*, 56, 815–849

Rangvid, J., 2006, Output and expected returns *Journal of Financial Economics*, 81 (3) 595-624

\* Guo, H., 2006, On the Out-of-Sample Predictability of Stock Market Returns, *Journal of Business*, 2006, 79, 645-670

\* Guo, H., and R. Savickas, Idiosyncratic Volatility, Stock Market Volatility, and Expected Stock Returns, *Journal of Business and Economic Statistics*, 24, 43-56

\* Guo, H., and R. Savickas, Average Idiosyncratic Volatility in G7 Countries, *Review of Financial Studies*, 2008, 21, 1259-1296

- *Present-Value Relations and Return Variance Decomposition*

\* Campbell, J., and R. Shiller, 1988, The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors, *Review of Financial Studies*, 1, 195–227

\* Campbell, J., 1991, A Variance Decomposition for Stock Returns, *The Economic Journal*, 101, 157–179

\* Campbell, J., 2008, Estimating the Equity Premium, *Canadian Journal of Economics*, 41, 1-21

\* Kelly, B., and S. Pruitt, 2013, Market Expectations in the Cross-Section of Present Values, *Journal of Finance*, 1721-1756

- *Finite-Sample Issues*

\* Hodrick, R. J., 1992, Dividend Yields and Expected Stock Returns: Alternative Procedures for Inference and Measurement, *Review of Financial Studies*, 5(3), 257–286

\* Nelson, C. and M. Kim, 1993, Predictable Stock Returns: The Role of Small Sample Bias, *Journal of Finance*, 48(2), 641–661

Goetzmann, W. and P. Jorion, 1993, Testing the Predictive Power of Dividend Yields, *Journal of Finance*, 48(2), 663–679

\* Stambaugh, R. F., 1999, “Predictive Regressions,” *Journal of Financial Economics*, 54(3), 375–421

Lewellen, J., 2004, Predicting Returns with Financial Ratios, *Journal of Financial Economics*, 74(2), 209–235

\* Valkanov, R., 2003, Long-Horizon Regressions: Theoretical Results and Applications, *Journal of Financial Economics*, 68, 201-232

\* Amihud, Y., C. Hurvich, and Y. Wang, 2009, Multiple-Predictor Regressions: Hypothesis Testing, *Review of Financial Studies*

- *The Predictability Debate*

\*# Goyal, I. and I. Welch, 2008, A Comprehensive Look at The Empirical Performance of Equity Premium Prediction, forthcoming, *Review of Financial Studies*

Guo, H. and R. Savickas, 2008, Average Idiosyncratic Variance and Expected Stock Market Returns: Some Further Evidence, Unpublished Working Paper, University of Cincinnati

Boudoukh, J., M. Richardson, and R. Whitelaw, 2008, The Myth of Long-Horizon Predictability, *Review of Financial Studies*, 24, 1577-1605.

Cochrane, J., 2008, The Dog that Did Not Bark: A Defense of Return Predictability, *Review of Financial Studies*, 21, 1533-1575

Lettau, M., and S. Van Nieuwerburgh, 2008, Reconciling the Return Predictability Evidence, *Review of Financial Studies*, 21, 1607-1652.

Campbell, J., and S. Thompson, 2008, Predicting Excess Stock Returns Out of Sample: Can Anything Beat the Historical Average? *Review of Financial Studies*, 1509-1531

- *Recent Development* (ask students to update the list)

Cooper, Ilan, and Richard Priestley, 2009, Time-Varying Risk Premiums and the Output Gap, *Review of Financial Studies*

Rapach, D., J. Strauss, and G. Zhou, 2010, Out-of-Sample Equity Premium Prediction: Combination Forecasts and Links to the Real Economy, *Review of Financial Studies*

Ferreira, M. and P. Santa-Clara, 2011, Forecasting stock market returns: The sum of the parts is more than the whole, *Journal of Financial Economics*.

Guo, H., 2011, IPO First-Day Return and Ex Ante Equity Premium, *Journal of Financial and Quantitative Analysis*

Carr, P., and L. Wu, Variance Risk Premiums, *Review of Financial Studies*, 2009, 22(3), 1311-1341.

Bollerslev, Tim, George Tauchen, and Hao Zhou, 2009, Expected Stock Returns and Variance Risk Premia, *Review of Financial Studies*

Drechsler, I. and A. Yaron, 2011, What's Vol Got To Do With It, *Review of Financial Studies*

Guo, H., and B. Qiu, 2014, Options-Implied Variance and Future Stock Returns, *Journal of Banking and Finance*

Guo, H., K. Wang, and H. Zhou, 2014, Conditional Equity Premia and Realized Jump Risk, Unpublished Working Paper, University of Cincinnati

Kelly, B. and H Jiang, 2014, Tail Risk and Asset Prices, *Review of Financial Studies*

Moeller, S. and J. Rangvid, 2015, End-of-the-year economic growth and time-varying expected returns, *Journal of Financial Economics*

Jones, Chris, and Selale Tuzel, 2013, New Orders and Asset Prices, *Review of Financial Studies*

Rapach, D., M. Ringgenberg, and G. Zhou, 2016, Short Interest and Aggregate Market Returns, *Journal of Financial Economics*, forthcoming.

Huang, D., F. Jiang, J. Tu, and G. Zhou, 2015, Investor Sentiment Aligned: A Powerful Predictor of Stock Returns, *Review of Financial Studies*

Adrian, T., E. Moench, and H. Shin, 2014, Dynamic leverage asset pricing, Unpublished Working Paper, New York Fed and Bank for International Settlements

Chava, S., M. Gallmeyer, and H. Park, 2015, Credit conditions and stock return predictability, *Journal of Monetary Economics*

Arif, S. and C. Lee, 2014, Aggregate Investment and Investor Sentiment, *Review of Financial Studies*

Guo, H. and B. Qiu, 2015, What Moves Aggregate Investment (and Net Hiring): Investor Sentiment or Time-Varying Equity Premium?

Liu, Q., Tao, L., W. Wu, and J. Yu, 2016, Short- and Long-Run Business Conditions and Expected Returns, *Management Science*, forthcoming

Colacito, R., E. Ghysels, J. Meng, W. Siwasarit, 2016, Skewness in Expected Macro Fundamentals and the Predictability of Equity Returns: Evidence and Theory, forthcoming, *Review of Financial Studies*, 20, 2069-2169

Zhou, G., 2018, Measuring Investor Sentiment, *Annual Review of Financial Economics*

Huang, D. and M. Kilic, 2018, Gold, Platinum, and Expected Stock Returns, *Journal of Financial Economics*, forthcoming.

Cujean, J. and M. Hasler, 2017, Why does return predictability concentrate in bad times? *The Journal of Finance*.

Martin, I., 2017, What is the expected return on the market?\*. *The Quarterly Journal of Economics* 132, 367–433.

Menzly, L., T. Santos, and P. Veronesi, 2004, Understanding predictability, *Journal of Political Economy*, 112, 1–47.

Atanasov, V., S. Moller, and R. Priestley, 2019, Consumption Fluctuations and Expected Returns, *Journal of Finance*

Li, Jun, Huijun Wang, and Jianfeng Yu, 2020, Aggregate Expected Investment Growth and Stock Market Returns, *Journal of Monetary Economics*.

Han, Bing and Gang Li, 2020, Aggregate Implied Volatility Spread and Stock Market Returns, *Management Science*

#### ***Topic 4: CAPM, APT, Conditional CAPM, and ICAPM***

- *CAPM*

\* CLM Chapter 5

Gibbons, M., S. Ross, and J. Shanken, 1989, A Test of the Efficiency of a Given Portfolio, *Econometrica*, 57, 1121–1152.

\* Fama, E. and J. MacBeth, 1973, Risk, Return, and Equilibrium: Empirical Tests, *Journal of Political Economy*, 71, 607-636.

\* Shanken, Jay, 1992, On the Estimation of Beta-Pricing Models, *Review of Financial Studies*, 5, 1-33.

\* Fama, E. and K. French, 1992, The Cross-Section of Expected Stock Returns, *Journal of Finance*, 47, 427–465.

\* Fama, E. and K. French, 1993, Common Risk Factors in the Returns on Bonds and Stocks, *Journal of Financial Economics*, 33, 3–56.

\* Berk, J., 1995, A Critique of Size-Related Anomalies, *Review of Financial Studies*, 8, 275–286

\* Daniel, K. and S. Titman, 1997, Evidence on the Characteristics of Cross Sectional Variation in Stock Returns, *Journal of Finance*, 52, 1–33

\* Andrea Frazzini and Lasse Heje Pedersen, Betting against Beta, *JFE* 2014



\* Kogan, L. and D Papanikolaou, 2013, Firm Characteristics and Stock Returns: The Role of Investment-Specific Shocks, *Review of Financial Studies*

- *APT*

\* CLM Chapter 6

\* Chen, N., R. Roll, and S. Ross, 1986, Economic Forces and the Stock Market, *Journal of Business*, 59, 3, 383–403

- *Conditional CAPM*

\* Jagannathan, R. and Z. Wang, 1996, The Conditional CAPM and the Cross-Section of Expected Returns, *Journal of Finance*, 51, 3–54

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

\* Petkova, R., and L. Zhang, 2005, Is Value Riskier than Growth? *Journal of Financial Economics*, 78, 187-202

\* Zhang, Lu, 2005, The value premium, *Journal of Finance* 60 (1), 67–103

\* Bai, Hou, Kung, and Zhang, 2015, The CAPM strikes back? An investment model with disasters, unpublished working paper, Ohio State University

\* Lewellen, J., and S. Nagel, 2006, The Conditional CAPM Does not Explain Asset-Pricing Anomalies, *Journal of Financial Economics*, 82 (2006), 289-314

Li, Y., and L. Yang, Testing Conditional Factor Models: A Nonparametric Approach, *Journal of Empirical Finance*, 18(5), 2011, 972-992

Ang, A., and D. Kristensen, 2012, Testing Conditional Factor Models, *Journal of Financial Economics*.

Boguth, O., M. Carlson, A. Fisher, and M. Simutin, 2011, Conditional risk and performance evaluation: Volatility timing, overconditioning, and new estimates of momentum alphas, *Journal of Financial Economics*, 102(2) 363-389

Cederburg, S., and M. O'Doherty, 2016, "Does it pay to bet against beta? On the conditional performance of the beta anomaly," *Journal of Finance*

O'Doherty, Michael S., 2012, On the conditional risk and performance of financially distressed stocks, *Management Science* 58(8), 1502-1520

Guo, H., Y. Yu, and C. Wu, 2017, Time-Varying Beta and the Value Premium: Evidence from the Varying-Coefficient Single-Index Model, *Journal of Financial and Quantitative Analysis*

- *Stochastic Discount-Factor Models*

\* Cochrane, Chapters 4, 10, 11, 13

Hansen, L., and R. Jagannathan, 1997, Assessing Specification Errors in Stochastic Discount Factor Models, *Journal of Finance*, 52, 557–590

\* Hodrick, R., and X. Zhang, 2001, Evaluating the Specification Errors of Asset Pricing Models, *Journal of Financial Economics*, 2001, 327-76

- *ICAPM*

\* CLM Chapter 8

- *Theoretical Framework*

Merton, R., 1973, An Intertemporal Capital Asset Pricing Model, *Econometrica*, 41, 867-887

\* Campbell, J., 1993, Intertemporal Asset Pricing without Consumption Data, *American Economic Review*, 83, 487-512

\* Campbell, J., S. Giglio, C. Polk, and R. Turley, 2018, An Intertemporal CAPM with Stochastic Volatility, *Journal of Financial Economics*, 128, 207-233

\* Bansal, R., D. Kiku, I. Shaliastovich, and A. Yaron, 2014, Volatility, the Macroeconomy and Asset Prices, *Journal of Finance*

- *Empirical Evidence*

\* Campbell, J., 1996, Understanding Risk and Return, *Journal of Political Economy*, 104, 298-345

\* Campbell, J., and T. Vuolteenaho, 2004, Bad Beta, Good Beta, *American Economic Review*, 94, 1249-1275

Kozak, S. and S. Santosh, 2020, Why Do Discount Rates Vary? *Journal of Financial Economics*, 137(3), 740-751

Andrei S. Gonçalves, 2020, Reinvestment Risk and the Equity Term Structure, *Journal of Finance*, forthcoming.

Andrei S. Gonçalves, 2020, The Short Duration Premium, *Journal of Financial Economics*, Forthcoming

Guo, H., R. Savickas, Z. Wang, and Jian Yang, 2009, Is the Value Premium a Proxy for Time-Varying Investment Opportunities: Some Time Series Evidence, *Journal of Financial and Quantitative Analysis*, 44, 133-154

Guo, H., 2006, Time-Varying Risk Premia and the Cross Section of Stock Returns, *Journal of Banking and Finance*, 30, 2087-2107

Shen, J., J. Yu, and S. Zhao, 2017, Investor Sentiment and Economic Forces, *Journal of Monetary Economics*

## Topic 5: Consumption-based asset pricing models

- *Overview*

\* CLM Chapter 7

# Campbell, J., 2003, Consumption-Based Asset Pricing, Handbook of the Economics of Finance, Edited by George Constantinides, Milton Harris, and Rene Stulz, North-Holland

\*# Cochrane, J., 2017, Macro-Finance, Review of Finance.

\* Muir, Tyler, 2016, Financial Crises and Risk Premia, Quarterly Journal of Economics

- *Excess Volatility Puzzle*

\* Shiller, R., 1981, Do Stock Prices Move Too Much to Be Justified by Subsequent Changes in Dividends? American Economic Review, 71, 421-436

- *Equity Premium Puzzle*

\* Mehra, R., and E. Prescott, 1985, The Equity Premium: A Puzzle, Journal of Monetary Economics, 15, 146-161

- *Recent Theoretical Developments*

\* CLM Chapter 8

\* Campbell, J., and J. Cochrane, 1999, By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior, Journal of Political Economy, 107, 205-331

\* Ljungqvist, L. and H. Uhlig, 2015, Comment on the Campbell-Cochrane Habit Model, Journal of Political Economy

\* Campbell, J., and J. Cochrane, 2015, the Fragile Benefits of Endowment Destruction, Journal of Political Economy

\* Bansal, R., and A. Yaron, 2004, Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles, Journal of Finance, 59, 1481-1509

\* Guo, H., 2004, Limited Stock Market Participation and Asset Prices in a Dynamic Economy, Journal of Financial and Quantitative Analysis, 2004, 39, 495-516

\* Lettau, M., and S. Ludvigson, 2009, Euler Equation Errors, Review of Economic Dynamics, 12, 255-283

\*Bollerslev, Tim, George Tauchen, and Hao Zhou, 2009, Expected Stock Returns and Variance Risk Premia, Review of Financial Studies, 22, 4463–4492

\*Drechsler, I., and A. Yaron, 2011, What's Vol Got to Do With It, *Review of Financial Studies*, 24, 1 - 45.

\* David, A. and P. Veronesi, 2013, What Ties Return Volatilities to Price Valuations and Fundamentals? *Journal of Political Economy*, 121, 682-746.

\* Bansal, R., D. Kiku, I. Shaliastovich, and A. Yaron, 2014, Volatility, the Macroeconomy and Asset Prices, *Journal of Finance*

\* Petrosky-Nadeau, Nicolas, Lu Zhang, and Lars-Alexander Kuehn, 2018, Endogenous disasters, *American Economic Review*, 108, 2212-2245

\* Wachter, J., 2013, Can time-varying risk of rare disasters explain aggregate stock market volatility? *Journal of Finance*

\* Beeler, J. and J. Campbell, 2012, The Long-Run Risks Model and Aggregate Asset Prices: An Empirical Assessment, *Critical Finance Review*

\* Bansal, R., D. Kiku, and A. Yaron, 2012, An Empirical Evaluation of the Long-Run Risks Model for Asset Prices, *Critical Finance Review*

\* Constantinides, G., and A. Ghosh, 2012, Asset Pricing Tests with Long Run Risks in Consumption Growth, *Review of Asset Pricing*

\* He, Z., and A. Krishnamurthy, 2013, Intermediary Asset Pricing, *American Economic Review* 103, 732-770.

\* Ju, N. and J. Miao, 2012, Ambiguity, Learning, and Asset Returns, *Econometrica*

- *General Equilibrium Asset Pricing Models*
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Rouwenhorst, G., 1995, Asset Pricing Implications of Equilibrium Business Cycle Models, 294-330, in *Frontiers of Business Cycle Research* edited by T. Cooley, Princeton University Press, NJ

Urban, J., 1998, Asset Pricing in Production Economies, *Journal of Monetary Economics*, 41, 257-275.

Boldrin, M., L. Christiano, and J. Fisher, 2001, Habit Persistence, Asset Returns, and the Business Cycle, *American Economic Review*.

Kaltenbrunner, G., and L. Lochstoer, 2010, Long-run risk through consumption smoothing, *Review of Financial Studies*.

Papanikolaou, D., 2011, Investment Shocks and Asset Prices, *Journal of Political Economy*, 119, 639-685.

## **Topic 6: Stock Market Risk-Return Tradeoff**

- *Realized Volatility, ARCH, Midas, Implied Volatility*

\* CML, Chapter 12.2

Merton, R., 1980, On Estimating the Expected Return on the Market: An Exploratory Investigation, *Journal of Financial Economics* 8, 323–361

\* Andersen, T., T. Bollerslev, F. Diebold, and P. Labys, 2003, Modeling and Forecasting Realized Volatility, *Econometrica* 71, 579–625

# Bollerslev, T., R. Chou, and K. Kroner, 1992, ARCH Modeling in Finance: A Review of the Theory and Empirical Evidence, *Journal of Econometrics*, 52, 5-59

\* Christensen, B., and N. Prabhala, 1998, The Relation between Implied and Realized Volatility, *Journal of Financial Economics*, 50, 125–150

Christiansen, C., M. Schmeling, and A. Schrimpf, 2012, A Comprehensive Look at Financial Volatility Prediction by Economic Variables, *Journal of Applied Econometrics*

\* Carr, P., and L. Wu, 2009, Variance Risk Premiums, *Review of Financial Studies*

Paye, B., 2012, Deja Vol Predictive Regressions for Aggregate Stock Market Volatility using Macroeconomic Variables, *Journal of Financial Economics*.

Ghysels, E., P. Santa-Clara, and R. Valkanov, 2005, There is a risk-return trade-off after all, *Journal of Financial Economics* 76 (3), 509-548

\* Ghysels, E. and R. Valkanov, 2016, Forecasting Volatility with MIDAS, forthcoming in *Volatility Models and Their Applications*, Eds. Bauwens, L., Hafner, C., and Laurent, S, John Wiley and Sons.

- *Empirical Studies*

\* Campbell, J., 1987, Stock returns and the term structure, *Journal of Financial Economics*, 18, 373–399

\* Glostien, L., R. Jagannathan, and D. Runkle, 1993, On the Relation Between the Expected Value and the Variance of the Nominal Excess Return on Stocks, *Journal of Finance*, 48, 1779-1801

\* Whitelaw, R., 1994, Time Variations and Covariations in the Expectation and Volatility of Stock Market Returns, *Journal of Finance* 49, 515–541

\* Scruggs, J., 1998, Resolving the Puzzling Intertemporal Relation between the Market Risk Premium and Conditional Market Variance: A Two-Factor Approach, *Journal of Finance* 53, 575–603

\* Guo, H., and R. Whitelaw, 2006, Uncovering the Risk-Return Relation in the Stock Market, *Journal of Finance*, 61, 1433-1463

\* Cheng, H., H. Guo, and Y. Shi, 2018, Uncovering China's Stock Market Risk--Return Relation: Crazy Casino Punters or Risk Averse Investors? Unpublished Working Paper, University of Cincinnati

\* Guo, H., Z. Wang, and J. Yang, 2013, Does Aggregate Relative Risk Aversion Change Countercyclically over Time? *Journal of Money, Credit, and Banking*

\* 17, Volatility Managed Portfolios, *Journal of Finance*

Cederburg, Scott, Michael S. O'Doherty, Feifei Wang, and Xuemin Yan, 2020, On the performance of volatility-managed portfolios, *Journal of Financial Economics*

\* Yu, J., and Y. Yuan, 2011, Investor Sentiment and the Mean-Variance Relation, *Journal of Financial Economics*, 100, 367-381

\* Ghysels, E., P. Guerin, and M. Marcellino, 2014, Regime switches in the risk–return trade-off, *Journal of Empirical Finance*

Lundblad, C., 2007, the risk return tradeoff in the long run: 1836–2003, *Journal of Financial Economics*

Pastor, L., M. Sinha, and B. Swaminathan, 2008, estimating the intertemporal risk–return tradeoff using the implied cost of capital, *the Journal of Finance*

- *Multiple state variables*

\* Guo, H., Q. Lin, and A. Pai, 2018, On the Stock Market Variance-Return or Price Relations: A Tale of Two Variances, Unpublished Working Paper, University of Cincinnati

\* Segal, G., I. Shaliastovich, and A. Yaron, 2015, Good and Bad Uncertainty: Macroeconomic and Financial Market Implications, *Journal of Financial Economics*

\* Bekaert, G. and E. Engstrom, *Asset Return Dynamics under Bad Environment-Good Environment Fundamentals*, forthcoming, *Journal of Political Economy*

\* Kilic, M. and I. Shaliastovich, 2017, Good and Bad Variance Premia and Expected Returns, *Management Science*

\* Gill Segal, 2019, A Tale of Two Volatilities: Sectoral Uncertainty, Growth, and Asset-Prices, *Journal of Financial Economics*

\* Guo, H., and R. Savickas, Average Idiosyncratic Volatility in G7 Countries, *Review of Financial Studies*, 2008, 21, 1259-1296

\* Veronesi, P., and A. David, 2013, What Ties Return Volatilities to Price Valuations and Fundamentals? *Journal of Political Economy*

\* Guo, H., K. Wang, and H. Zhou, 2014, Conditional Equity Premia and Realized Jump Risk, Unpublished Working Paper, University of Cincinnati

- *Term Structure of Returns*

van Binsbergen, J., M. Brandt, and R. Koijen, 2012, On the Timing and Pricing of Dividends, *American Economic Review*, 102, 1596-1618.

van Binsbergen, J., M. Brandt, and R. Koijen, 2016, On the Timing and Pricing of Dividends: Reply, *American Economic Review*, 106, 3224-3237.

Schulz, F., 2016, On the Timing and Pricing of Dividends: Comment, *American Economic Review*, 106, 3185-3223.

Bansal, R., S. Miller, and A. Yaron, Is the Term Structure of Equity Risk premia Upward Sloping?, Unpublished working paper, Duke University.

van Binsbergen, and R. Koijen, 2017, the Term Structure of Returns: Facts and Theory, *Journal of Financial Economics*, 124, 1-21.

Ai, H., M. Croce, A. Diercks, and K. Li, 2018, News shocks and production-based term structure of equity returns, *Review of Financial Studies*, forthcoming.

- *Sentiment and Asset Prices*

Wang, H., J. Yan, and J. Yu, 2017, Reference-Dependent Preferences and the Risk-Return Tradeoff, *Journal of Financial Economics*

Stambaugh, R., J. Yu, and Y. Yuan, 2012, the Short of It: Investor Sentiment and Anomalies, *Journal of Financial Economics*, 288-302

Stambaugh, R., J. Yu, and Y. Yuan, 2014, the Long of It: Odds That Investor Sentiment Spuriously Predicts Anomaly Returns, *Journal of Financial Economics*, 613-619.

Stambaugh, R., J. Yu, and Y. Yuan, 2015, Arbitrage Asymmetry and the Idiosyncratic Volatility Puzzle, *Journal of Finance*

Stambaugh, R. and Y. Yuan, 2017, Mispricing Factors, *Review of Financial Studies*

### **Topic 7: Investment-based Asset Pricing Model**

\* Cochrane, John H., 1991, Production-based asset pricing and the link between stock returns and economic fluctuations, *Journal of Finance*

\*# Zhang, L., 2017, the investment CAPM, *European Financial Management* 23, 545-603.

Liu, L., T. Whited, and L. Zhang, 2009, Investment-based expected stock returns, *Journal of Political Economy*

Zhang, L., 2005, The value premium, *Journal of Finance*.

### **Topic 8: Cross-Sectional Stock Return Predictability**

\* Hou, K., C. Xue, and L. Zhang, 2015, Digesting anomalies: An investment approach, *Review of Financial Studies*

\* Fama, E., and K. French, 2015, A five-factor asset pricing model, *Journal of Financial Economics*

\* Fama, E., and K French, 2008, Dissecting Anomalies, *Journal of Finance*, 63, 1653-1678

\* Kozak, S., S. Nagel, and S. Santosh, 2018, Interpreting Factor Models, *Journal of Finance*

Harvey, C., Y. Liu, and H. Zhu, 2015, ... and the Cross-Section of Expected Returns, *Review of Financial Studies*

# I. Tuna, S. Richardson, and P Wysocki, 2010, Accounting anomalies and fundamental analysis: A review of recent research advances, *Journal of Accounting and Economics*, 50: 410-454

- Duration Anomaly

Weber, Michael, 2018, Cash Flow Duration and the Term Structure of Equity Returns, *Journal of Financial Economics*, 128, 486-503.

Andrei S. Gonçalves, 2020, The Short Duration Premium, *Journal of Financial Economics*

- *Value and Growth, Size*

\* Fama, E. and K. French, 1992, The Cross-Section of Expected Stock Returns, *Journal of Finance*, 47, 427–465.

\* Fama, E. and K. French, 1993, Common Risk Factors in the Returns on Bonds and Stocks, *Journal of Financial Economics*, 33, 3–56.

- *Momentum*

\* Jegadeesh, N., and S. Titman, 1993, Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency, *Journal of Finance*, 48, 65–91

- *Accruals*

\* Sloan, Richard G., 1996, Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings? *The Accounting Review*, 71, 289–315

- *Investments*

\* Cooper, M., H. Gulen, and M. Schill, 2008, Asset growth and the cross-section of stock returns, *Journal of Finance*

- Profitability

Novy-Marx, R., 2013, the Other Side of Value: The Gross Profitability Premium, *Journal of Financial Economics*, 2013, 1-28.



- *Net Share Issuance*

Ikenberry, D., J. Lakonishok, and T. Vermelean, 1995, Market Underreaction to Open Market Share Repurchases, *Journal of Financial Economics*, 39, 181-208

Loughran, T., and J. Ritter, 1995, The New Issues Puzzle, *Journal of Finance* 50, 23-51

\* Pontiff, J., and A. Woodgate, 2006, Share issuance and cross-sectional returns, forthcoming, *Journal of Finance*

Daniel, K., and S. Titman, 2006, Market reactions to tangible and intangible information, *Journal of Finance*, 61, 1605-1643

\* Wurgler, J., and M. Baker, 2000, The Equity Share in New Issues and Aggregate Stock Returns, *Journal of Finance*, 55, 2219-2257

- *Idiosyncratic Volatility*

\* Ang, A., Hodrick, R., Xing, Y., and X. Zhang, 2006, The Cross-Section of Volatility and Expected Returns, *Journal of Finance*, 259-299