

FIN9014 Asset Pricing Theory (and Empirical Methods in Finance)

Carl H. Lindner College of Business, University of Cincinnati

Fall 2014

Instructor: Prof. Hui Guo
Phone: (513) 556-7077
Office: 418 Carl H. Lindner Hall
Email: hui.guo@uc.edu
Class Hours: Thursday 12pm to 3pm
Class Room: 401 Carl H. Lindner Hall
Office hours: By appointments

COURSE DESCRIPTION:

This course introduces doctoral students in finance and related fields to the frontier empirical asset pricing research. We will cover 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 empirical work always requires a thorough understanding of asset pricing theories. In this course, we will overview the tension between empirical findings and economic theories, and discuss recent theoretical developments that attempt to provide a better explanation of data.

To register for this course, you should have completed graduate-level courses in 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. The College of Business has the subscription to many financial databases through WRDS. If you have not done so, please register an account with WRDS at <https://wrds-web.wharton.upenn.edu/wrds/>

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 empirical asset pricing.

COURSE MATERIALS:

Required Textbook

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

Useful References

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

Strongly recommended

3. Greene, William, 2000, *Econometric Analysis*, Prentice Hall (5th edition)

4. Hamilton, James, 1994, Time Series Analysis, Princeton University Press
5. Pennacchi, George, 2008, Theory of Asset Pricing, Pearson Education

GRADING: TBA

TENTATIVE COURSE OUTLINE AND READING:

(* denotes required reading and # denotes surveys)

9/4 and 9/18

(No class on 9/11 NFA meetings)

Overview, Efficient Market Hypothesis, and Random Walk Hypothesis

- *Literature Overview*

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

*# 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

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

- *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

9/25

Market Microstructure Effects

* 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

10/2, 10/9, and 10/16

(10/9 is a reading day)

Time-Series Stock Market Return Predictability

* CLM, Chapter 7

- *Empirical Evidence*

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

* 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

* 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

- *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

- *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

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*.

Hirshleifer, D., K. Hou, and S. Teoh, 2009, Accruals, Cash Flows, and Aggregate Stock Returns, *Journal of Financial Economics*, 91, 389-406

Kang, Q., Q. Liu, and R. Qi, 2010, Predict stock market returns with aggregate discretionary accruals, *Journal of Accounting Research*, 48, 815-858

Guo, H. and X. Jiang, 2011, Accruals and Conditional Equity Premium, *Journal of Accounting Research*, 49, 197-221

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

* 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), 1-45

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, Tail Risk and Asset Prices, *Review of Financial Studies*, forthcoming

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

10/23

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

10/30

APT and Conditional CAPM

- *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

* 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

Guo, H., Y. Yu, and C. Wu, 2012, Time-Varying Beta and the Value Premium: Evidence from the Varying-Coefficient Single-Index Model, Unpublished Working Paper, University of Cincinnati

- *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

11/6

Intertemporal CAPM

* 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, 2012, An Intertemporal CAPM with Stochastic Volatility, Unpublished Working Paper, Harvard University

- *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

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

11/13 and 11/20

Consumption-based Asset Pricing Models

* 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

- *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

* 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, Volatility, the Macroeconomy and Asset Prices, forthcoming *Journal of Finance*

Kuehn, L., N. Petrosky-Nadeau, and L. Zhang, 2012, An equilibrium asset pricing model with labor market search, Unpublished Working Paper, OSU

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

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*

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

11/27 Thanksgiving Holiday

12/4

Conditional Volatility and Stock Market Risk-Return Relation across Time

- *Realized Volatility, ARCH, and 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

- *Empirical Studies*

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

* Glosten, 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

Guo, H., Z. Wang, and J. Yang, 2012, Does Aggregate Relative Risk Aversion Change Countercyclically over Time? *Journal of Money, Credit, and Banking*, forthcoming

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

12/11

Cross-Sectional Stock Return Predictability and Other Topics

Hou, K., C. Xue, and L. Zhang, 2014, Digesting anomalies: An investment approach, *Review of Financial Studies*, forthcoming

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

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

- *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

Chordia, T. and L. Shivakumar, 2002, Momentum, business cycle, and time-varying expected returns, *Journal of Finance* 57, 985-1019

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

David A., M. Schill, and C. Zhou, 2004, The Illusory Nature of Momentum Profits, *Journal of Financial Economics*, 71, 349-380

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

- *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

Hirshleifer, D., K. Hou, and S. Teoh, 2009, Accruals, Cash Flows, and Aggregate Stock Returns, *Journal of Financial Economics*, 91, 389-406

Guo, H. and X. Jiang, 2011, Accruals and Conditional Equity Premium, *Journal of Accounting Research*

- *Investments*

* Titman, S., K. Wei, and F. Xie, 2004, Capital investments and stock returns, *Journal of Financial and Quantitative Analysis*, 39, 677-700

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

- *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

- *Liquidity*

* Pastor, L., and R. Stambaugh, 2003, Liquidity Risk and Expected Stock Returns, *Journal of Political Economy*, 111, 642-685

* V. Acharya, and L. Pedersen, 2005, Asset Pricing with Liquidity Risk, *Journal of Financial Economics*, 77, pp. 375-410

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

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

Guo, H., R. Savickas, and R. Wood, 2008, Uncovering the Relation between Aggregate Stock Illiquidity and Excess Market Returns, Unpublished Working Paper, University of Cincinnati

- *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

Ang, A., Hodrick, R., Xing, Y., and X. Zhang, 2008, High Idiosyncratic Volatility and Low Returns: International and Further U.S. Evidence, *Journal of Financial Economics*, forthcoming

Guo, H., and R. Savickas, 2010, The Relation between Time-Series and Cross-Sectional Effects of Idiosyncratic Variance on Stock Returns in G7 Countries, *Journal of Banking and Finance*

Fu, F., 2009, Idiosyncratic Risk and the Cross-Section of Expected Stock Returns, *Journal of Financial Economics*, 91, 24-37.

Guo, H., H. Kassa, and M. Ferguson, 2012, On the Relation between EGARCH Idiosyncratic Volatility and Expected Stock Returns, *Journal of Financial and Quantitative Analysis*, forthcoming

- *Skewness*

Mitton, T., and K. Vorkink, 2007, Equilibrium underdiversification and the preference for skewness, *Review of Financial Studies* 20, 1255–1288

Boyer, B., T. Mitton, and K. Vorkink, 2010, Expected idiosyncratic skewness, *Review of Financial Studies* 23, 169–202.

Conrad, J., R. Dittmar, and E. Ghysels, 2012, Ex Ante Skewness and Expected Stock Returns, *Journal of Finance*, forthcoming.

- *Hedge Fund Returns*

Sadka, R., Liquidity risk and the cross-section of hedge fund returns, *Journal of Financial Economics* 98, October 2010, 54-71

Bali, T., S. Brown, and M. Caglayan, 2010, Do Hedge Funds' Exposures to Risk Factors Predict Their Future Returns? *Journal of Financial Economics*, forthcoming