

B9311 Asset Pricing II
Spring 2009
Course Outline and Syllabus

Contact Information:

Professor Robert Hodrick

Uris Hall 414

Ph: 212-854-3413

Email: rh169@columbia.edu

Office Hours: I am usually available right after class. Otherwise, please email for an appointment.

Description

The course provides an introduction to empirical work on the asset pricing side of financial economics. We will cover a combination of financial and econometric theory, and this year's focus will be on international financial applications.

The field itself is vast, but we will focus on two core ideas:

1. time-series properties of asset returns, such as predictability, volatility, and correlations with other variables.
2. cross-sectional properties of asset returns implied by equilibrium asset pricing models.

We will also examine some discrete time term structure models and consider their implications for exchange rates as well as interest rates. The course does not cover empirical tests of derivative pricing models, and it concentrates on discrete-time methods. We leave pricing of complex derivatives and continuous-time methods to other courses.

To examine these ideas, we will use a variety of econometric techniques including GMM, maximum likelihood, Bayesian methods, and various time-series models. We view these econometric techniques as a way to answer economic questions, rather than as interesting econometric methodologies, per se.

The class is designed to complement Asset Pricing I. Whereas Asset Pricing I took a theoretical approach, this class will cover many of the same topics from an empirical perspective.

Prerequisites

The course is designed for second year doctoral students in finance. The pre-requisites are Econometrics, Financial Econometrics and Finance Theory I.

Materials

I will hand out articles that we will cover. Two excellent reference books are the following:

John Campbell, Andrew Lo and Craig MacKinlay, *The Econometrics of Financial Markets*

John Cochrane, *Asset Pricing*

In addition, you will find James Hamilton's *Time Series Analysis* very useful. Kenneth Singleton's book *Empirical Dynamic Asset Pricing* may also be of interest.

If you want to work in this area, you will need to develop knowledge of Matlab, Gauss or some other matrix programming language.

Requirements

You will be required to do some empirical work. There will be a final exam.

Reading List.

January 21, Class 1: Consumption Based Asset Pricing and GMM: The Forward Foreign Exchange Market and the Unbiasedness Hypothesis

*Hodrick, Robert J., *The Empirical Evidence*, 27-84.

Hansen, Lars Peter. 1982, "Large Sample Properties of Generalized Method of Moments Estimators," *Econometrica* 50, 1029-1054.

Hansen, Lars Peter and Kenneth J. Singleton, 1982, "Generalized Instrumental Variables Estimation of Nonlinear Rational Expectations Models," *Econometrica* 50, 1269-1286.

Fama, Eugene, 1984, "Forward and Spot Exchange Rates," *Journal of Monetary Economics*, pp. 319-338.

Bekaert, Geert and Robert J. Hodrick, 1993, "On Biases in the Measurement of Foreign Exchange Risk Premiums," *Journal of International Money and Finance* 12, 115-138.

Cornell, Bradford, 1989, "The Impact of Data Errors on Measurement of the Foreign Exchange Risk Premium," *Journal of International Money and Finance* 8, pp.147-157.

Bossaerts, Peter and Pierre Hillion, 1991, "Market Microstructure Effects of Government Intervention in the Foreign Exchange Market," *Review of Financial Studies* 4, No. 3, pp. 513-541.

Mark, Nelson and Young-Kyu Moh, 2006, "Official Intervention and the Forward Premium Anomaly," forthcoming in the *Journal of Empirical Finance*.

Sercu, Piet and M Vandebroek, 2005, "What UIP Tests on Extreme Samples Reveal about the Missing Variable," *Journal of International Money and Finance* 24, 8, 1237-1260.

Frankel, Jeffrey and Jumana Poonawala, 2006, "The Forward Market in Emerging Currencies: Less Biased Than in Major Currencies," NBER Working Paper No. 12496.

Bansal, Ravi and Magnus Dahlquist, 2000, "The Forward Premium Puzzle: Different Takes from Developed and Emerging Economies," *Journal of International Economics* 51, pp. 115-144.

January 28, Class 2: VAR Methods and Time Varying Risk Premiums

*Hodrick, Robert J., *The Empirical Evidence*, 84-138.

*Bekaert, Geert, 1995, "The Time-Variation of Expected Returns and Volatility in the Foreign Exchange Markets," *Journal of Business and Economic Statistics* 13, pp. 397-408.

Hansen, Lars Peter and Robert J. Hodrick, 1983, "Risk Averse Speculation in the Forward Foreign Exchange Market: An Econometric Analysis of Linear Models," in Jacob A. Frenkel, ed., *Exchange Rates and International Macroeconomics*, University of Chicago Press, 1983, 113-142.

Burnside, Craig, Martin Eichenbaum, Isaac Kleshchelski and Sergio Rebelo, 2006, "The Returns to Currency Speculation," NBER Working Paper No. 12489, August.

Engel, Charles, 1996, "The Forward Discount Anomaly and the Risk Premium: A Survey of Recent Evidence," *Journal of Empirical Finance* 3, pp. 123-192.

Mark, Nelson C., 1988, "Time Varying Betas and Risk Premia in the Pricing of Forward Foreign Exchange Contracts," *Journal of Financial Economics* 22, pp. 335-354.

Kaminsky, Graciela and Rodrigo Peruga, 1990, "Can a Time-Varying Risk Premium Explain Excess Returns in the Forward Market for Foreign Exchange," *Journal of International Economics* 28, 47-70.

Cumby, Robert E., 1988, "Is It Risk? Explaining Deviations from Uncovered Interest Parity," *Journal of Monetary Economics* 22, pp. 279-299.

Giovannini, Alberto and Philippe Jorion, 1989, "The Time-Variation of Risk and Return in the Foreign Exchange and Stock Markets," *Journal of Finance* 44, pp. 307-326.

Wheatley, Simon, 1989, "A Critique of Latent Variable Tests of Asset Pricing Models," *Journal of Financial Economics* 23, pp. 325-338.

Baillie, Richard and Tim Bollerslev, 1990, "A Multivariate Generalized ARCH Approach to Modeling Risk Premia in Forward Foreign Exchange Markets," *Journal of International Money and Finance* 9, pp. 309-324.

Lewis, Karen K., 1991, "Should the Holding Period Matter for the Intertemporal CAPM?" *Journal of Monetary Economics* 28, pp. 365-389.

February 4, Class 3: Rejections of the Expectations Hypotheses of the Forward Market and the Term Structure and Small Sample Problems in the Rejections of Unbiasedness

*Bekaert, Geert and Robert J. Hodrick, 2001, "Expectations Hypotheses Tests," *Journal of Finance* 56, pp. 1357-1394.

Campbell, John Y. and Robert J. Shiller. "Yield Spreads and Interest Rate Movements: A Bird's Eye View," *Review of Economic Studies*, 1991, v58(195), 495-514.

Bekaert, Geert, Robert J. Hodrick, and David Marshall, 1997, "On Biases in Tests of the Expectations Hypothesis of the Term Structure of Interest Rates," *Journal of Financial Economics* 44, (June 1997): 309-348.

Boudoukh, Jacob, Matthew Richardson and Robert Whitelaw, 2006, "The Information in Long-Maturity Forward Rates: Implications for Exchange Rates and the Forward Premium Anomaly," NYU Stern Working Paper.

Bekaert, Geert, Min Wei and Yuhang Xing, 2006, "Uncovered Interest Rate Parity and the Term Structure," forthcoming *Journal of International Money and Finance*.

February 11, Class 4: Skewness in Currency Returns, Peso Problems, and Hansen-Jagannathan Bounds

*Brunnermeier, Markus K., Stefan Nagel, and Lasse Pedersen, 2008, "Carry Trades and Currency Crashes," Princeton University Working Paper.

Carr, Peter and Liuren Wu, 2007, "Stochastic Skew in Currency Options," *Journal of Financial Economics* 86, pp. 213-247.

Bekaert, Geert, Robert J. Hodrick, and David Marshall, 2001, "Peso Problem Explanations for Term Structure Anomalies," *Journal of Monetary Economics* 48, 241-270.

Barro, Robert J., 2009, "Rare Disasters, Asset Prices, and Welfare Costs," *American Economic Review* March.

Barro, Robert J., 2009, "Rare Disasters and Asset Markets in the Twentieth Century," *Quarterly Journal of Economics* August.

Gabaix, Xavier, 2008, "Variable Rare Disasters: A Tractable Theory of Ten Puzzles in Macro-Finance", *American Economic Review Papers and Proceedings*.

Gabaix, Xavier and Emmanuel Farhi, 2008, "Rare Disasters and Exchange Rates," Working Paper, NYU Stern School.

Hansen, Lars Peter and Ravi Jagannathan. "Implications of Security Market Data for Models of Dynamic Economies," *Journal of Political Economy*, 1991, v99(2), 225-262.

Hansen, Lars Peter and Ravi Jagannathan. "Assessing Specification Errors in Stochastic Discount Factor Models," *Journal of Finance*, 1997, v52(2,Jun), 557-590.

February 18, Class 5: Long-Horizon Predictability

*Hodrick, Robert J., 1992, "Dividend Yields and Expected Stock Returns: Alternative Procedures for Inference and Measurement," *Review of Financial Studies* 5, 357-386.

Campbell, John Y. and Robert J. Shiller. "The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors," *Review of Financial Studies*, 1988, v1(3), 195-228.

Bekaert, Geert and Robert J. Hodrick, 1992, "Characterizing Predictable Components in Excess Returns on Equity and Foreign Exchange Markets," *Journal of Finance* 47, 467-509.

Fama, Eugene F. and Kenneth R. French. "Dividend Yields and Expected Stock Returns," *Journal of Financial Economics*, 1988a, v22(1), 3-26.

Fama, Eugene F. and Kenneth R. French. "Permanent and Temporary Components of Stock Prices," *Journal of Political Economy*, 1988b, v96(2), 246-273.

Ang, Andrew and Geert Bekaert, 2007, "Stock Return Predictability: Is It There?" *Review of Financial Studies* 20, 651-707.

Boudoukh, Jacob, Roni Michaely, Matthew Richardson and Michael R. Roberts, 2008, "On the Importance of Measuring Dividend Yields: Implications for Empirical Asset Pricing," forthcoming *Journal of Finance*.

Boudoukh, Jacob, Matthew Richardson and Robert Whitelaw, 2008, "The Myth of Long-Horizon Predictability," forthcoming *Review of Financial Studies*.

Lo, Andrew W. and A. Craig MacKinlay. "Stock Market Prices do not Follow Random Walks: Evidence from a Simple Specification Test," *Review of Financial Studies*, 1988, v1(1), 41-66.

February 25 and March 18, 25 Classes 6-8: Affine Models of the Term Structure and Currencies and Bayesian Estimation

*Brandt, Michael W., John H. Cochrane and Pedro Santa-Clara, 2006, "International Risk Sharing Is Better Than Think, Or Exchange Rates Are Much Too Smooth" *Journal of Monetary Economics*, pp. 671-698.

- *Dong, Sen, 2006, "Macro Variables, Term Structure of Interest Rates, and Exchange Rates," Columbia Business School working paper.
- Ang, Andrew, Sen Dong, and Monica Piazzesi, 2007, "No Arbitrage Taylor Rules," Working Paper, Columbia Business School.
- Ang, Andrew, Jean Boivin, and Sen Dong, 2008, "Monetary Policy Shifts and the Term Structure," Working Paper, Columbia Business School.
- Brennan, Michael and Yihong Xia, 2006, "International Capital Markets and Foreign Exchange Risk," *Review of Financial Studies* 19, No. 3, pp. 753-795.
- Carter, Christopher K. and Robert Kohn, 1994, "On Gibbs Sampling for State Space Models," *Biometrika* 81, 541-553.
- Casella, George and Edward I. George, 1992, "Explaining the Gibbs Sampler," *The American Statistician* 46, 167-174.
- Chib, Siddhartha and Edward Greenberg, 1995, "Understanding the Metropolis-Hastings Algorithm," *The American Statistician* 49, 327-335.
- Johannes, Michael and Nicholas Polson. 2006, "MCMC Methods for Continuous-Time Financial Econometrics," working paper, 2006, Columbia Business School.
- Bakshi, Gurdip, Peter Carr, and Liuren Wu, 2006, "Stochastic Risk Premiums, Stochastic Skewness in Currency Options, and Stochastic Discount Factors in International Economies," forthcoming *Journal of Financial Economics*.
- Graveline, Jeremy J., 2006, "Exchange Rate Volatility and the Forward Premium Anomaly," University of Minnesota working paper.
- Colacito, Riccardo and Massimiliano Croce, 2006, "Risk for the Long Run and the Real Exchange Rate," NYU working paper.
- Backus, David, Silverio Foresi and Chris Telmer, 2001, "Affine Models of Currency Pricing" *Journal of Finance* 56, 279-304.
- Bansal, Ravi, 1997, "An Exploration of the Forward Premium Puzzle in Currency Markets," *Review of Financial Studies* 10, 369-403..
- Brandt, Michael W. and Pedro Santa-Clara, 2001, "Simulated Likelihood Estimation of Diffusions with an Application to Exchange Rate Dynamics in Incomplete Markets" *Journal of Financial Economics*.
- Iwata, Shigeru and Shu Wu, 2005, "What International Risks Are (Not) Shared by International Investors," *Journal of Money, Credit and Banking* 37, 6, 1121-1141
- Clarida, Richard H. and Mark P. Taylor, 1997, "The Term Structure of Forward Exchange Premia and the Forecastability of Spot Exchange Rates: Correcting the Errors" *Review of Economics and Statistics*.

- Dai, Qiang and Kenneth J. Singleton, 2000, "Specification Analysis of Affine Term Structure Models," *Journal of Finance* 55, no. 5, 1943-78.
- 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, 415-41.
- Dai, Qiang and Kenneth J. Singleton, 2003, "Term Structure Dynamics in Theory and Reality" *Review of Financial Studies* 16, 631-78.
- Dai, Qiang, Kenneth J. Singleton and Wei Yang, 2007, "Regime Shifts in a Dynamic Term Structure Model of U.S. Treasury Bond Yields," *Review of Financial Studies*
- Bakshi, Gurdip and Zhiwu Chen, 1997, "Equilibrium Valuation of Foreign Exchange Claims" *Journal of Finance* 52, 799-826.
- Saa-Requejo, Jesus, "The Dynamics of the Term Structure of Risk Premia in Foreign Exchange Markets," manuscript, University of Chicago, 1995.
- Frachot, Antoine, "A Reexamination of the Uncovered Interest Rate Parity Hypothesis," *Journal of International Money and Finance* 15, (June 1996), 419-437.
- Ahn, Dong-Hyun, 2004, "Common Factors and Local Factors: Implications for Term Structures and Exchange Rates," *Journal of Financial and Quantitative Analysis* 39, 1, 69-102.
- Han, Bing and Peter Hammond, 2003, "Affine Models of the Joint Dynamics of Exchange Rates and Interest Rates," Working Paper, University of Calgary.

April 1, Class 9: Unconditional Equity Risk Premiums

- *Fama, Eugene and Kenneth French, "Value versus Growth: The International Evidence," *Journal of Finance* 53, December 1998, 1975-1999.
- *Hodrick, Robert J., David Ng and Paul Sengmueller, 1999, "An International Dynamic Asset Pricing Model," *International Tax and Public Finance* 6, November, 597-620.
- Hodrick, Robert J. and Xiaoyan Zhang, 2001, "Evaluating the Specification Errors of Asset Pricing Models," *Journal of Financial Economics* 62, 327-376.
- Zhang, Xiaoyan, 2005, "Specification Tests of International Asset Pricing Models," *Journal of International Money and Finance* 25, pp. 275-307.
- Campbell, John Y., 2006, "Understanding Risk and Return," *Journal of Political Economy* 104, 298-345.
- Campbell, John Y. and Tuomo Vuolteenaho, 2004, "Bad Beta, Good Beta," *American Economic Review* 94, 1249-1275.
- Fama, Eugene F. and Kenneth R. French, 1992, "The Cross-Section of Expected Stock Returns," *Journal of Finance* 47, 427-466.

- 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.
- Fama, Eugene F. and Kenneth R. French, 1996, "Multifactor Explanations of Asset Pricing Anomalies," *Journal of Finance* 51, 55-84.
- Fama, Eugene F. and James D. MacBeth, 1973, "Risk, Return, and Equilibrium: Empirical Tests," *Journal of Political Economy* 81, 607-636.
- Karolyi, G. Andrew and René M. Stulz, 2003, "Are Financial Assets Priced Locally or Globally?" Chapter 16 in George Constantinides, Milton Harris and René Stulz, eds., *Handbook of the Economics of Finance*, Elsevier: Amsterdam, The Netherlands.
- Griffin, John M., Xiuqing Ji and J. Spencer Martin, 2003, "Momentum Investing and Business Cycle Risk: Evidence from Pole to Pole," *Journal of Finance* 58, 2515-2547.
- Froot, Kenneth A. and Paul G. J. O'Connell, 2003, "The Risk Tolerance of International Investors," NBER Working Paper No. 10157, December.
- Claus, James and Jacob Thomas, 2001, "Equity Premia as Low as Three Percent? Evidence from Analysts' Earnings Forecasts for Domestic and International Stock Markets," *Journal of Finance* 56, 1629 – 1666
- Stulz, René M., "International Portfolio Choice and Asset Pricing: An Integrative Survey," in *Handbooks of Operations Research and Management Science, Vol. 9, Finance*, edited by R. Jarrow, V. Maksimovic and W. Ziemba, 1995.
- Stulz, René M., "A Model of International Asset Pricing," *Journal of Financial Economics* 9, (1981): 383-406.
- Adler, Michael and Bernard Dumas, "International Portfolio Choice and Corporation Finance: A Synthesis" *Journal of Finance* 38, (1983), 925-984.
- Vassalou, Maria, "Exchange Rate and Foreign Inflation Risk Premiums in Global Equity Returns," *Journal of International Money and Finance*, 2000, 19, 433-470.
- Jagannathan, Ravi and Zhenyu Wang, "The Conditional CAPM and the Cross-Section of Expected Returns," *Journal of Finance* 51, March 1996, 3-53.
- Fama, Eugene and Kenneth French, "Multifactor Explanations of Asset Pricing Anomalies," *Journal of Finance* 51, March 1996, 55-84.
- Bansal, Ravi, Robert F. Dittmar and Christopher T. Lundblad, 2005, "Consumption, Dividends and the Cross Section of Equity Returns," *Journal of Finance*, 2005 60, 1639-1672.
- Black, Fisher, Michael C. Jensen, and Myron Scholes. 1972, "The CAPM: Some Empirical Tests," in M. C. Jensen, ed. *Studies in the Theory of Capital Markets*, Praeger: New York.

April 8, Class 10: Models of Conditional Equity Risk Premiums

- *Harvey, Campbell, 1991, "The World Price of Covariance Risk," *Journal of Finance* 46, 111-158.
- *Ferson, Wayne and Campbell Harvey, 1993, "The Risk and Predictability of International Equity Returns," *Review of Financial Studies* 6, 527-567.
- Ferson, Wayne E. and Campbell R. Harvey, 1999, "Conditioning Variables and the Cross Section of Stock Returns," *Journal of Finance* 54, 1325-1360.
- *Dumas, Bernard and Bruno Solnik, 1995, "The World Price of Foreign Exchange Risk," *Journal of Finance* 50, 445-479.
- *De Santis, Georgio and Bruno Gerard, 1997, "International Asset Pricing and Portfolio Diversification with Time-Varying Risk," *Journal of Finance* 52, 1881-1912.
- *De Santis, Georgio and Bruno Gerard, 1998, "How Big is the Premium for Currency Risk?" *Journal of Financial Economics* 49, 375-412.
- Dumas, Bernard, Campbell R. Harvey and Pierre Ruiz, 2003, "Are Correlations of Stock Returns Justified by Subsequent Changes in National Outputs?" *Journal of International Money and Finance* 22, 777-812.
- Bansal, Ravi and Christian Lundblad, 2001, "Market Efficiency, Fundamental Values, and Asset Returns in Global Equity Markets," manuscript.
- Kasa, Kenneth, "Consumption-based versus Production-based Models of International Equity Markets," *Journal of International Money and Finance* 16, October 1997, 653-680.
- Chan, K.C., G. Andrew Karolyi and René Stulz, "Global Financial Markets and the Risk Premium on U.S. Equity," *Journal of Financial Economics* 32, 137-168.
- Lin, Weng-Lin, Robert F. Engle and Takatoshi Ito, "Do Bulls and Bears Move Across Borders?" *Review of Financial Studies* 7, 507-538.
- Cumby, Robert E. "Consumption Risk and International Equity Returns: Some Empirical Evidence," *Journal of International Money and Finance* 9, June 1990, 182-192.
- Korajczyk, Robert A. and Claude J. Viallet, "An Empirical Investigation of International Asset Pricing" *The Review of Financial Studies*, 2, 553-586.
- Korajczyk, Robert A. and Claude J. Viallet, "Equity Risk Premia and the Pricing of Foreign Exchange Risk," *Journal of International Economics*, 1992.
- Solnik, Bruno, "The Performance of International Strategies Using Conditioning Information," *Journal of Empirical Finance* 1, 33-56.
- Cumby, Robert E. and Jack D. Glen, "Evaluating the Performance of International Mutual Funds," *Journal of Finance* 45, June 1990, 497-522.

Jagannathan, Ravi and Zhenyu Wang. 1996, "The Conditional CAPM and the Cross-Section of Expected Returns," *Journal of Finance* 51, 3-53.

April 15, Class 11: Aggregate Volatility, Idiosyncratic Volatility, and Liquidity

Ang, Andrew, Robert J. Hodrick, Yuhang Xing, and Xiaoyan Zhang, 2008, "High Idiosyncratic Volatility and Low Returns: International and Further U.S. Evidence," *Journal of Financial Economics*.

Ang, Andrew, Robert J. Hodrick, Yuhang Xing, and Xiaoyan Zhang, "The Cross-Section of Volatility and Expected Returns" *Journal of Finance* 61, 259-299.

Amihud, Yakov, 2002, Illiquidity and stock returns: Cross-section and time series effects, *Journal of Financial Markets* 5, 31-56.

Korajczyk, Robert and Ronnie Sadka, 2008, "Pricing the Commonality Across Alternative Measures of Liquidity" *Journal of Financial Economics* 87: 45-72.

Pastor, Lubos, and Robert F. Stambaugh, 2003, Liquidity risk and expected stock returns, *Journal of Political Economy* 111, 642-685.

Bali, Turan G., Nusret Cakici, and Robert F. Whitelaw, 2008, Maxing out: Stocks as lotteries and the cross-section of expected returns, manuscript, New York University.

April 22, Class 12: New Cross-Sectional Tests of Asset Pricing Models with Volatility, Skewness, and Kurtosis,

Ang, Andrew, Robert J. Hodrick, Yuhang Xing, and Xiaoyan Zhang, 2009, "Skewness Risk", working paper, Columbia Business School.

Ang, Andrew, Jun Liu, and Krista Schwarz, 2008, "Using Stocks or Portfolios in Tests of Factor Models" working paper, Columbia Business School.

Dittmar, Robert F., 2002, Non-linear pricing kernels, kurtosis preference, and the cross-section of equity returns, *Journal of Finance* 57, 369-403.

Harvey, Campbell R. and Akhtar Siddique, 2000, Conditional skewness in asset pricing tests, *Journal of Finance* 55, 1263-1295.