



A N N U A L
R E P O R T

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YACINE AÏT-SAHALIA

Director's Introduction



Twelve years ago, we opened the doors of the old Dial Lodge to the Bendheim Center for Finance to fulfill the same mission we have today: to develop new courses and programs in finance that will afford exciting learning opportunities to Princeton students, and to establish a leading center for research in modern finance.

Between banking and sovereign debt crises, this continues to be one of the most exciting times for research and teaching in finance. Princeton's existing finance curriculum has been expanded and improved with the introduction of the Undergraduate Certificate in Finance in 1999 and Master in Finance in 2001. Recently we have added courses on the rise of the Asian financial markets, history of financial crises, and regulation of international financial markets, to name a few.

Center-affiliated faculty members continue to teach in both programs, as well as in a variety of contexts in their home departments across the University. By bringing together outstanding scholars from a wide variety of disciplines in a well-equipped setting that encourages dialogue and interaction, the Bendheim Center for Finance has been an ideal environment in which to conduct significant research in finance. It also has served as a major venue where the world's leading experts in finance from academia, government, and the private sector can meet regularly to exchange views and information.

Proximity to Wall Street and other important centers of private-sector financial research continues to provide an additional source of intellectual stimulation and interchange for the Bendheim Center for Finance, and in recent years we have seen outreach and partnership with firms and alumni as far-flung as London, Hong Kong, Shanghai, and beyond. Our students are able to explore both internships and permanent job opportunities in an increasingly wide variety of finance-related areas, which have expanded from a few large Wall Street investment banks at the inception of the program to jobs in firms of all sizes and types around the world. The Bendheim Center for Finance also encourages students at all levels to conduct finance-related research at the University by providing such services as funding senior thesis projects, acting as a clearinghouse and major source of data, and providing expert faculty advisers for both undergraduate and master's research projects.

The scholars in the Bendheim Center for Finance are chosen for their ability to deploy cutting-edge methodologies to a wide range of finance-related topics, from stock-price determination and public policy toward financial markets to the role of financial institutions in economic growth. The center supports these leading scholars by encouraging their individual, collaborative, and multidisciplinary research and by providing facilities (including computer and data support), research assistance, financial resources, and venues for the exchange of ideas (such as weekly seminars and conferences). The University's existing strengths in areas such as economics, mathematics and statistics, operations research, computer science, psychology, and public policy provide a serious disciplinary basis for this research, leveraging our resources to produce a truly distinguished program. To promote maximum interchange among disciplines, all center faculty have appointments in regular University departments as well as in the Bendheim Center for Finance.

The past 12 years have proven finance's importance to Princeton's continued success as an educational and research institution, given increasing demands for training in these areas by our students at all levels, and because these fields have become central to research efforts in diverse disciplines, including economics. As one of the world's leading research and teaching universities, Princeton has much to offer to the future development and effective application of finance, including distinguished academic programs that can provide support in such areas as operations research, mathematics and statistics, decision science, and organizational theory. It has never been Princeton's objective to create a simulacrum of a business school. Rather, our strategy is to focus on those portions of the conventional business school curriculum in which the University has existing strengths—such as fields that can be solidly grounded in analytical, discipline-based research—and emphasize interdisciplinary research. Indeed, research and teaching in finance with an essential interdisciplinary component constitutes the distinguishing feature of the Bendheim Center for Finance.

By helping to attract outstanding new faculty, encouraging and supporting the work of existing faculty, and bringing outstanding scholars and practitioners from private industry to campus, the center continues to stimulate exciting new research, dialogue, and collaboration. And through its educational programs, the center will continue to enhance the education, training, and career opportunities of many of the world's best students for decades to come.

2011-2012 DEVELOPMENTS

Christopher Sims won the 2011 Nobel Prize with Thomas Sargent of NYU for their research on cause and effect in macroeconomics. Sims is the third BCF-affiliated faculty member to win the Nobel Prize in Economic Science since the BCF's founding, after Danny Kahneman (2002) and Paul Krugman (2008).

In 2011, investment executive Mitch Julis, a member of Princeton's class of 1977, made a substantial gift to create the Julis-Rabinowitz Center for Public Policy and Finance. The center's first conference took place in April 2012 and was attended by more than 200 faculty, alumni, corporate affiliates and guests. (More information about the program is included in the Conferences and Events section of this report).

Two new faculty members joined the center in 2012—Atif Mian and Valentin Haddad. Mian joins as Professor of economics and public affairs from the University of California-Berkeley, where he has been a faculty member since 2009. He previously taught at the University of Chicago. Mian's research focuses on links between financial markets and the macroeconomy. His work emphasizes the role played by political, governance and organizational constraints in shaping the effectiveness and scope of financial markets. He has published widely on topics such as the origins of the global financial crisis, the political economy of government intervention in financial markets, and the link between asset prices, household borrowing and consumption. Mian holds bachelor's and master's degrees from the Massachusetts Institute of Technology.

Mian will be teaching a new course—WWS 594—Financial Regulation, Crises and Macro Policy—which will focus on the origins and consequences of financial crises, addressing such fundamental questions as whether financial markets are efficient or susceptible to bubbles, the difference between bank liquidity and bank solvency, the relationship between financial regulation and bank CEO incentives, capital arbitrage, securitization and credit rating agencies, debt-overhang and how it impacts employment, GDP and inflation, the roles and limits of fiscal and monetary policy in a financial crisis, and how politics shapes and distorts policy.

Haddad received his Ph.D. in Economics and Finance from the University of Chicago Booth School of Business and Department of Economics and has a bachelor's and master's degree in applied mathematics and economics from Ecole Polytechnique. His research interests include asset pricing and macroeconomics with financial frictions.

MFin Alumnus Dario Villani, portfolio manager with BlueCrest Capital Management, will return to campus in the spring of 2013 to teach ORF574/FIN574, "Special Topics in Investment Science: Trading and Risk Management."

PH.D. STUDENTS

Ten students with finance interests received their Ph.D. in 2012 and accepted the following positions:

- JOSÉ AZAR, Charles River, senior associate
- DONG BEOM CHOI, New York Federal Reserve, economist
- HYUN SOO CHOI, Singapore Management University, assistant professor
- WEIJIE GU Barclays Capital, associate
- ANDREW ROBINSON, BlackRock Scientific, associate
- MARTIN SCHMALZ, University of Michigan, Ross School of Business, assistant professor
- WARREN SCOTT Lawrence Livermore National Laboratory, post doc research
- XIN TONG, MIT, assistant professor, (department of mathematics)
- MING YANG, Duke University, Fuqua School of Business, assistant professor
- SERGEY ZHUK, University of Vienna, assistant professor

MASTER IN FINANCE

The 10th class of the Center's Master in Finance (MFin) program graduated in June with 21 students. Years of investment in the placement of our graduating students continued to pay off in what remained a difficult job market, especially since our MFin students tend to all seek jobs with financial firms and have little desire to branch out outside that industry. The networking efforts of our Director of Corporate Relations, the strong support from our Corporate Affiliates and our Advisory Council, and the success enjoyed by our previous graduating classes have been reflected once again in 100 percent placement of our first-year students in summer internships and 95 percent of our graduating students in permanent positions. While costly in the short run in terms of faculty and staff involvement, in the long run, a successful placement record is critical to maintain the program's leading position which was recognized in industry surveys.

The number of MFin applications for 2012-13 was up significantly from 729 in January 2011 to 815 in January 2012, an all-time high. We continued to conduct interviews of the most promising subset of our applicant pool, a process that helps us ascertain which of the strong academic candidates we had identified through their written applications also excelled in areas such as communication and leadership. This year, we interviewed 169 of the applicants and made 48 offers of admission (compared to 36 last year). Our selectivity rate continues to be extremely high, with our program admitting about 5.9 percent of its applicant pool. This is a much smaller percentage than our peer programs in quantitative finance (Carnegie Mellon University, Columbia University, Massachusetts Institute of Technology, New York University, Stanford University, University of California-Berkeley, University of Chicago, etc.), which typically admit around 25 percent of their applicant pool.

We received 43 acceptances (compared to 29 last year). Our yield (89.6 percent this year, significantly higher than last year's 80.5%) remained remarkably high, despite the absence in most cases of financial aid, which was limited to a total of two half-semester and five quarter-semester fellowships among the 43 students.

A strong applicant pool and yield reflect the recognition that the program is gaining in the wider quantitative finance community and among the top undergraduate institutions that are providing us with applicants. We have continued to rely on our Advisory Council to help us recruit the most promising applicants: we ask our members to speak or meet with the admitted students in order to tell them about Princeton and help steer them in our direction. Not surprisingly, our Advisory Council members tend to be excellent at selling and many report that they enjoy the opportunity to feel connected in this way to the program. We also get a positive "halo" effect with the admitted students, who are uniformly impressed with the fact that industry leaders stand behind the program.

UNDERGRADUATE CERTIFICATE IN FINANCE

Now in its 15th year, the Undergraduate Certificate in Finance (UCF) continues to do extremely well. We currently have 104 students in the Class of 2013 and will enroll 100 juniors from the Class of 2014. This will bring our total number of undergraduate students in the program (juniors and seniors) to 204 for the coming academic year, despite our grade-based cap in place. UCF students are drawn to the program from a wide variety of departments. Only about half of our students come from Economics and ORFE combined; the other half come this year from the following 17 departments, in decreasing order of numbers of students in the UCF: Mathematics, Woodrow Wilson School, Computer Science, Chemical and Biological Engineering, Physics, Electrical Engineering, Mechanical and Aerospace Engineering, Chemistry, Philosophy, Psychology, Molecular Biology, Near Eastern Studies, Architecture, Astrophysical Sciences, Classics, Comparative Literature, and Politics.

Not surprisingly given the demands of a multidisciplinary program in addition to those of their major, UCF students continue to be high achievers among the Princeton population and receive a high proportion of the prizes awarded by their respective departments. This year, UCF seniors received 11 departmental prizes (two receiving two prizes) and four UCF juniors received three departmental prizes; 15 UCF students were elected to Phi Beta Kappa Society; 22 UCF students were elected to membership in Society of Sigma Xi; 13 UCF students were elected to membership in Tau Beta Pi National Engineering Society; one senior (the only one in the Class of 2012) received the Shapiro Prize for Academic Excellence, while 3 UCF juniors received the Shapiro Prize for Academic Excellence, 2010-2011; and 45 UCF students received academic honors (11 cum laude, 16 magna cum laude, and 18 summa cum laude). 32 of our UCF students earned certificates in proficiency from 13 other departments or programs, 20 students earning 1 additional certificate, 11 earning 2 additional certificates and 1 earning 3 additional certificates.

FUNDRAISING AND ADVISORY COUNCIL

As in past years, our greatest challenge will be to continue to recruit and retain top-flight faculty. Faculty recruitment and retention is essential to our new educational initiatives and for continued expansion of course offerings. To be successful in this competitive market, we have found it necessary to make commitments to provide research support for faculty members. All of this requires active fundraising, and we continue to work closely with the Office of Development to increase the Center's resources. This year we give special thanks to David H. Blair '67, Howard E. Cox, Jr. '64, Robert R. Hermann, Jr. '75, Kenneth A. Hersh '85, William H. Heyman '70, William H. Janeway '65, and Jonathan F. Schachter, Ph.D. '94 for their generous gifts to the center.

Looking back, similar gifts from generous alumni have established conferences and symposia, enabled ongoing faculty development, provided scholarships to deserving young students, and refurbished physical spaces important for interaction both inside and outside the classroom.

As we had anticipated during the flush years, our Corporate Affiliates Program has slowed down due to the economic environment and the continued budgetary challenges facing the industry. Recognizing the effect of the economic environment, we have focused on maintaining and developing long-term relationships, as well as recruiting partnerships with a broader group of firms. We are pleased to welcome two new corporate affiliates to the program—AXA Equitable and Edelman & Associates. In addition, the following firms have remained active in recruiting efforts and have expressed a continued interest in our program: Barclays Capital, Citadel Investments Group, Citigroup, Crédit Suisse, DC Energy, Deutsche Bank, Goldman Sachs, and UBS/Prediction Company.

Over the past 13 years, the Center has relied on the help and advice of prominent alumni working in the financial sector. The tenth annual meeting of the Advisory Council took place on campus on May 3-4, 2012. We are grateful for their leadership, involvement and counsel.

Yacine Aït-Sahalia

Otto A. Hack '03 Professor of Finance and Economics
Director, Bendheim Center for Finance, June 2012



2011-12
FACULTY AND STAFF



FACULTY

DILIP ABREU is the Edward E. Matthews, Class of 1953, Professor of Finance and Professor of Economics. His research interests include behavioral economics and finance, economic theory, and game theory. He is a fellow of the Econometric Society and a member of its council, and a fellow of the American Academy of Arts and Sciences. He received a B.A. from Bombay University, an M.Phil. from the University of Oxford, and a Ph.D. in economics from Princeton.

COURSES TAUGHT

- ECO 200: Advanced Principles of Economics
- ECO 418: Strategy and Information

GRADUATE STUDENTS ADVISED

- Benjamin Brook

REPRESENTATIVE PUBLICATIONS

- “Bargaining, Reputation, and Equilibrium Selection in Repeated Games with Contracts,” *Econometrica* 75(3), May 2007 (with D. Pearce).
- “Bubbles and Crashes,” *Econometrica* 71(1), January 2003 (with M. Brunnermeier).
- “Bargaining and Reputation,” *Econometrica* 68(1), January 2000 (with F. Gul).
- “Information and Timing in Repeated Partnership,” *Econometrica* 59(6), November 1991 (with P. Milgrom and D. Pearce).
- “On the Theory of Infinitely Repeated Games with Discounting,” *Econometrica* 56(2), March 1988.

YACINE AÏT-SAHALIA is the Otto A. Hack '03 Professor of Finance and Economics and the director of the Bendheim Center for Finance. He was previously a professor at the University of Chicago's Graduate School of Business. He was named an outstanding faculty member by *BusinessWeek's 1997 Guide to the Best Business Schools* and is the recipient of the 1997 Michael Brennan Award, the 2001 FAME Award, and the 2003 Aigner Award. He received fellowships from the Sloan and Guggenheim Foundations. He is a fellow of the Econometric Society, the American Statistical Association, and the Institute of Mathematical Statistics, and a research associate for the National Bureau of Economic Research. He currently serves as a co-editor of the *Journal of Econometrics*. He edited the *Handbook of Financial Econometrics* with Lars P. Hansen. He received his Ph.D. in economics from the Massachusetts Institute of Technology in 1993 and his undergraduate degree from France's École Polytechnique.

COURSES TAUGHT

- ECO 462/FIN 515: Portfolio Theory and Asset Management
- ECO525/FIN 595: Asset Pricing I

GRADUATE STUDENTS ADVISED

- Jia Li, “Testing for Jumps: A Delta-Hedging Perspective”
- Dacheng Xiu, “Essays on the Econometrics of High Frequency Data”

- Xing Hu, “Essays in Empirical Asset Pricing: Rollover Risk, Liquidity and the Financial Crisis”

REPRESENTATIVE PUBLICATIONS

- “Testing Whether Jumps Have Finite or Infinite Activity,” with Jean Jacod, *Annals of Statistics*, 2011, 39 1689-1719 .
- “Ultra High Frequency Volatility Estimation with Dependent Microstructure Noise,” with Per A. Mykland and Lan Zhang, *Journal of Econometrics*, 2011, 160, 160-175.
- “High Frequency Covariance Estimates with Noisy and Asynchronous Financial Data,” with Jianqing Fan and Dacheng Xiu, *Journal of the American Statistical Association*, 2010, 105, 1504-1517.
- “Nonparametric Tests of the Markov Hypothesis in Continuous-Time Models,” with Jianqing Fan and Jiancheng Jiang, *Annals of Statistics*, 2010, 38, 3129-3163.
- “Is Brownian Motion Necessary to Model High Frequency Data?,” with J. Jacod, *Annals of Statistics*, 2010, 38.

ALAN BLINDER is the Gordon S. Rentschler Memorial Professor of Economics. He also founded the Griswold Center for Economic Policy Studies at Princeton in 1990. He is former vice chairman of the Board of Governors of the Federal Reserve System (1994–96) and before that was a member of President Clinton’s original Council of Economic Advisers (1993–94). He also served briefly as deputy assistant director of the Congressional Budget Office in 1975. He is the vice chairman of Promontory Interfinancial Network, a director of the Council on Foreign Relations, and a member of the Economic Club of New York. Blinder was elected to the American Philosophical Society and the American Academy of Arts and Sciences. He is the author or coauthor of 17 books and has written scores of scholarly articles on topics such as fiscal policy, monetary policy, and the distribution of income. He received his Ph.D. from the Massachusetts Institute of Technology.

COURSES TAUGHT

- ECO 101: Introduction to Macroeconomics
- WWS 524: Domestic Macroeconomics: The Political Economy of Central Banking

GRADUATE STUDENTS ADVISED

- Andrew Tiffin, “Essays in International Finance: Institutions, Capital Flow and Growth”

REPRESENTATIVE PUBLICATIONS

- “It’s Broke, Let’s Fix It: Rethinking Financial Regulation,” paper prepared for the International Journal of Central Banking conference, “The theory and practice of macro-prudential regulation,” December 2010..
- “How Central Should the Central Bank Be?” *Journal of Economic Literature*, March 2010.
- “Revisiting Monetary Policy in a Low Inflation and Low Utilization Environment,” *Journal of Money, Credit and Banking*, Supplement to Vol. 44, No. 1, (February 2012), pp. 141-146.

- “The Squam Lake Report Fifteen Economists in Search of Financial Reform,” *Journal of Monetary Economics*, October 2010, Vol. 57, Issue 7, 892-902.
- “Quantitative Easing: Entrance and Exit Strategies,” *Federal Reserve Bank of St. Louis Review*, November/December 2010, 465-479 (The 2010 Homer Jones lecture).

MARKUS BRUNNERMEIER is the Edwards S. Sanford Professor at Princeton University. He is a faculty member of the Department of Economics and affiliated with Princeton’s Bendheim Center for Finance and the International Economics Section. He is the director of Princeton’s Julis Rabinowitz Center for Public Policy and Finance. He is also a research associate at CEPR, NBER, and CESifo, and a visiting scholar at the Federal Reserve Bank of New York. He was awarded his PhD. by the London School of Economics (LSE), where he was also affiliated with its Financial Markets Group. His research focuses on financial markets and the macroeconomy with special emphasis on bubbles, liquidity, financial stability and its implication for financial regulation and monetary policy. His models incorporate frictions as well as behavioral elements. He is a Sloan Research Fellow, Fellow of the Econometric Society and the recipient of the Bernácer Prize granted for outstanding contributions in the fields of macroeconomics and finance. He recently received a Guggenheim Fellowship for studying the impact of financial frictions on the macroeconomy. He is also an associate editor of the *American Economic Review*, *Journal of European Economic Association*, *Journal of Finance* and was previously on the editorial board of the *Review of Financial Studies* and the *Journal of Financial Intermediation*.

GRADUATE STUDENTS ADVISED

- Dong Choi, “Heterogeneity and Stability: Bolster the Strong Not the Weak”
- Martin Schmalz, “Managing Human Capital Risk”

REPRESENTATIVE PUBLICATIONS

- “The Maturity Rat Race,” *Journal of Finance* (forthcoming)
- “Risk Topography,” *NBER Macroeconomics Annual* 2011, (forthcoming)
- “Deciphering the 2007–08 Liquidity and Credit Crunch,” *Journal of Economic Perspectives* 23 (1).
- “Market Liquidity and Funding Liquidity,” *Review of Financial Studies* 22(6) (with Pedersen).
- “Bubbles and Crashes,” *Econometrica* 71(1), 2003 (with D. Abreu).

RENÉ CARMONA is the Paul M. Wythes ’55 Professor of Engineering and Finance. As director of graduate studies of the Bendheim Center for Finance, he is responsible for the Master in Finance program. He joined Princeton in 1995. He was granted the “Aggregation” of mathematics (federal degree) in 1969, and a “These d’Etat” in probability from the University of Marseille in 1977. He was elected fellow of the Institute of Mathematical Statistics in 1984, and of the Society for Industrial and Applied Mathematics (SIAM) in 2009. He is also a member of the Bachelier Finance Society. Among his many editorial responsibilities, he was the co-founder and editor in chief of *Electronic Journal in Probability*, *Communications in Probability* and *SIAM Journal on Financial Mathematics*. He works on mathematical models for the commodity markets, especially the energy and emissions markets, and computational methods for quantitative finance.

COURSES TAUGHT

- ORF 405: Regression & Applied Time Series
- ORF 542: Stochastic Control and Stochastic Differential Games
- ORF 557, 558: Stochastic Analysis Seminar

UNDERGRADUATE STUDENTS ADVISED

- Kyle O'Donovan "The New Asian Option: Using Temperature and Rainfall to Predict and Hedge the Uncertainty in Chinese Tea Harvests"
- Patrick Ohlendorf, "Reconsidering Public University Debt Management in Light of the 2008 Financial Crisis: A Stochastic Optimization Approach"
- Christian Villaran, "Maintenance Scheduling for Caracas: Maintaining Power Plants in a Failing Grid"
- Michael Weinberg, "Optimal Investment Under Asymmetric Compensation Contracts in a Discrete-Time Framework"

GRADUATE STUDENTS ADVISED

- Zhou Yang, "A Study on Differential Games with Applications to Asset Management and Market-Liquidity Research"
- Youhong Sun, "Spread Options and Implied and Local Correlations"
- Yi Ma, "Arbitrage Free Monte Carlo Simulation of Implied Volatility Surface Evolutions"

REPRESENTATIVE PUBLICATIONS

- Indifference Pricing (editor), Princeton University Press, 2008.
- Interest Rate Models: An Infinite Dimensional Stochastic Analysis Perspective, Springer Verlag, 2006.
- Statistical Analysis of Financial Data in S-Plus, Springer Verlag, Second Printing, 2006.
- "Optimal Stochastic Control and Carbon Price Formation" (with M. Fehr & J. Hinz)
- "Market Design for Emissions Markets Trading Schemes" (with M. Fehr, J. Hinz & A. Porchet)
- "The Clean Development Mechanism and CER Price Formation in the Carbon Emissions Markets" (with M. Fehr)
- "Singular Forward-Backward Stochastic Differential Equations and Emissions Derivatives" (with F. Delarue, G.E. Espinoza & N. Touzi)
- "Tangent Levy Market Models" (with S. Nadtochyi)
- "Tangent Models as a Mathematical Framework for Dynamic Calibration" (with S. Nadtochyi)

PATRICK CHERIDITO is an associate professor of operations research and financial engineering. His research interests lie in probability theory and its applications to finance and insurance. Recently, he has been working on stochastic models for interest rates, dynamic risk measurement, risk allocation problems and backward stochastic differential equations.

COURSES TAUGHT

- ORF 526: Probability Theory
- ORF 570: Convex Analysis

UNDERGRADUATE STUDENTS ADVISED

- Phillips M. Cao, “Bid and Ask Prices in Options Markets with Transaction Costs”
- Daniel Xiochen Wang, “Analytical Approaches to Calculating Value-at-Risk of a Quadratic Approximation of a Stock and Options Portfolio”
- Ray Wang, “Modeling Systemic Risk Using Networks”

GRADUATE STUDENTS ADVISED

- Alexander Wugalter, “Pricing and Hedging in Affine Models with Possibility of Default and Characteristic Functions of Log Stock Prices”
- Jared Klyman, “Systemic Risk Measures: Dist VaR and Other Too-Big-To-Fail Risk Measures”

RECENT PUBLICATIONS

- “Existence, Minimality and Approximation of Solutions to BSDEs with Convex Drivers” *Stochastic Processes and Their Applications*, 122, 2012.
- “Pricing and Hedging in Affine Models with Possibility of Default” *SIAM Journal of Financial Mathematics*, 3(1), 2012.
- “Processes of Class Sigma, Last Passage Times and Drawdowns”. *SIAM Journal of Financial Mathematics* 3(1). 2012.
- “Ordered Contribution Allocations: Theoretical Properties and Applications” *The Journal of Risk*, 14(1), 2011.
- “Optimal Consumption and Investment in Incomplete Markets with General Constraints,” *Stochastics and Dynamics* 11(2),2011, p. 283-299 (with Y. Hu)
- “Composition of Time-consistent Dynamic Monetary Risk Measures in Discrete Time,” *International Journal of Theoretical and Applied Finance*, 14, 2011 (with M. Kupper).

GREGORY CHOW is a professor of economics, emeritus, and the Class of 1913 Professor of Political Economy, Emeritus. He was manager of economic research at the I.B.M. Thomas J. Watson Research Center from 1962–70, and director of the Econometric Research Program at Princeton from 1970–97. The program was renamed the Gregory C. Chow Econometric Research Program in 2001. Chow is a member of the American Philosophical Society and of Academia Sinica and a fellow of the American Statistical Association and of the Econometric Society. He has served as associate editor or co-editor of the *American Economic Review*, *China Economic Review*, *International Economic Review*, *Journal of Economic Dynamics and Control*, *MOCT-MOST*, and the *Review of Economics and Statistics*. Chow’s contributions to economics cover three main areas: econometrics, including the often used “Chow test” for parameter stability, the estimation of simultaneous stochastic equations, and criteria for model selection; dynamic economics, including spectral methods and optimal control methods for the analysis of econometric models and dynamic optimization under uncertainty to be solved by the method of Lagrange multipliers (in lieu of dynamic programming); and the Chinese economy, an institutional, theoretical, and quantitative approach to its study. He received his Ph.D. from the University of Chicago. He writes a column in three major newspapers in China and one in Taiwan. He is editor of the *Routledge Handbook of the Chinese Economy* and independent director of the Taiwan Semiconductors Manufacturing Company.

COURSES TAUGHT

- ECP379/EAS346: The Chinese Economy
- ORF 571: Economic Analysis of Environmental Problems

REPRESENTATIVE PUBLICATIONS

- “China as a Leader of the World Economy,” *World Scientific*, 2012, Chinese edition, World Scientific 2012
- “Co-movements of Shanghai and New York Stock Prices by Time-varying Regressions,” *Journal of Comparative Economics*, 2011.
- “A Simple Model of the Chinese Macroeconomy,” *Economics Letters* 106, 2010.
- “Interpreting China’s Economy” *World Scientific*, 2010; (Chinese edition) Citic Press, 2010.
- China’s Economic Transformation. Oxford: Blackwell Publishers, second edition, 2007.
- Knowing China. Singapore: World Scientific Publishing Co., 2004.
- Dynamic Economics: Optimization by the Lagrange Method. Oxford: Oxford University Press, 1997.

ERHAN ÇINLAR is the Norman J. Sollenberger Professor of Engineering in the Department of Operations Research and Financial Engineering. He came to Princeton as a visiting professor of statistics in 1979–80. He is a fellow of the Institute of Mathematical Statistics, a fellow of INFORMS, an elected member of the International Statistical Institute, and the recipient of the Science Prize of TÜBİTAK. He has served as editor or associate editor of more than 12 journals on probability theory and its applications. His research interests center on martingales, Markov processes, stochastic differential equations, dynamic point processes, mass transport by stochastic flows, and their applications to mathematics of insurance and finance, reliability of complex systems, and modeling and estimation of natural hazards. He received the President’s Award for Distinguished Teaching during the June 2010 Princeton Commencement ceremonies. He received the Lifetime Achievement Award for Excellence in Teaching for the Engineering School Student Council in 2011.

COURSES TAUGHT

- ORF 309: Probability and Stochastic Systems
- ORF 551/APC 521: Probability Theory

UNDERGRADUATE STUDENTS ADVISED

- Matthew Connor, “Option Pricing and Momentum and Mean Reversion”
- Graham MacDonald, “Markov Chain and Random Walk Analysis of Professional Squash Players”

REPRESENTATIVE PUBLICATIONS

- “Lyapunov Exponents of Poisson Shot-noise Velocity Fields,” *Stochastic Processes and Their Applications* 94, 2001 (with M. Caglar).
- “Spectral Expansion of the Occupation Measure for Birth and Death on a Flow,” *Stochastic Processes and Their Applications*, 74, 1998 (with J. Kao).
- “Dispersion of Particle Systems in Brownian Flows,” *Advances in Applied Probability* 28, 1996 (with C. Zirbel).

- “Mass Transport by Brownian Flows,” in *Stochastic Models in Geosystems*, edited by S.A. Molchanov, IMA Volumes in Mathematics and Its Applications, Springer Verlag, 1996 (with C. Zirbel).
- “Conditional Levy Processes,” *Computers and Mathematics* 46, 2003.
- *Probability and Stochastics*. Graduate Texts in Mathematics volume 261, Springer, New York, 2011.

JIANQING FAN is the Frederick L. Moore '18 Professor of Finance, and he joined the Department of Operations Research and Financial Engineering in 2003. His research interests are financial econometrics, asset pricing, risk management, nonlinear time series, high-dimensional data analyses, nonparametric modeling, and computational biology. As a specialist in statistics and financial econometrics, Fan received the 2000 Presidents' Award from the Committee of Presidents of Statistical Societies, recognizing the most outstanding statistician under age 40; the 2007 Morningside Gold Medal of Applied Mathematics, given triennially to an outstanding applied mathematical scientist of Chinese descent under age 45; and the Guggenheim Fellowship in 2009. He was the president of the Institute of Mathematical Statistics, an international professional and scholarly society. He is an elected fellow of the American Association for the Advancement of Science, the American Statistical Association, and the Institute of Mathematical Statistics. He has coauthored two highly regarded books. He delivered a talk at the 2006 Madrid International Congress for Mathematicians, a high honor in mathematical sciences. He serves as the co-editor of the *Journal of Econometrics*, and *Econometrics Journal* and an associate editor of *Econometrica*, *Journal of the American Statistical Association* and *Journal of Financial Econometrics*. He has served as the co-editor (in-chief) of the *Annals of Statistics* (2004–06), and an editor of the *Journal of Multivariate Analysis* (1998–2000) and *Probability Theory and Related Fields* (2003–05). He earned his Ph.D. from the University of California–Berkeley. He served as the director of graduate studies of both Ph.D. program of ORFE and Master in Finance in BCF.

COURSES TAUGHT

- ORF 504/FIN 504: Financial Econometrics
- ORF 565: Empirical Process and Asymptotic Theory

UNDERGRADUATE STUDENTS ADVISED

- Natalie H. Shoup, “Sustainable Energy Economics: Optimizing the Integration of Renewables in Guatemala”
- Jonathan H. Wang, “Explaining Credit Default Swap Premia: Analyzing the Relationship between Global CDS Spreads and Stochastically Modeled Corporate Default Probabilities”
- Yiran Lillian Ma, “Sensitivity Analysis on a Transitive-State Markov Model of Diabetes”
- Edgar Dobriban, “Regularity Properties of Random Matrices and Applications”

GRADUATE STUDENTS ADVISED

- Jelena Bradic, “Sparse Estimation and Oracle Properties of Regularized Regression with Non-Polynomial Dimensional Covariates”
- Lei Qi, “Essays on the Estimation of Time Series Models”
- Weijie Gu, “Estimating False Discovery Proportion under Covariance Dependence”
- Xin Tong, “Learning with Asymmetry, High Dimension, and Social Networks”

POSTDOCTORAL FELLOWS SUPERVISED

- Yuan Liao, “Financial Econometrics”
- Michael Imerman, “Finance”
- Runlong Tang, “High-dimensional Statistical Learning and Inference”
- Yunbei Ma, “High-dimensional Statistical Learning and Inference”

REPRESENTATIVE RECENT PUBLICATIONS

- “Testing and Detecting Jumps Based on a Discretely Observed Process,” *Journal of Econometrics*, 2011 164, 331-344 (with Y. Fan).
- High Dimensional Covariance Matrix Estimation in Approximate Factor Models,” *The Annals of Statistics* 39, 3320-3356 (with Y. Liano and M. Mincheva).
- “Sparse High-dimensional Models in Economics,” *Annual Review of Economics* 2011 3, 291-317 (with J. Lv and L. Qi).
- “High Frequency Covariance Estimates with Noisy and Asynchronous Financial Data,” *Journal of American Statistical Association* 105, 2010 (with Y. Aït-Sahalia and D. Xiu)
- “Nonparametric Tests of the Markov Hypothesis in Continuous-time Models,” *The Annals of Statistics* 38, 3129-3163, 2010 (with Y. Aït-Sahalia and J. Jiang).
- “Option Pricing with Model-guided Nonparametric Methods,” *Journal of American Statistical Association* 104, 2009 (with L. Mancini).
- “Nonparametric Transition-based Tests for Diffusions,” *Journal of American Statistical Association* 104, 1102-1116, 2009 (with Y. Aït-Sahalia and H. Peng).
- *Nonlinear Time Series: Nonparametric and Parametric Methods*, Springer Verlag, New York. 2003 (with Q. Yao).

MIKHAIL GOLOSOV Mikhail Golosov is a professor of economics at Princeton University. Dr. Golosov has also held positions at Yale University and the Massachusetts Institute of Technology. He is the associate editor of *Econometrica* and *Journal of Public Economics*. Dr. Golosov was awarded the Sloan Research Fellowship in 2008 as well as the National Science Foundation CAREER Grant. His research covers topics in macro economics, public finance and political economy.

HARRISON HONG is the John Scully '66 Professor of Economics and Finance. He teaches courses in finance in the undergraduate, master's, and Ph.D. programs. Before joining Princeton in 2002, he was on the faculty of the Graduate School of Business at Stanford University, most recently as an associate professor of finance. He received his B.A. in economics and statistics with highest distinction from the University of California– Berkeley in 1992 and his Ph.D. in economics from the Massachusetts Institute of Technology in 1997. His research has covered such topics as: behavioral finance and stock market efficiency; asset pricing and trading under market imperfections; social interaction and investor behavior; security analyst incentives and forecast biases; organizational form and mutual fund performance; and destabilizing arbitrage, socially responsible investing, and commodities pricing. His work has received numerous awards and grants. He is on the editorial boards of the *Journal of Finance* and the *Journal of International Central Banking*. He was awarded the 2009 Fischer Black Prize by the American Finance Association, given bi-annually to the best financial economist under the age of 40.

COURSES TAUGHT:

- ECO 362 Financial Investments
- ECO 468/FIN 568 – Behavioral Finance and Economics

GRADUATE STUDENT ADVISED:

- Hyun Soo Choi, “Three Essays on Real Estate Finance”

REPRESENTATIVE PUBLICATIONS

- “Advisors and Asset Prices: A Model of the Origins of Bubbles,” *Journal of Financial Economics*, forthcoming (with J. Scheinkman and W. Xiong).
- “Simple Forecasts and Paradigm Shifts,” *Journal of Finance* 62, 2007 (with J. Stein and J. Yu).
- “Disagreement and the Stock Market,” *Journal of Economic Perspectives* 21, 2007 (with Stein).
- “Do Industries Lead Stock Markets?” *Journal of Financial Economics*, February 2007 (with W. Torous and R. Valkanov).
- “Asset Float and Speculative Bubbles,” *Journal of Finance*, June 2006 (with J. Scheinkman and W. Xiong).

HAROLD JAMES, who holds a joint appointment as a professor of international affairs in the Woodrow Wilson School and a professor in the history department, studies economic and financial history and modern German history. He was educated at the University of Cambridge (Ph.D., 1982) and was a fellow of Peterhouse for eight years before coming to Princeton in 1986. In 2004, he was awarded the Helmut Schmidt Prize for Economic History, and in 2005, the Ludwig Erhard Prize for writing about economics. He is chair of the editorial board of *World Politics*.

COURSES TAUGHT

- WWS 340/HIS 466: The History of Financial Crises
- HIS 366: Germany Since 1806
- HIS 554: Germany in 19th and 20th Centuries

REPRESENTATIVE PUBLICATIONS

- *The Roman Predicament: How the Rules of International Order Create the Politics of Empire*. Princeton: Princeton University Press, 2006.
- *Family Capitalism: Wendels, Haniels, and Falcks*. Cambridge: Harvard University Press, (also available in German: Munich, Verlag C. H. Beck), 2006.
- *Europe Reborn: A History 1914–2000*. London: Longman/Pearson Education, 2003.
- *The Deutsche Bank and the Nazi Economic War against the Jews*. Cambridge: Cambridge University Press, 2001.
- *The End of Globalization: Lessons from the Great Depression*. Cambridge: Harvard University Press (also available in Chinese, German, Greek, Japanese, Korean, and Spanish translations), 2001.

JAKUB JUREK is an Assistant Professor at the Department of Economics at Princeton University, and a research fellow at the National Bureau of Economic Research. He joined the Bendheim Center for Finance in 2008, and teaches courses on fixed income and financial economics. His research focuses on theoretical and empirical asset

pricing, with applications to liquidity, credit risk and portfolio management. Jakub's recent work develops option-based methods for the valuation of collateralized debt obligations (CDOs) and the dynamics of repo market financing terms. His research has been published in refereed journals such as the *Journal of Finance*, *American Economic Review* and the *Review of Finance*. Jakub holds an undergraduate degree in Applied Mathematics and a Ph.D. in Business Economics, both from Harvard University. Prior to entering graduate school, he was an analyst at the quantitative equity strategy groups at Goldman Sachs and AQR Capital Management. He has also served as a consultant to Grantham, Mayo, van Otterloo, LLC, a Boston-based investment management company, and the Harvard Management Company

COURSES TAUGHT

- ECO 466/FIN 521 Fixed Income: Models and Applications
- ECO 467/FIN 567 Institutional Finance
- ECO 525/FIN 595 Financial Economics I

UNDERGRADUATE STUDENTS ADVISED

- Ahsan Mosharraf Barkatullah, "Credit Rating Agencies and Ratings Inflation"
- Ji Un Han, "A Test of the Expectations Hypothesis of the Term Structure of Sovereign Credit Default Swaps: Is Sovereign Risk Premium Time-Varying?"
- John P. Votta, "Game of Trends: Institutional Ownership, Short Selling, and the Post-Earnings Announcement Drift"
- James Jiajun Luo, "Asset Pricing Implications of Information Asymmetries in Large Investor Networks"
- Tianyi Peng, "The Application of a Four-Factor Asset-Pricing Model in the Chinese Stock Market"
- Sean Pi, "Trade Credit as a Model Risk Factor: Predicting Firm and Supply Chain Linked Company Returns"

REPRESENTATIVE PUBLICATIONS

- "The Economics of Structured Finance," *Journal of Economic Perspectives* 23(1) (with J. Coval and E. Stafford).
- "Economic Catastrophe Bonds," *American Economic Review* 99(3) (with J. Coval and E. Stafford).
- "The Price of Immediacy," *Journal of Finance* 63(3), June 2008 (with G. Chacko and E. Stafford).

WORKING PAPERS

- "The Cost of Capital for Alternative Investments," April 2012 (with E. Stafford)
- "Crashes and Collateralized Lending," April 2011 (with E. Stafford)

DANIEL KAHNEMAN is a senior scholar at the Woodrow Wilson School of Public and International Affairs. He is also professor of psychology and public affairs, emeritus, at the Woodrow Wilson School, the Eugene Higgins Professor of Psychology Emeritus at Princeton, and a fellow of the Center for Rationality at the Hebrew University in Jerusalem. Kahneman has held the position of professor of psychology at the Hebrew University in Jerusalem (1970–78), the University of British Columbia (1978–86), and the University of California–Berkeley (1986–94). He is a member of the National Academy of Science, the Philosophical Society, and the American Academy of Arts and Sciences, and a fellow of the American Psychological Association,

the American Psychological Society, the Society of Experimental Psychologists, and the Econometric Society. He has been the recipient of many awards, among them the Nobel Prize in Economic Sciences (2002); the Lifetime Contribution Award of the American Psychological Association (2007) and the Grawemeyer Prize (2002), both jointly with Amos Tversky; the Warren Medal of the Society of Experimental Psychologists (1995); the Distinguished Scientific Contribution Award of the American Psychological Association (1982); and the Hilgard Award for Career Contributions to General Psychology (1995). Kahneman holds honorary degrees from numerous universities.

REPRESENTATIVE PUBLICATIONS

- “Frames and Brains: Elicitation and Control of Response Tendencies,” *Trends in Cognitive Sciences* 11, 2007 (with S. Frederick).
- “Why Hawks Win,” *Foreign Policy* 158, 2007 (with J. Renshon).
- “Developments in the Measurement of Subjective Well-being,” *Journal of Economic Perspectives* 20, 2006 (with A. Krueger).
- Anomalies: Utility Maximization and Experienced Utility,” *Journal of Economic Perspectives* 20, 2006 (with R. Thaler)
- Choices, Values, and Frames. New York: Cambridge University Press and the Russell Sage Foundation, summer 2000 (with A. Tversky).

NOBUHIRO KIYOTAKI is the Harold H. Helm '20 Professor of Economics and Banking and 2010-11 Visiting Centennial Professor at the London School of Economics and Political Science. He received his Ph.D. at Harvard University. He has published widely in macroeconomics and monetary economics, including “Monopolistic Competition and the Effects of Aggregate Demand,” with Olivier Blanchard in 1987, “On Money as a Medium of Exchange,” with Randall Wright in 1989, and “Credit Cycles,” with John Moore in 1997. Kiyotaki also serves as an academic consultant for the Federal Reserve Bank of New York. Among professional honors, Kiyotaki received in 2010 the Stephen A. Ross Prize in Financial Economics and in 1999 the EEA Yrjo Jahnsson Award together with John Moore. He is a Fellow of the Econometric Society and a Fellow of the British Academy.

COURSE TAUGHT

- ECO 522: Advanced Macroeconomics
- ECO 301: Macroeconomics

GRADUATE STUDENTS ADVISED

- Mathieu Tachereau-Dumouchel “Three Essays on Macroeconomics of Labor Market” completed January 2012, now assistant professor at Wharton.
- Edouard Schall “Three Essays on Macroeconomics of Labor Market” completed May 2011, now assistant professor at NYU.

PAUL R. KRUGMAN is a professor of economics and international affairs. He is the author or editor of dozens of books and several hundred articles, primarily about international trade and international finance. He is also internationally known for his twice-weekly columns in *The New York Times*. He was the Ford International Professor of International Economics at the Massachusetts Institute of Technology and has served on the staff of the U.S. Council of Economic Advisers. In 2008, Krugman

received the Nobel Prize in Economic Sciences. He was the recipient of the 1991 John Bates Clark Medal, an award given every two years by the American Economic Association to an economist under 40. He received his Ph.D. from the Massachusetts Institute of Technology. He holds a joint appointment with the economics department and the Woodrow Wilson School of Public and International Affairs.

COURSE TAUGHT

- WWS 472: Special Topics in Public Affairs – The Economics of the Welfare State

REPRESENTATIVE PUBLICATIONS

- *The Conscience of a Liberal*, 2007.
- *Macroeconomics*, 2005 (with R. Wells).
- *Principles of Economics*, 2004 (with R. Wells).
- *Currency Crises* (ed.), University of Chicago Press, 2000.

BURTON MALKIEL has been the Chemical Bank Chairman’s Professor of Economics at Princeton since 1988. He entered emeritus status in 2011. His research interests center on financial markets, asset pricing, and investment strategies. He is a regular op-ed writer for *The Wall Street Journal*. He also serves on the boards of several financial and non-financial corporations. He has been awarded an Honorary Doctor of Humane Letters from the University of Hartford (1971), Phi Beta Kappa, and the Harvard Business School Alumni Achievement Award for 1984. He has served as the president of the American Finance Association. He received his Ph.D. from Princeton.

COURSES TAUGHT

- ECO 362: Financial Investments

UNDERGRADUATE STUDENTS ADVISED

- Joshua Rosner, “The Build America Bond Programs: An Empirical Analysis of Issuer Borrowing Costs and the Muni-Puzzle”
- Sean (Xueyang) Li, “A New Way to Invest: Style Timing Using Dynamic Rank Weighting”
- Alaap Parikh, “Asset Pricing in the Indian Stock Market: Tests of the Size and Value Effects”

GRADUATE STUDENT ADVISED

- Nicholas Racculia “Returns from Investing in Venture Capital”

REPRESENTATIVE PUBLICATIONS

- “DCF Valuation with Cash Flow Cessation Risk” *Journal of Applied Finance* 22:1, 2012 (with A. Saha).
- *A Random Walk Down Wall Street*, New York: *W.W. Norton & Co.* 10th edition, paper, January 2012.
- “The Value Effect and the Market for Chinese Stocks,” *Emerging Market Review* 10, 2009.
- *The Elements of Investing*, New York: Wiley, December 2009 (with C. Elles).
- “Have Individual Stocks Become More Volatile?” *Journal of Finance*, February 2001 (with J. Campbell, M Lettau, and Y. Xu) [First Prize paper for the Smith Breeden Prizes for 2002].

STEPHEN MORRIS is the Alexander Stewart 1886 Professor of Economics, and his work ranges from game theory to applied (microeconomic) theory to topics in financial economics. He joined Princeton in 2005. He taught at the University of Pennsylvania from 1991 to 1998, first as an assistant and then as an associate professor. He joined the Yale University faculty as a professor of economics in 1998. Morris received his Ph.D. in economics from Yale in 1991.

COURSES TAUGHT

- ECO 317: The Economics of Uncertainty
- ECO 502: Microeconomic Theory II
- ECO 512: Advanced Microeconomic Theory II

UNDERGRADUATE STUDENTS ADVISED

- Matt Zimmerman, “Combating Paternalism with Paternalism to Remedy Market Failure: Policy Proposals to End the Shortage in Available Kidneys for Transplant”
- Jason Huang, “The Trade-Off Between Under Pricing and Price Accuracy: An Analysis of Allocation Discrimination in Book Building”

GRADUATE STUDENT ADVISED

- Ming Yang, “Essays in Strategic Information Acquisition
- Takuo Sugaya, “Essays on Repeated Games With Private Monitoring
- Eduardo Grillo, “Essays in Strategic Communication”

REPRESENTATIVE PUBLICATIONS

- “Contagious Adverse Selection,” *American Economic Journal: Macroeconomics*, 2012 (with H. Shin)
- “Financial Regulation in a System Context,” *Brookings Papers on Economic Activity*, 2009 (with H. Shin).
- “Risk and Wealth in a Model of Self-fulfilling Currency Crises,” *Journal of Monetary Economics* 54, 2007 (with B. Guimaeres).
- “Beauty Contests and Bubbles,” *Review of Financial Studies* 19, 2006 (with F. Allen and H. Shin)
- “Central Bank Transparency and the Signal Value of Prices,” *Brookings Papers on Economic Activity* 2, 2005 (with H.S. Shin)

ULRICH MÜLLER is an associate professor in the Department of Economics. He received his Ph.D. in economics from the University of St. Gallen, Switzerland. His main research interest is time series econometrics. His recent work focuses on Bayesian inference, low frequency variability, and the development of econometric tools that are robust to correlations of largely unknown form.

(No undergraduate students this year)

REPRESENTATIVE PUBLICATIONS

- “Efficient Tests under a Weak Convergence Assumption,” *Econometrica* 79 (2011), 395-435.
- “Efficient Estimation of the Parameter Path in Unstable Time Series Models,” *Review of Economic Studies* 77 (2010), 1508-1539. Supplement. (Joint with Philippe Emmanuel Petalas).

- “Valid Inference in Partially Unstable GMM Models,” *Review of Economic Studies* 76 (2009), 343-365. (Joint with Hong Li).
- “Testing Models of Low Frequency Variability,” *Econometrica* 76 (2008), 979-1016. (Joint with Mark Watson).
- “Tests for Unit Roots and the Initial Condition,” *Econometrica* 71 (2003), 1269-1286. (With Graham Elliott).

JOHN MULVEY is a professor of operations research and financial engineering. His research interests center on designing financial planning systems, primarily for pension plans, hedge funds, and wealthy individuals; developing optimal hedge fund strategies; combining financial optimization and stochastic models; stochastic optimization algorithms; and decentralized risk management. He was a finalist for the Edelman Prize for the Towers Perrin-Tillinghast investment system in 1999. He received his Ph.D. in management from the University of California–Los Angeles.

COURSES TAUGHT

- ORF 534: Investment Science
- ORF 311: Optimization under Uncertainty

UNDERGRADUATE STUDENTS ADVISED

- Ariel Brown, “Counterparty Credit Risk: An Exploration of Hidden Dangers in Exchange Traded Products”
- Daniel Condronimpuno, “Leading Industries: Evidence from Emerging Markets and Applications of Regime Switching Investment Models”
- Harris Perlman, “Imitating Masters: On Replicating the Investment Returns of Fine Art”
- Benjamin Yao, “Replication and Comparison of Commodity Futures Trading Strategies”

GRADUATE STUDENTS ADVISED

- Astrid Prajogo, “Analyzing Patterns in the Equity Market Using ETF Investor Sentiment and Corporate Cash Holding
- Lorenzo Reus, “Discovering Regimes in Currencies Tactics, and Related Issues for Private Equity Investors”
- Mehmet Vural, “Term Structure Characteristics of Commodities, U.S. Dollar Interest Rates, and Multi Regime Portfolio Optimization”

REPRESENTATIVE PUBLICATIONS

- “The Role of Managed Futures and Commodity Funds,” *Journal of Indexes*, Summer, 2012.
- “Linking Momentum Strategies with Single-Period Portfolio Models,” *Handbook of Portfolio Construction: Contemporary Applications of Markowitz Techniques*, Springer, 2011, 511-528 (with W. Kim and M. Bilgili).
- “A Dynamic Portfolio of Investment Strategies: Applying Capital Growth with Drawdown Penalties.” In *The Kelly Capital Growth Criterion: Theory and Practice*, (eds. L. MacLean, E. Thorp, and W. Ziemba), 2011, (with M. Bilgili and T. Vural).
- “Multi-stage Financial Planning: Integrating Stochastic Programs and Policy Simulators,” in *Stochastic Programming: The State of the Art*, (ed. G. Infanger), 2011, 257-276, (with W. Kim).

- “Applying Stochastic Programming to the Defined Benefit Pension System,” *Optimizing the Aging, Retirement and Pension Dilemma*, (eds. M. Bertocchi, S. Schwartz, W. Ziemba), Wiley 2010 (with Z. Zhang)
- “Evaluating Style Investment: Does a Fund Market Defined along Equity Styles Add Value?” Feature article, *Quantitative Finance*, fall 2009 (with W. Kim).

BIRGIT RUDLOFF is an assistant professor of operations research and financial engineering. Her research interests include hedging, price bounds and risk measurement in markets with transaction costs, hedging in incomplete markets with convex risk measures, portfolio optimization with risk constraints, mathematical finance, risk management, and convex analysis. She received her Ph.D. in mathematical finance from Martin-Luther University Halle-Wittenberg (Germany) in 2006 and visited the research institute IMPA in Rio de Janeiro and the technical university in Vienna before coming to Princeton in 2006.

COURSES TAUGHT

- ORF 435: Financial Risk Management
- ORF 533: Convex Analysis for Mathematical Finance
- ORF 515: Asset Pricing II: Stochastic Calculus and Advanced Derivatives.

UNDERGRADUATE STUDENTS ADVISED

- Selene Sooyeon Kim, “Indifference Pricing under Transaction Costs”
- Jack Wang, “Spread Options under Transaction Costs”

GRADUATE STUDENTS ADVISED

- Zach Feinstein, “Set-valued Dynamic Risk Measure for Markets with Transaction Costs”
- Cagin Arat, “The Set-valued Entropic Risk Measure for Markets with Transaction Costs”
- Firdevs Ulus, “An Algorithm to Solve Convex Vector Optimization Problems and Its Application for Utility Maximization for Incomplete Preferences

REPRESENTATIVE PUBLICATIONS

- “Risk Minimization and Set-valued Average Value at Risk Via Linear Vector Optimization,” submitted for publication 2012 (with A. Hamel, M. Yankova).
- “Set-valued Dynamic Risk Measures,” submitted for publication 2012 (with Z. Feinstein)
- An Algorithm for Calculating the Set of Superhedging Portfolios in Markets with Transaction Costs,” submitted for publication 2012 (with A. Loehne).
- “Set-valued Risk Measures for Conical Market Models,” 2011, *Mathematics and Financial Economics* 5 (1), 1-28 (with A. Hamel, F. Heyde).
- “Testing Composite Hypotheses via Convex Duality,” 2010, *Bernoulli* 16 (4), 1224-1239 (with I. Karatzas).
- “Coherent Hedging in Incomplete Markets,” *Quantitative Finance* 9 (2), 2009.

YULIY SANNIKOV is a Professor of economics whose research interests include economic theory, corporate finance and macroeconomics with financial frictions. Yuliy Sannikov got his B.A. from Princeton and a Ph.D. from Stanford GSB. Yuliy was an invited panel speaker at several meetings of the Econometric Society, including North

American Meetings in 2006, Latin American in 2008, East Asian in 2009, and the World Congress in 2010. He is a Sloan Fellow in 2009-2011, and he was also invited to give the annual Schultz lecture at the University of Chicago Economics Department in 2008. He participated in the Review of Economic Studies tour as one of the top six Economics Ph.D. graduates in the U.S. in 2004, and he got three gold medals at International Mathematical Olympiads in 1996, 1995, and 1994. Besides Princeton, Yuliy Sannikov has taught at MIT, NYU, Harvard, Stanford and UC Berkeley.

UNDERGRADUATE STUDENTS ADVISED

- Vijay Chetty, “How Yesterday’s Merchants of Venice Led to Today’s Margins and Volatility: An Intermediation-Based Comparative Approach to the Leverage Cycle”
- Ryan Makis, “NFL Scouting Combine: Econometric Analysis Determining Indicators of Success and Evaluating the Market for NFL Prospects”
- Atanas Petkov, “Understanding Catastrophe Bond Pricing: Empirical and Theoretical Approaches”
- Kunal Poddar, “Bank-dependent Versus Bond-issuing Firms: An Analysis of Monetary Tightening in India”
- Shasanka Pradhan, “Effect of Acquirer’s Venture Capital-backing on Their Announcement Period Abnormal Returns”
- Samuel Roeca, “A Paradox of Internal Capital markets: The Effect of Regional and Systematic Stress on Lending in Regionally Diversified U.S. Banks”
- Maxwell Shaw, “The Internet Bubble 2.0: Revisiting Investor Sentiment During the DOT-COM Era Amid Discussion of Today’s Web 2.0 Boom”
- Huijia Wu, “Information Shocks and Bubble Crashes”

REPRESENTATIVE PUBLICATIONS

- “Optimal Security Design and Dynamic Capital Structure in a Continuous-time Agency Model,” with Peter DeMarzo, *Journal of Finance*, 2006, Vol. 61, No. 6, pp. 2681-2724
- Games with Imperfectly Observable Actions in Continuous time,” *Econometrica*, 2007, Vol. 75, No. 5, pp. 1285-1330.
- “Impossibility of Collusion under Imperfect Monitoring with Flexible Production,” with Andy Skrzypacz, *American Economic Review*, 2007, Vol. 97, No. 5, pp. 1794-1823.
- “A Continuous-time Version of the Principal-agent Problem,” *Review of Economic Studies*, 2008, Vol. 75, No. 3, pp. 957-984.
- “The Role of Information in Repeated Games with Frequent Actions, with Andy Skrzypacz, *Econometrica*, 2010, Vol. 78, No. 3, pp. 847-882.
- “Reputation in Continuous-time Games,” with Eduardo Faingold, *Econometrica*, 2011, Vol. 79, No. 3, 773-876.

JOSÉ A. SCHEINKMAN joined Princeton as the Theodore Wells '29 Professor of Economics in 1999. He received an M.S. in mathematics from the Instituto de Matemática Pura e Aplicada, Brazil, and an M.A. and a Ph.D. in economics from the University of Rochester. Scheinkman is a research associate of the National Bureau of Economic Research, a member of the National Academy of Sciences, a fellow of the American Academy of Arts and Sciences and of the Econometric Society, and a “docteur honoris causa” of the University of Paris-Dauphine. He was named a fellow of the John Simon Guggenheim Memorial Foundation in 2007. From 1973 to 1998,

Scheinkman taught at the University of Chicago, where he was from 1995 to 1998 the chair of the economics department, and beginning in 1997 the Alvin H. Baum Distinguished Service Professor of Economics. From 1987–88, he was vice president of the Financial Strategies Group at Goldman, Sachs & Co. He has been a visiting professor at College de France, Princeton University, University of Paris-Dauphine, E.H.E.S.S. (France), Instituto de Matemática Pura e Aplicada, and E.P.G.E. (Brazil). During 2002, he held a Blaise Pascal Research Chair (France). His current research interests are the determinants of the size of the financial industry, asset-price bubbles, and developing tools for empirical studies of asset markets.

COURSES TAUGHT

- ECO 502 Microeconomic Theory II
- ECO 525/FIN 595: Financial Economics
- ECO 493/FIN 593: Financial Crises

REPRESENTATIVE PUBLICATIONS

- “Pricing Growth-Rate Risk,” (with Lars Hansen) *Finance and Stochastics* 16:1, 2012.
- “The Informal Sector: An Equilibrium Model and Some Empirical Evidence from Brazil” (with Aureo de Paula) *Review of Income and Wealth* 57:s1, 2011.
- “Risk Price Dynamics,” (with J. Borovicka, L. Hansen and M. Hendricks) *Journal of Financial Econometrics* 9:1, winter 2011.
- “Outside and Inside Liquidity,” (with P. Bolton and T. Santos) *Quarterly Journal of Economics* 126:1, 2011.
- “Value Added Taxes, Chain Effects and Informality,” *American Economic Journal: Macroeconomics*, 2010 (with A. de Paula).
- “Market and Public Liquidity,” *American Economic Review Papers and Proceedings*, 2009, (with With P. Bolton and T. Santos)
- “Long Run Risks: An Operator Approach,” *Econometrica*, 2009 (with L. Hansen).
- “Advisors and Asset Prices: A Model of the Origins of Bubbles,” *Journal of Financial Economics*, 2008 (with H. Hong and W. Xiong).

HYUN SONG SHIN is the Hughes-Rogers Professor of Economics at Princeton University. Before coming to Princeton in 2006, he was a professor of finance at the London School of Economics. His recent research has focused on the current credit crisis and the role of risk management techniques and accounting rules in the crisis dynamics. His broader research interests are in financial economics, especially in issues related to disclosures, financial regulation, crises, and financial stability, issues on which he has advised central banks and policy institutions. He is a fellow of the Econometric Society and the British Academy. He received his Ph.D. from the University of Oxford in 1988. He was on leave during the academic year 2009–10, serving as an adviser to President Lee Myung-bak of South Korea.

COURSES TAUGHT

- FRS 114: Recent Developments in Financial Regulations: International Dimensions”
- FIN 502: Corporate Finance and Financial Accounting
- FIN 591/ECO 491: Cases in Financial Risk Management
- FIN 596/ECO 526: Financial Economics II

UNDERGRADUATE STUDENT ADVISED

- Tiao Guan, “Price Divergence between Dual-listed A and H-shares: The Roles of Speculation, Market Liquidity, and Arbitrage”

GRADUATE STUDENTS ADVISED

- Anastasia-Aggeliki Andrikogiannopoulou, “Estimating Risk Preferences: Evidence from Online Sports Gambling”
- Sergey Zhuk, “Three Essays in Financial Economics”

REPRESENTATIVE PUBLICATIONS

- Risk and Liquidity, Clarendon Lectures in Finance, 2009, Oxford University Press
- “Marking to Market: Panacea or Pandora’s Box?” *Journal of Accounting Research* 46, 2008 (with G. Plantin and H. Saprà).
- “Beauty Contests and Iterated Expectations in Asset Markets,” *Review of Financial Studies* 19, 2006 (with F. Allen and S. Morris).
- “Disclosure Risk and Price Drift,” *Journal of Accounting Research* 44, 2006.
- “Disclosures and Asset Return,” *Econometrica* 71, 2003.
- “Social Value of Public Information,” *American Economic Review*, 52, 2002 (with Morris).

CHRISTOPHER SIMS is the John F. Sherrerd '52 University Professor of Economics. He received his Ph.D. from Harvard University in 1968. He taught in the economics department of the University of Minnesota from 1969 to 1990, then moved to Yale University where he taught from 1990 to 1999. He is a member of the National Academy of Sciences and a fellow of the Econometric Society, for which he has served as president and as co-editor of *Econometrica*. He became president elect of the American Economic Association in 2011 and serves as president during 2012. He was with Thomas Sargent, the co-recipient of the 2011 Nobel Prize in Economics. He has intermittently served as an adviser, consultant, and visitor to several regional Federal Reserve banks. He has worked on econometric methods, economic theory, and empirical work, mostly related to macroeconomics and monetary policy.

COURSES TAUGHT

- ECO 342: Money and Banking I
- ECO513: Advanced Econometrics: Time Series Models
- ECO 521: Macroeconomic Theory I
- ECO 522: Advanced Macroeconomic Theory II

UNDERGRADUATE STUDENTS ADVISED

- Neha Bansal, “How Safe is the Safety Net? Access to Care in the Emergency Room”
- Sean Emmer, “Semiconductor Innovation in the American Economy: A Growth Accounting Approach”
- Scott Gates: “Faculty Salaries and University Finances: How Selected Public and Private Universities Change the Composition and Compensation of Their Faculties Based on Financial Resources”
- Anna Liu, “Size, Profitability and Risk: A Macroeconomic Perspective on Microfinance Institution Performance”
- Albulen Pano, “The Privatization of Drinking Water: The Effect of Ownership on Water System Regulatory Compliance in the USA”

REPRESENTATIVE PUBLICATIONS

- “Were There Regime Switches in U.S. Monetary Policy?” *American Economic Review* 96(1), March 2006.
- “Implications of Rational Inattention,” *Journal of Monetary Economics* 50(3), April 2003.
- “The Role of Models and Probabilities in the Monetary Policy Process,” *Brookings Papers on Economic Activity* 2, 2002.
- “The Precarious Fiscal Foundations of EMU,” *De Economist* 147(4), 1999.
- “Error Bands for Impulse Responses,” *Econometrica* 67(5), 1999 (with T. Zha).

RONNIE SIRCAR is a professor of operations research and financial engineering. He received his doctorate from Stanford University, and taught for three years at the University of Michigan in the Department of Mathematics before coming to Princeton. He has received continuing National Science Foundation research grants since 1998. He was a recipient of the E-Council Excellence in Teaching Award for his teaching in 2002, 2005, and 2006 and the Howard B. Wentz Jr. Junior Faculty Award in 2003. His research interests center on financial mathematics, stochastic volatility models, credit risk, asymptotic and computational methods, portfolio optimization and stochastic control problems, stochastic differential games and energy and commodities markets.

GRADUATE STUDENTS ADVISED

- Andrew Ledvina, “Differential Games in Oligopolistic Markets”
- Edmond Choi, “Credit & Equity Derivatives”
- Mike Stein, “Energy and Commodity Markets”

REPRESENTATIVE PUBLICATIONS

- “Dynamic Bertrand and Cournot Competition: Asymptotic and Computational Analysis of Product Differentiation”, with A. Ledvina, February 2011. To be published in *Risk and Decision Analysis*.
- “Exploration and Exhaustibility in Dynamic Cournot Games”, with M. Ludkovski, *European Journal on Applied Mathematics* (23)3, 2012, pp 343-372.
- *Multiscale Stochastic Volatility for Equity, Interest-Rate and Credit Derivatives* with J.-P. Fouque, G. Papanicolaou and K. Solna, Cambridge University Press, September 2011.
- “Dynamic Bertrand Oligopoly,” *Applied Mathematics and Optimization* 63(1), 2011, pp 11-44 (with A. Ledvina).
- “From Smile Asymptotics to Market risk Measures,” submitted July 2011 (with S. Sturm).
- “Games with Exhaustible Resources,” *SIAM J., Applied Mathematics* 70(7), 2010, pages 2556-2581 (with C. Harris and S. Howison).

DAVID SRAER joined the faculty at the Department of Economics at Princeton University in 2009 and teaches courses in corporate finance for the master’s and the Ph.D. programs. He received his B.S. in applied mathematics and economics from École Polytechnique in 2001 and his Ph.D. in economics from the Toulouse School of Economics in 2007. His research has been published in leading journals in economics and finance such as the *American Economic Review*, *Review of Economic Studies*, *The Journal of Finance*, and the *Journal of Financial Economics*. It has covered topics such

as: the role of collateral value on firms' investment decisions; the importance of family ownership for corporate behavior; the impact of retail investing on idiosyncratic volatility; and the role of dissent in organizations. Sraer is an associate editor for the *Journal of the European Economic Association* and has served as ad hoc referee for leading journals in both economics and finance.

COURSES TAUGHT

- FIN 502: Corporate Finance and Financial Accounting
- ECO 526/FIN 596: Corporate Finance

UNDERGRADUATE STUDENTS ADVISED

- Christian Blake, "Family Firm Performance: Evidence from the S&P During the Financial Crisis"
- Alec Finley, "Variation in Firm Value in Response to Credit Constraints"
- Steve Low, "Mergers, Acquisitions, & Shareholder Wealth"

REPRESENTATIVE PUBLICATIONS

- "Performance and Behavior of Family Firms: Evidence from the French Stock Market," *Journal of the European Economic Association* 5(4), June 2007 (with D. Thesmar).
- "Optimal Dissent in Organizations," *The Review of Economic Studies* 76, 2009 (with A. Landier and D. Thesmar).
- "Individual Investors and Volatility," *The Journal of Finance*, forthcoming (with T. Foucault and D. Thesmar)
- "Growth LBOs," *The Journal of Financial Economics*, forthcoming (with Q. Boucly and D. Thesmar).
- "The Collateral Channel: How Firms React to Real Estate Shocks." *The American Economic Review*, forthcoming (with T. Chaney and D. Thesmar).

KENNETH STEIGLITZ, the Eugene Higgins Professor of Computer Science, received his doctorate in 1963 from New York University and has been teaching at Princeton ever since. He is a fellow of the Institute of Electrical and Electronics Engineers (1981), a fellow of the Association for Computing Machinery (1997), and a recipient of the Technical Achievement Award of the Signal Processing Society (1981), the Signal Processing Society Award (1986), the IEEE Centennial Medal (1984), the School of Engineering Distinguished Teacher Award (1997), and the IEEE Third Millennium Medal (2000). His current research interests are in agent-based modeling of markets, auctions, and computing using soliton collisions. Kenneth Steiglitz has transferred to emeritus status and continues to work on emergent behavior in agent-based macro-economic models.

COURSES TAUGHT

- COS 126/EGR 126: General Computer Science

UNDERGRADUATE STUDENTS ADVISED

- Zhihong Xu "Redesigning EOS: Developing a Realistic Baseline for the Economics via Object-oriented Simulation Framework,"

REPRESENTATIVE PUBLICATIONS

- “Soliton-guided Phase Shifter and Beam Splitter,” *Phys. Rev. A* 81, March 2010.
- “Proton Trapping and Transfer with Solitons,” *Phys. Rev. A* 79, 021802R, February 2009 (with D. Rand).
- Snipers, Shills, and Sharks: EBay and Human Behavior, Princeton University Press, 2007.
- “Making Beam Splitters with Dark Soliton Collisions,” *Phys. Rev. A*, 82, 043831, October 2010
- “The Spite Motive and Equilibrium Behavior in Auctions,” *Contributions to Economic Analysis & Policy*, 2(1), 2003 (with J. Morgan and G. Reis).

ROBERT VANDERBEI has been a professor in the Department of Operations Research and Financial Engineering since its creation in 1999 and is the chair until July 1, 2012. His research interests focus on algorithms for nonlinear optimization and their application to problems arising in engineering and science. Application areas of interest focus mainly on inverse Fourier transform optimization problems and action minimization problems with a special interest in applying these techniques to the design of NASA’s terrestrial planet finder space telescope. He is an associate editor for both *Optimization in Engineering* and *Mathematical Programming*. He is a member of the Mathematical Optimization Society, SPIE, and the American Astrophysical Society. He is a Fellow of the Society for Industrial and Applied Mathematics and he is a Fellow of the Institute for Operations Research and Management Science. He received his Ph.D. in applied mathematics from Cornell University in 1981.

COURSES TAUGHT

- ORF 522: Linear Optimization
- ORF 307: Optimization

UNDERGRADUATE STUDENTS ADVISED

- Henry Chu, “Non-Redundant Aperture Masking and its Application in the Analysis of Stars with Planetary System”
- James Connolly, “A Regression Analysis of Madden NFL Team and Player Ratings”
- Sook Yung Kim, “Sovereign Wealth Funds: Their Performance in Global Financial Markets and its Implications for Regulatory Controls”
- Chetan Narain, “Predicting Politics: A Mathematical Approach to Parsing and Evaluating Presidential Campaign Speeches”
- Kexing (Christina) Ren, “An Analysis of Wireless Telecommunication Churn Rates Using data Mining Methods”
- Carolyn Anastasi, “An Analysis of a Tax on Sugar-Sweetened Soft Drinks Through an Examination of the Differential Response to Price.”

REPRESENTATIVE PUBLICATIONS

- “Interior-point Methods for Nonconvex Nonlinear Programming: Jamming and Numerical Testing,” *Mathematical Programming* 2003 (with H. Benson and D. Shanno).
- “Two-mirror Apodization for High-contrast Imaging,” *Astrophysical Journal* 599, 2003 (with W. Traub).

- “Circularly Symmetric Apodization via Starshaped Masks,” *Astrophysical Journal* 590, 2003 (with D. Spergel and N. Kasdin).
- “Frontiers of Stochastically Nondominated Portfolio,” *Econometrica* 71(4), 2003 (with A. Ruszczyński).
- *Linear Programming: Foundations and Extensions*. Kluwer Academic Publishers, 2nd edition, 2001.

ERIK VANMARCKE is a professor of civil and environmental engineering. He received his doctorate from the Massachusetts Institute of Technology in 1970 and joined the faculty, remaining there until 1985. At MIT, he was the Gilbert W. Winslow Career Development Professor and served as director of the Civil Engineering Systems Methodology Group. He has held visiting appointments at Harvard University, Technical University of Delft (the Netherlands), and University of Leuven (Belgium), his undergraduate alma mater, and was the Shimizu Corporation Visiting Professor at Stanford University. He presently holds the Kwang-Hua Chair Visiting Professorship at Tongji University in Shanghai, China. His principal expertise is in risk assessment and applied systems science. He authored *Random Fields: Analysis and Synthesis*, originally published by MIT Press; the second (revised and expanded) was published in 2010 by World Scientific Company. He won several research prizes of the American Society of Civil Engineers and chaired its Council on Disaster Risk Management. He was awarded a Senior Scientist Fellowship from the Japanese Society for the Promotion of Science and is a foreign member of the Royal Academy of Arts and Sciences of Belgium.

COURSES TAUGHT

- CEE 362: Structural Dynamics and Earthquake Engineering
- CEE 558: Applied Random Fields

GRADUATE STUDENTS ADVISED

- Ning Lin, Ph.D. 2010
- Siu-Chung Yau 2011

REPRESENTATIVE PUBLICATIONS

- “Quantitative Risk Analysis of Damage to Structures during Windstorms: Some Multi-scale and System Reliability Effects,” Keynote Lecture, Proceedings International Symposium on Reliability Engineering and Risk Management, Shanghai, China; Published by Tongji University Press, pp. 93-101, 210, (with E. Lin, N. and Yau, S.C.)
- “Quantitative Risk Analysis Applied to Dams,” Proceedings of the 4th Civil Engineering Conference in the Asian Region (CECAR-4), Taipei, June 2007; Published by the Asian Civil Engineering Coordinating Council (ACECC), pp. 17-21, 2007; also CDRM Monograph No. 5, ASCE, 2010.
- “Risk Assessment of Hurricane Storm Surge for New York City,” *J. Geophys. Res.*, 115, D18121, doi: 10.1029/2009JD013630, 2010. (with Lin, N., Emanuel, K.A., Smith, J.A.)
- “Quantifying the Benefits of Risk Reduction in Civil Infrastructure Systems,” Chapter 10 in *Frontier Technologies for Infrastructures Engineering*, Eds. S.-S. Chen and A. Ang, CRC Press (Francis & Taylor), Boca Raton, pp. 215-222, 2009.

- *Random Fields: Analysis and Synthesis*, 2nd (revised and expanded) edition, World Scientific Publishing Company, 2010.

MARK WATSON is the Howard Harrison and Gabrielle Snyder Beck Professor of Economics and Public Affairs in the Department of Economics and the Woodrow Wilson School. His research interests include econometrics, macroeconomics, and forecasting. He is a research associate at the National Bureau of Economic Research and a fellow of the Econometric Society. He has received the Galbraith Award for Graduate Teaching in 1986 and the McGraw Center Graduate Mentoring Award in 2008. He holds a Ph.D. in economics from the University of California–San Diego, and his past credentials include posts at Northwestern University and Harvard University.

COURSES TAUGHT

- ECO 313: Econometric Applications
- ECO 517: Econometric Theory I
- ECO 518: Econometric Theory II
- WWS507B: Quantitative Analysis (Basic)
- WWS507C: Quantitative Analysis (Advanced)

UNDERGRADUATE STUDENTS ADVISED

- Rebecca Scharfstein: “The Effect of Mortgage Credit Expansion on Residential Energy Consumption in California”

REPRESENTATIVE PUBLICATIONS

- “Sectoral vs. Aggregate Shocks: A Structural Factor Analysis of Industrial Production” *Journal of Political Economy*, February 2011, Vol. 119, No. 1, p 1-38 (with Andrew Foerster and Pierre-Daniel Sarte).
- “Relative Goods’ Prices, Pure Inflation, and the Phillips Correlation,” *American Economic Journal: Macroeconomics*, July 2010 2(3), pp 128-157 (with Ricardo Reis).
- “Heteroskedasticity-robust Standard Errors for Fixed Effect Panel Data Regression,” *Econometrica*, January 2008, Vol. 76, No. 1, pp 155–174 (with J. Stock).
- Testing Models of Low-frequency Variability (with Ulrich Müller), *Econometrica* 76(5), September 2008.

WEI XIONG is a professor of economics in the Department of Economics. His research interests center on capital market imperfections. His earlier papers cover speculative bubbles induced by heterogeneous beliefs and short-sales constraints, effects of stock price bubbles on managerial incentives and firm investment, asset market contagion, limited investor attention, non-standard investor preferences, asset pricing with heterogeneous beliefs and rollover risk and dynamic coordination problems between creditors. He is currently researching financialization of commodities markets, belief distortions in the recent financial crisis, and China’s financial markets. He received his Ph.D. from Duke University in 2001. He is a research associate of the National Bureau of Economic Research and was the finance editor of *Management Science*.

COURSES TAUGHT

- FIN 522/ECO 465: Futures, Options, and Financial Derivatives
- FIN 595/ECO 525: Financial Economics I
- FIN 593/ECO 493: Financial Crises
- FIN S500: Math Camp for MIF Students

UNDERGRADUATE STUDENTS ADVISED

- Zeynep Guner Gul, “Incentives, Compensations and Risk-Taking”
- Tiffany Liu, “The Effect of Mergers and Acquisitions on Executive Compensation”

GRADUATE STUDENTS ADVISED

- Ing-haw Cheng, “Essays in Corporate Governance and Capital Markets”
- Adam Zawadowski, “Essays in Finance”
- Andrew Robinson, “Essays on Financial Liquidity and Risk”

REPRESENTATIVE PUBLICATIONS

- “Rollover Risk and Credit Risk,” *Journal of Finance*, 2012 (with Z. He).
- “Dynamic Debt Runs,” *Review of Financial Studies*, 2012 (with Z. He).
- “Realization Utility,” *Journal of Financial Economics*, forthcoming (with N. Barberis).
- “The Chinese Warrants Bubble,” *American Economic Review*, 2011 (with J. Yu).
- “Heterogeneous Expectations and Bond Markets,” *Review of Financial Studies*, 2010 (with H. Yan).

VISITING FACULTY

During the academic year 2011–12, the Bendheim Center for Finance welcomed the following visiting faculty:

TOBIAS ADRIAN is a Vice President of the Federal Reserve Bank of New York, with the Capital Markets Function of the Research Group. His research covers asset pricing, financial intermediation, and macroeconomics, with a focus on the aggregate implications of capital market developments. He has contributed to the NY Fed's financial stability policy and to its monetary policy briefings. Tobias Adrian holds a Ph.D. from MIT and an MSc from LSE. He has taught at MIT and Princeton University.

COURSE TAUGHT

- ECO 462/FIN 515: Portfolio Theory and Asset Management

JEAN-CHRISTOPHE DE SWAAN has been teaching at Princeton since the Spring of 2009 as a Lecturer. He teaches a joint undergraduate and graduate course, The Rise of Asian Capital Markets, and a Freshman seminar, Ethics in Financial Markets. He also teaches at the University of Cambridge and has taught at Yale University, Cheung Kong Business School and Renmin University in Beijing. He is also a Principal at Cornwall Capital, a multi-strategy hedge fund based in New York. Prior to that, he was a special adviser on China at a global macro hedge fund, a Principal at an Asia-dedicated hedge fund, and a consultant at McKinsey & Company. He received his B.A. from Yale University, an MPhil in International Relations from the University of Cambridge, and a Masters in Public Policy from Harvard University's Kennedy School of Government. He is a Member of the Council on Foreign Relations. He is a faculty advisor in Rockefeller College (Princeton University) and an Associate Fellow of Ezra Stiles College (Yale University).

COURSES TAUGHT

- FRS139: Ethics in Financial Markets
- ECO 492/FIN 592: The Rise of Asian Capital Markets

MARC HALLIN was a visiting research scholar in the operations research and financial engineering department and the Bendheim Center for Finance for the spring and fall semesters. He spent most of his career at the Mathematics Department of the Université libre de Bruxelles. His research interests are in non- and semiparametric inference, the asymptotic theory of statistical experiments, and time series analysis. A fellow of the Institute of Mathematical Statistics and the American Statistical Association, he is member of the Classe des Sciences of the Royal Academy of Belgium.

COURSE TAUGHT

- ORF524: Statistical Theory & Methods

JEAN JACOD visited Princeton during the spring semester. He is a professor in the faculty of mathematics of Université Pierre et Marie Curie (Paris-6). After receiving a Ph.D. from this university, he held a position at the École des Mines de Paris in the geostatistics department, then was professor at Rennes and École Polytechnique (Paris), and then at Paris-6 since 1983. His interests are generally in stochastic processes and stochastic integration, with a number of applications to mathematical finance and to statistics of stochastic processes. Recently, he also worked on high-frequency statistics, with special emphasis on financial applications.

COURSE TAUGHT

- ECO 575: Topics in Financial Economics

WILLIAM JANEWAY is Senior Advisor at Warburg Pincus. He joined Warburg Pincus in 1988 and was responsible for building the information technology investment practice. Previously, he was executive vice president and director at Eberstadt Fleming. Dr. Janeway is a director of Magnet Systems, Nuance Communications, O'Reilly Media, and a member of the Board of Managers of Roubini Global Economics.

Dr. Janeway is Chairman of the Board of Trustees of Cambridge in America, University of Cambridge and a Member of the Board of Managers of the Cambridge Endowment for Research in Finance (CERF). Dr. Janeway is a member of the board of directors of the Social Science Research Council and the board of governors of the Institute for New Economic Thinking and of the Advisory Boards of the Princeton Bendheim Center for Finance and the MIT-Sloan Finance Group. He is the author of *Doing Capitalism in the Innovation Economy: Markets Speculation and the State*, to be published by Cambridge University Press in October 2012.

Dr. Janeway received his doctorate in economics from Cambridge University where he was a Marshall Scholar. He was valedictorian of the class of 1965 at Princeton University.

COURSE TAUGHT

- ECO 493/FIN 593 – Financial Crises

O. GRIFFITH SEXTON was, until 1995, a managing director of Morgan Stanley and director of the corporate restructuring group within the firm's financing and advisory services department. Sexton graduated from Princeton in 1965. Following six years of service as an aviator in the U.S. Navy, he attended the Stanford Graduate School of Business, where he received his MBA. He joined Morgan Stanley in 1973 and spent his career there involved in a broad range of the firm's financing and advisory activities. In 1995, he became an active advisory director of Morgan Stanley. Also in 1995, he became an adjunct professor at Columbia University's Graduate School of Business, teaching two courses in the subject of corporate finance. In 2000, he became a visiting lecturer at Princeton. Sexton is a member of the board of directors of Morgan Stanley, and he is a director of Investor AB, a publicly traded company based in Stockholm, Sweden, and of one other privately held company.

COURSE TAUGHT

- ECO 464/FIN 519: Corporate Restructuring

STAFF

WENDELL COLLINS is the director of corporate relations for the Bendheim Center for Finance. Before joining the center in 2007, she worked in Princeton's Office of Development and Office of the Dean for Research. Before joining the University, Collins spent 11 years at Merrill Lynch in marketing, training, and business development, as well as serving in various management roles at Dow Jones and the Associated Press. Her responsibilities with the center include i) managing the Corporate Affiliates Program, which seeks support for the center from firms interested in finance and which works with corporations to build partnerships investigating financial topics of mutual interest, ii) advising undergraduates and Master in Finance candidates on career issues, including the development of applied finance programs and interview enhancement techniques for the Master in Finance program, iii) facilitating the recruiting activities of corporate affiliates by coordinating on-campus recruiting presentations and organization of events at the center, and iv) promoting and organizing special events involving alumni and advisory council members. She received her undergraduate degree in journalism and political science from the University of North Carolina-Chapel Hill.

ELLEN DIPIPPA is the Academic Administrator for the Bendheim Center for Finance. Before joining Princeton in 2008, Ellen held several administrative positions in both the private and academic sector, including the Economics Graduate Administrator at Harvard University and Economic Recruiter at the Brattle Group in Washington, DC. She earned her Bachelor of Music in Education from Youngstown State University, Ohio.

KAREN NEUKIRCHEN is the Center Administrator for the Bendheim Center for Finance. She joined the Princeton Economics Department in 1986 and has been with Bendheim Center since 2000. She was previously employed by Mobil Oil Corporation, Hazeltine Corporation, and FMC. She graduated from Rider University in 2006 with a degree in Business Administration.

JESSICA H. B. O'LEARY is the Center Manager for the Bendheim Center for Finance. In that role she oversees the day to day functions of the Bendheim Center for Finance including its facility in the Old Dial Lodge. She has worked at Princeton for 14 years, including three years in Molecular Biology and nine years in Mechanical & Aerospace Engineering as the Graduate Program Administrator. She is a graduate of Rider University with a BA in business management.



PH.D. STUDENTS

GRADUATING 2011-12



Ph.D. students in the Bendheim Center for Finance are admitted through the Department of Economics, the Department of Operations Research and Financial Engineering, or the Program in Applied and Computational Mathematics. Ten Ph.D. students graduated in 2011.

JOSÉ AZAR received his Ph.D. from the department of economics. His thesis was titled “A New Look at Oligopoly: Implicit Collusion through Portfolio Diversification.” He has accepted a senior associate position with Charles River Associates.

DONG BEOM CHOI received his Ph.D. from the department of economics. His thesis was titled “Essays in Financial Economics.” He accepted a position as economist, financial intermediation function with the New York Federal Reserve Bank.

HYUN SOO CHOI received his Ph.D. from the department of economics. His thesis was titled “Three Essays on Real Estate Finance.” He accepted an assistant professor of finance position with the Singapore Management University.

WEIJIE GU received his Ph.D. from the operations research and financial engineering department. His thesis was titled “Estimating False Discovery Proportion under Covariance Dependence.” He accepted an associate position with Barclays Capital.

ANDREW ROBINSON received his Ph.D. from the department of economics. His thesis was titled “Essays on Financial Liquidity and Risk.” He accepted an associate position with BlackRock Scientific.

MARTIN SCHMALZ received his Ph.D. from the department of economics. His thesis was titled “Three Essays in Financial Economics.” He accepted an assistant professor of finance position at the University of Michigan, Ross School of Business.

WARREN SCOTT received his Ph.D. from the operations research and financial engineering department. His thesis is titled “Energy Storage Application of the Knowledge Gradient for Calibrating Continuous Parameters, Approximate Policy Iteration Using Bellman Error Minimization with Instrumental Variables, Covariance Matrix Estimation Using an Error-in-Variables Factor Model.” He accepted a post doc research position with the Lawrence Livermore National Laboratory.

XIN TONG received his Ph.D. from the operations research and financial engineering department. His thesis is titled “Learning with Asymmetry, High Dimension and Social Networks.” He has accepted a statistics instructor position with MIT, department of mathematics.

MING YANG received his Ph.D. from the department of economics. His thesis is titled “Flexible Information Acquisition in Strategic Situations.” He has accepted an assistant professor in finance position at Fuqua School of Business, Duke University.

SERGEY ZHUK received his Ph.D. from the department of economics. His thesis is titled “Three Essays in Financial Economics.” He accepted an assistant professor in finance position at the University of Vienna.



2011-12

SEMINARS AND CONFERENCES



CIVITAS FOUNDATION FINANCE SEMINARS

Each week, Bendheim Center for Finance organizes a seminar in which academic experts are invited to present their latest research to the faculty and graduate students of the center. The seminar usually meets on Wednesdays, 2:50–4 p.m., in the Bendheim Center for Finance classroom.

FALL 2011

September 21

José Azar, Princeton University
“Diversification, Shareholder Value Maximization, and Competition: A Trilemma”

October 5

Jerome Powell (Advisory Board, Bendheim Center for Finance)
“Dodd Frank and Too Big to Fail”

October 11

Sergey Zhuk, Princeton University (special day and time: Tuesday, 12:20-1:30 p.m.)
“Bubbles and Reinvestment”

October 12

Hyun Soo Choi, Princeton University
“The Impact of Anti-Predatory Lending Laws on Mortgage Volume”

October 18

Martin Schmalz (special day and time: Tuesday, 1:00-2:10 p.m.)
Topic: “Managing Human Capital Risk: Identifying the Hidden Balance Sheet”

October 19

Dong Beom Choi, Princeton University
Topic: “Heterogeneity and Stability: Bolster the Strong Not the Weak”

October 25

Ming Yang, (special day and time: Tuesday, 12:20-1:30 p.m.)
“Optimality of Securitized Debt with Endogenous and Flexible Information Acquisition”

November 16

Francis Longstaff, UCLA
“Systemic Sovereign Credit Risk: Lessons from the U.S. and Europe”

November 30

Leonid Kogan, MIT
“Investment-specific Shocks, Firm Characteristics, and the Cross-section of Returns: (with Dimitris Papanikolaou)”

December 7

Marianne Bertrand, University of Chicago (joint with Labor Seminar)
“Trickle-Down Consumption”

December 14

Antoinette Schoar, MIT
“Credit Supply and House Prices: Evidence from Mortgage Market Segmentation” (with Felipe Severino)

SPRING 2012

February 29

Or Shachar, New York University
“Exposing the Exposed: Intermediation Capacity in the Credit Default Swap Market”

March 1

Thomas Mariotti, IDEI, Toulouse School of Economics (Joint with Microeconomics Theory)
“Nonexclusive Competition under Adverse Selection”

March 7

Thomas Philippon, New York University
“Has the U.S. Finance Industry Become Less Efficient? On the Theory and Measurement of Financial Intermediation”

March 28

Nicolae Garleanu (University of California—Berkeley)
“Young, Old, Conservative, and Bold: The Implications of Heterogeneity and Finite Lives for Asset Pricing”

April 4

David Hirshleifer (University of California – Irvine)
“Self-Enhancing Transmission Bias and Active Investing”

April 11

Monika Piazzesi (Stanford University)
“The Allocation of Interest Rate Risk and the Financial Sector”

April 25

Lionel Martellini (EDHEC), visiting Princeton
“Slicing and Dicing Investor Welfare Across and Within Asset Classes”

May 2

Hanno Lustig (University of California, Los Angeles)
“Countercyclical Currency Risk Premia” (with Nikolai Roussanov and Adrien Verdelhan)

FINANCE PH.D. STUDENT WORKSHOP

Each week, the Bendheim Center for Finance organizes a seminar for its Ph.D. students and faculty in which preliminary research ideas are presented internally. The seminar usually meets on Tuesdays, 12:30–1:30 p.m., in the Bendheim Center for Finance library.

FALL 2011

September 27

Dong Beom Choi

“Contagious Bank Runs: Which Bank to be Recapitalized?”

Gonzalo Cisternas

“A Continuous-time Model of Career Concerns and Human Capital Accumulation”

October 4

Jean-Noel Barrot, HEC Paris

“Investor Horizon and Limits of Arbitrage: Evidence from Private Equity Funds”

October 11

Sergey Zhuk

“Bubbles and Reinvestment”

October 18

Martin Schmalz

“Financing Human and Organizational Capital: Evidence from Unionization Elections”

October 25

Ming Yang

“Optimality of Securitized Debt with Endogenous and Flexible Information Acquisition”

November 8

Jakub Jurek

“The Cost of Capital for Alternative Investments”

November 15

Yi Li

“The Role of Reputation on PE Fund Size and Performance”

José Azar

“Changes in the Opportunity Cost of Cash: A Solution to the Corporate Cash Hoarding Puzzle” (with Jean-Francois Kagy)

November 22

Constantinos Kalfarentzos

“Endogenous Fund Flows and Managerial Tournament Behavior under High Watermark Contracts” (with Filippos Papanikolaou)

John Kim

“Welfare Economics with Heterogeneous Beliefs”

November 29

Dacheng Xiu

“A Tale of Two Option Markets: State-price Densities Implied from S&P 500 and VIX Option Prices”

Olivier Darmouni

“Can Contracting Prevent Traders from Neglecting Risks?”

SPRING 2012

February 7

Michael Hasler
“Portfolio Choice and Costly Dynamic Information Acquisition”

April 10

Zhenyu Gao
“Real Estate Investors and the Boom and Bust of the U.S. Housing Market”

José Azar

“Common Shareholders and Interlocking Directorships: The Relation between Two Corporate Networks”

February 21

Yi Li
“What Drives Persistence in Private Equity Fund Performance?”

April 17

Ji Huang
“Financial Intermediation and Off-balance Sheet Financing”

March 6

Weicheng Lian
“Why Do Households Trade Risky Mortgages? A New Perspective from Risk Sharing”

April 24

Wei Cui
“Financial Friction and Selling Friction”

Kevin Webster

“A Belief Driven Order Book Model”

March 13

Vicky Liu
“Trade Credit in the Absence of Immediate Credit Constraint”

May 15

Per Mykland (University of Chicago)
“Between Data Cleaning and Inference: Pre-averaging and Other Robust Estimates of the Efficient Price”
(with Lan Zhang)

March 27

Rohit Lamba
“Dynamic Market for Lemons”

2011 PRINCETON LECTURES IN FINANCE

Each year, the Bendheim Center invites a leading figure in the field of finance to deliver a set of lectures at Princeton on a topic of major significance to researchers and professionals. The published lectures will appear as a Princeton University Press book. The lectures are open to the public and held in the BCF classroom.

Robert C. Merton of MIT gave the 2011 Princeton Lectures in Finance on September 27-29, 2011, on the topic of “Observations on the Future of Financial Innovation and Engineering: Addressing Financial Challenges of the Economy”

Lecture 1:

A Next-Generation Solution for Funding Retirement: A Case Study in Design and Implementation of Financial Innovation

Lecture 2:

Financial Innovation in Residential Housing Finance: Funding, Risk Transfer, and Efficient Asset Use.

Lecture 3:

Financial Innovation in Government’s role in the Financial System: Identifying Systemic Risks, Oversight, Stabilization, Market Completion, and Social Security.

PRINCETON INITIATIVE: MACRO, MONEY AND FINANCE

September 9-10, 2011, Princeton University
Taylor Auditorium, Frick Chemistry Laboratory

Friday, September 7, 2012

Liquidity Concepts: Amplification, Persistence and Asymmetry
Markus Brunnermeier

Heterogeneous Agent Models with Financial Frictions: A Continuous Time Approach
Yuliy Sannikov

Financial Frictions: Empirical Facts
David Sraer

Saturday, September 8, 2012

Demand for Liquid Assets
Markus Brunnermeier

The I Theory of Money
Markus Brunnermeier

Productivity Losses from Financial Frictions
Ben Moll

Rollover Risk, Credit Risk, and Debt Runs
Wei Xiong

Bubbles and Imbalances
Markus Brunnermeier

Sunday, September 9, 2012

The Fiscal Theory of the Price Level
Chris Sims

International Macro: Capital Flows and Asset Prices)
Nobuhiro Kiyotaki

Global Liquidity
Hyun Shin

SEVENTH CAMBRIDGE-PRINCETON CONFERENCE

This conference, the sixth in the series, brought together faculty from Princeton's Bendheim Center for Finance and the Cambridge Endowment for Research in Finance, thanks to generous support from William H. Janeway '65.

The conference took place on September 16-17, 2011, at the Bendheim Center for Finance.

Friday September 16, 2011

Session Chair: Bill Janeway
Mike Tehranchi, "An Equilibrium Market Model with Learning"
Discussant: René Carmona

Wei Xiong (with Ing-haw Cheng and Andrei Kirilenko), "Endogenous Risk and the Seismology of Commodity Futures Markets"
Discussant: Raghu Rau

Session Chair: David Sraer
Chris Rogers (with Katsumasa Nishide), "Market Selection: Hungry Misers and Happy Bankrupts"
Discussant: Tobias Adrian
John Mulvey, "Advances in Portfolio Allocation Models: Lessons from the Past Decade"
Discussant: Elena Medova

Session Chair: Andrew Harvey
Hashem Pesaran (with Takashi Yamagata), "Testing CAPM with a Large Number of Assets"
Discussant: Yuan Liao

Birgit Rudloff (with Andreas Loehne), "An Algorithm for Calculating the Set of Superhedging Portfolios and Strategies in Markets with Transaction Costs"
Discussant: Chris Rogers
Session Chair: Hyun Song Shin
Amir Amel-Zadeh (with Baruch Lev and Geoff Meeks), "The Role of Management Forecasts During Mergers and Acquisitions"
Discussant: Darius Palia

Patrick Cheridito (with Ulrich Horst, Michael Kupper and Traian Adrian Pirvu), "Equilibrium Pricing in Incomplete Markets Under Translation Invariant Preferences"
Discussant: Mike Tehranchi
Session Chair: Ronnie Sircar
Raghu Rau (with Yan-Leung Cheung and Aris Strouraitis), "Which Firms Benefit From Bribes, and How Much? Evidence From Corruption Cases Worldwide"
Discussant: Simi Kedia

Jianqing Fan (with Yuan Liao and Martina Mincheva), "High Dimensional Covariance Matrix Estimation in Approximate Factor Models"
Discussant: Vanessa Smith

Session Chair: John Eatwell
Michael Dempster (with Elena Medova and J. Roberts), "Regulating Complex Derivatives: Can the Opaque Be Made Transparent?"
Discussant: Markus Brunnermeier

Yacine Ait-Sahalia, "The Leverage Effect Puzzle: Disentangling Sources of Bias at High Frequency"
Discussants: Andrew Harvey

Saturday September 17, 2011

Session Chair: Andrew Harvey
Hashem Pesaran (with Takashi Yamagata), "Testing CAPM with a Large Number of Assets"
Discussant: Yuan Liao
Birgit Rudloff (with Andreas Loehne), "An Algorithm for Calculating the Set of Superhedging Portfolios and Strategies in Markets with Transaction Costs"
Discussant: Chris Rogers

Session Chair: Hyun Song Shin
Amir Amel-Zadeh (with Baruch Lev and Geoff Meeks), "The Role of Management Forecasts During Mergers and Acquisitions"
Discussant: Darius Palia
Patrick Cheridito (with Ulrich Horst, Michael Kupper and Traian Adrian Pirvu), "Equilibrium Pricing in Incomplete Markets Under Translation Invariant Preferences"
Discussant: Mike Tehranchi

Session Chair: Ronnie Sircar
Raghu Rau (with Yan-Leung Cheung and Aris Strouraitis), "Which Firms Benefit From Bribes, and How Much? Evidence From Corruption Cases Worldwide"
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Michael Dempster (with Elena Medova and J. Roberts), "Regulating Complex Derivatives: Can the Opaque Be Made Transparent?"
Discussant: Markus Brunnermeier
Yacine Ait-Sahalia, "The Leverage Effect Puzzle: Disentangling Sources of Bias at High Frequency"
Discussants: Andrew Harvey

SECOND PRINCETON UNIVERSITY HIGH FREQUENCY AND QUANTITATIVE TRADING CONFERENCE

This conference was organized by Princeton University Graduate Students from Operations Research and Financial Engineering, Economics, Mathematics and Computer Science on March 31, 2012 at the Friend Center.

Featured Speakers:

Ms. Irene Aldridge, Managing Partner, Able Alpha

Dr. Robert Almgren, Co-founder and Head of Research, Quantitative Brokers

Mr. Ugur Arslan, Founder and Managing Member, Aientech

Mr. Matthew Andresen, Co-founder and CEO, Headlands Technologies

Mr. Steve Crutchfield, CEO, NYSE Amex Options

Dr. Matt Cushman, Senior Managing Director, Citadel

Mr. Daniel Kenna, Managing Director, Morgan Stanley

Dr. AJ Lindeman, Managing Director, Benchmark Solutions

Mr. Peter Nabicht, Executive Vice President, Allston Trading

Dr. Daniel Nehren, Global Head of Linear QR, JPMorgan Chase

Dr. Alex Reyfman, Director, Barclays Capital

Mr. Ryan Sheftel, MD, Global Head of Rates Electronic Trading, Credit Suisse

Dr. Michael Sotiropoulos, MD, Global Head of Algorithmic Trading Research, Bank of America Merrill Lynch

Mr. Shane Swanson, Partner and General Counsel, Eladian Partners

Featured Panelists:

Ms. Unson Allen, Head of Recruitment for the Electronic Trading Group, Knight Capital Group

Mr. Eric Greiner, Director, Quantitative Prime Brokerage, Barclays Capital

Dr. Ann Guo, Head of Campus Recruiting, GETCO LLC

Mr. Brennan Hughes, Partner, World Wide Financial Industry Recruiting Services

Mr. Trent Krupp, Partner, Constitution Group LLP

Ms. Katy Lederer, Founder and Managing Partner, Intelligent Alternatives LLC

Mr. Bill Lyon, CTO, Prediction Company

Mr. Ryan Sheftel, Head of Electronic Market Making, Credit Suisse

Mr. Eliot Smith, Senior Consultant, Quantitative and Electronic Trading, NJF Search

Dr. Michael Sotiropoulos, MD, Global Head of Algorithmic Trading Research, Bank of America Merrill Lynch

Inaugural Julis-Rabinowitz Center Conference

“European Crisis: Historical Parallels and Economic Lessons”

April 19-20, 2012, Princeton University

Thursday, April 19, 2012

Welcome – Markus Brunnermeier

Chris Sims, “Gaps in the Institutions of the Euro Area”

Ricardo Reis, Columbia University
“Can a Central Bank with Negative Capital Still Be effective?”

Harold James, “Lessons for the Euro from History”
Chair: Hyun Shin, Princeton University

Luis Garicano, London School of Economics
“The Spanish Variant of the Dutch Disease”

Tano Santos, Columbia University
“Domestic Banking in a Monetary Union: The Spanish Case”

Chair: David Thesmar, HEC Paris
Keynote Speech – Paul Krugman, “Europe’s Two Depressions”

Friday, April 20, 2012

Hans-Werner Sinn, University of Munich
“The Euro Crisis”

Chair: Mark Aguilar
Keynote Address - Benoit Coeure, European Central Bank
“Risk Sharing in EMU: before, during and after the Crisis”

Policy Panel - “Current Events in Europe”
Jean-Pierre Landau, Princeton University
“Internal Imbalances in the Eurozone”

Ashoka Mody, IMF
“Banks in the Eurozone and Capital Flows’ Reversal”

Jacob Goldfield
“Did the Three Year LTROs Really Cause the Yield Decline?”

Christian Kastrop, German Ministry of Finance
“Eurozone: What Strategy Against Failure?”

Franklin Allen, University of Pennsylvania
“How Will the Eurozone Emerge from the Crisis?”

EDHEC-Princeton Institutional Money Management Conference

April 27, 2012

Princeton Club of New York

Paradigm shifts in the investment industry: from alpha to beta Management—Lionel Martellini

New frontiers in equity investments: Equity portfolio construction using better constraints—Raman Uppal

New frontiers in fixed-income investments: New forms of fixed-income benchmarks for performance-seeking and liability-hedging portfolios—Frank J. Fabozzi

New frontiers in commodity investments: From static long-only to dynamic long-short investment strategies—John Mulvey

Hedging versus insurance: Long-term investing with short-term constraints—Lionel Martellini

Asset allocation decisions in the presence of regime Switches—René Garcia

Portfolio selection with alternatives—Jakub Jurek

Asset allocation and risk management in a world where all asset classes can fail together—Yacine Aït-Sahalia

7TH OXFORD-PRINCETON WORKSHOP ON FINANCIAL MATHEMATICS & STOCHASTIC ANALYSIS

April 27-28, 2012 Princeton University, Sherrerd Hall

April 27

Mete Soner (ETH Zurich)
Recombinant Tree Approximation of Stochastic Volatility Models

Terry Lyons
The Expected Signature of a Stopped Brownian Motion

Dmitry Kramkov
Integral Representation of Martingales and Endogenous Completeness of Financial Models

Xunyu Zhou
Arrow-Debreu Equilibria for Rank-Dependent Utilities

Patrick Cheridito
Systemic Risk Management

Shige Peng
Risk Measures and Accumulated Model Uncertainty

Michael Coulon
Spread Option Pricing in Electricity Markets

Hyun Shin
Which Financial Frictions? Parsing the Evidence from the Financial Crisis of 2007-9

Gechun Liang
Long Time Optimal Portfolios: An Ergodic Quadratic BSDE Approach

Greg Gyurko
Monte Carlo Methods via a Dual Approach for Some Discrete Time Stochastic Control Problems

April 28

Ronnie Sircar
Stochastic Volatility Portfolio Asymptotics

Christoph Reisinger
Piecewise-Constant Control Approximation to Multi-Dimensional HJB Equations

Harrison Hong
Speculative Betas

Johannes Ruf
Hedging Options On Exploding Exchange Rates

Jeremy Large
Markov Perfect Bayesian Equilibrium via Ergodicity

Nicolas Victoir, (JP Morgan Chase)
A Local Volatility Model in Rates

Sergey Nadtochiy
Robust Static Hedging of Barrier Options with Beliefs

Matt Lorig
Variance Swaps on Lévy Subordinated Diffusion Processes

Mike Monoyios
Malliavin Calculus Method for Asymptotic Expansions of Indifference Prices

Vladimir Cherny
Portfolio Optimization Under Nonlinear Drawdown Constraint in a General Semimartingale Market

Zachary Feinstein
Time Consistency in Markets with Transaction Costs

Zhenyu Gao
Real Estate Investors and the Boom and Bust of the US Housing Market

Sigrid Kallblad
Forward Investment and Consumption Criteria

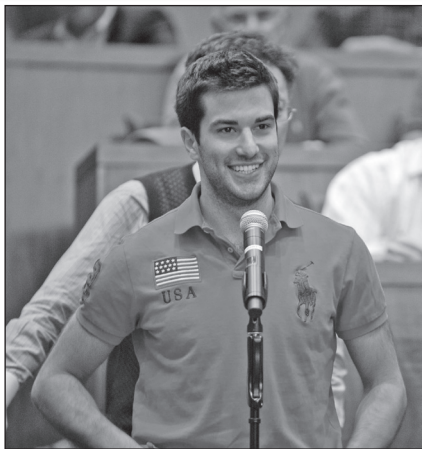
Martina Mincheva
Large Covariance Estimation by Thresholding Principal Orthogonal Complements

Oleskii Mostovyi
Necessary & Sufficient Conditions in the Problem of Optimal Investment with Intermediate Consumption

Kevin Webster
A Belief Driven Order Book Model

Rasmus Wissmann
A PCA-based Approach for High-Dimensional PDEs in Derivative Pricing

UNDERGRADUATE CERTIFICATE IN FINANCE



In 1999, the Bendheim Center for Finance started offering an Undergraduate Certificate in Finance (UCF) to Princeton undergraduates. The certificate program in finance has four major components:

- First, there are prerequisites in mathematics, economics, and probability and statistics, as necessary for the study of finance at a sophisticated level. These prerequisite courses are to be completed during the freshman and sophomore years. Students then apply at the end of their sophomore year.
- Second, two required core courses during the junior year, provide an integrated overview and background in modern finance.
- Third, students are required to take three elective courses.
- Fourth, a significant piece of independent work must relate to issues or methods of finance. This takes the form of a senior thesis, or for non-ECO or ORF majors only, a separate, shorter piece of independent work if there is no possibility of finance content in their senior thesis or junior paper.

Now in its 15th year, the Undergraduate Certificate in Finance continues to do extremely well. We currently have 104 students in the Class of 2013 and enrolled 100 juniors from the Class of 2014. This will bring our total number of undergraduate students in the program (juniors and seniors) to 204 for the coming academic year. This number is subject to change, as we often have students who apply and are admitted mid-year. Students earning the certificate are drawn from a wide cross-section of departments on campus, testifying both to the interdisciplinary flavor of the program and its wide appeal. The breakdown by major is given in the following two tables.

CLASS OF 2012

Total number of certificates awarded: 71 (17 to women or 24 percent)

Major	Number of Students
Chemical Engineering	3
Computer Science	3
Economics	36
Electrical Engineering	2
English	1
Geosciences	1
History	1
Mathematics	2
Mechanical and Aeronautical Engineering	1
Operations Research and Financial Engineering	16
Philosophy	1
Politics	1
Psychology	1
Woodrow Wilson School	2

CLASS OF 2013

Total expected number of certificates to be awarded: 104 (31 to women, or 30 percent)

Major	Number of Students
Anthropology	1
Art	1
Chemical and Biological Engineering	2
Chemistry	1
Computer Science	8
Economics	44
Electrical Engineering	3
Mathematics	4
Mechanical and Aerospace Engineering	3
Molecular Biology	2
Near Eastern Studies	1
Operations Research and Financial Engineering	21
Philosophy	2
Physics	3
Politics	3
Psychology	1
Woodrow Wilson School	4

CLASS OF 2014

Total expected number of certificates to be awarded: 100 (28 to women, or 28 percent)

Major	Number of Students
Astrophysical Sciences	1
Chemical and Biological Engineering	4
Chemical and Electrical Engineering	1
Chemistry	2
Comparative Literature	1
Computer Science	10
Economics	40
Electrical Engineering	1
Mathematics	4
Mechanical and Aeronautical Engineering	1
Operations Research and Financial Engineering	24
Philosophy	1
Physics	2
Politics	1
Psychology	2
Woodrow Wilson School	5

DEPARTMENTAL PRIZES, HONORS, AND ATHLETIC AWARDS TO UCF 2011 STUDENTS

Undergraduate Certificate in Finance (UCF) students continue to receive a high proportion of the prizes awarded by their respective departments. This year, UCF students received a combination of departmental prizes and honors; 9 UCF seniors received 12 departmental prizes (two receiving two prizes) and one UCF junior received two departmental prizes; 15 UCF students were elected to Phi Beta Kappa Society; 22 UCF students were elected to membership in Society of Sigma Xi; 13 UCF students were elected to membership in Tau Beta Pi National Engineering Society; One senior (the only one in the Class of 2012) and 3 UCF juniors received the Shapiro Prize for Academic Excellence, 2010-2011; and 45 UCF students received academic honors (11 cum laude, 16 magna cum laude, and 18 summa cum laude). Thirty-two of our UCF students earned certificates in proficiency from 13 other departments or programs, 20 students earning one additional certificate, 11 earning 2 additional certificates and 1 earning three additional certificates.

15 UCF STUDENTS RECEIVED 15 DEPARTMENTAL PRIZES AND HONORS

- | | |
|---|---|
| Daniel Xiaochen Wang (MAT), <i>Birch Family Prize (Bendheim Center for Finance)</i> | Ilina Mitra (ELE), <i>Peter Mark Prize (Electrical Engineering)</i> |
| Huija Wu (ECO), <i>Kathleen Traynor '83 Senior Research Prize (Bendheim Center for Finance)</i> | Ilina Mitra (ELE), <i>Lore von Jaskowsky Memorial Prize (School of Engineering and Applied Science)</i> |
| Yang May Li (CBE), <i>Richard K. Toner Thermodynamics Prize (Chemical and Biological Engineering)</i> | Randi Louise Vogt (PSY), <i>Francis LeMoyné Page Dance Award (Lewis Center for the Arts)</i> |
| Julia Yun Chien Yan (CHM), <i>William Foster Memorial Prize in Chemistry (Chemistry)</i> | Steven Hsue Chen (ORF), <i>Ahmet S. Cakmak Prize (Operations Research and Financial Engineering)</i> |
| Xiang Ding '13 (ECO) and Taman Narayan '13 (ECO), <i>Junior Orator Medal (Debating and Public Speaking)</i> | Bryton Ja-Shing Shang (ORF) and Benjamin Jun Yao (ORF), <i>Dr. Frank S. Castellana Prize in Operations Research and Financial Engineering (Operations Research and Financial Engineering)</i> |
| James Jiajun Luo (ECO), <i>Wolf Balleisen Memorial Prize (Economics)</i> | Ovidiu Alexandru Cotlet '13 (PHY), <i>Kusaka Memorial Prize in Physics (Physics)</i> |
| Huija Wu (ECO), <i>Burton G. Malkiel '64 Senior Thesis Prize in Finance (Economics)</i> | |
| James Jiajun Luo (ECO), <i>Halbert White '72 Prize in Economics (Economics)</i> | |
| Jonathan Richu Lin (ECO) and Matthew Ryan Wender (ECO), <i>Daniel L. Rubinfeld '67 Prize in Empirical Economics (ECO)</i> | |

1 UCF STUDENTS RECEIVED ATHLETIC AWARD

- Michael John Monovoukas (WWS), *The War Memorial Trophy (Swimming)*

15 UCF STUDENTS WERE ELECTED TO PHI BETA KAPPA SOCIETY

Ahsan Barkatullah (ECO)	James Luo (ECO)
Ka Wai Chan (ECO)	Ilina Mitra (ELE)
Steven Chen (ORF)	Harris Perlman (ORF)
Amelia Chivetta (ORF)	Daniel Xiaochen Wang (MAT)
Daniel Condronimpuno (ORF)	Matthew Wender (ECO)
Ethan Goldstein (COS)	Huijia Wu (ECO)
Yu-Sung Huang (ORF)	Benjamin Yao (ORF)
Jonathan Lin (ECO)	

22 UCF STUDENTS WERE ELECTED TO MEMBERSHIP IN SOCIETY OF SIGMA XI

Steven Chen (ORF)	Lucy Lin (COS)
Amelia Chivetta (ORF)	Juan Mazzini (ORF)
Daniel Condronimpuno (ORF)	Ilina Mitra (ELE)
Jack Gang (ORF)	Harris Perlman (ORF)
Anish Goel (ORF)	Bryton Shang (ORF)
Ethan Goldstein (COS)	Russell Slater (CHM)
Sida Huang (ORF)	S Duane Stroebel III (ORF)
Yu-Sung Huang (ORF)	Randi Vogt (PSY)
Andrew Kaier (COS)	Robert Weylandt Jr. (ECO)
Shafiq Kashmiri (ORF)	Chenyu Xu (ORF)
Yang May Li (CBE)	Benjamin Yao (ORF)

13 UCF STUDENTS WERE ELECTED TO MEMBERSHIP IN TAU BETA PI NATIONAL ENGINEERING HONOR SOCIETY

Steven Chen (ORF)	Ilina Mitra (ELE)
Amelia Chivetta (ORF)	Bill Pang (ELE)
Daniel Condronimpuno (ORF)	Bryton Shang (ORF)
Jamie Ding (MAE)	Robert Weylandt Jr. (ECO)
Ethan Goldstein (COS)	Chenyu Xu (ORF)
Yu-Sung Huang (ORF)	Benjamin Yao (ORF)
Lucy Lin (COS)	

1 UCF SENIOR RECEIVED THE SHAPIRO PRIZE FOR ACADEMIC EXCELLENCE 2010-2011

Bryton Shang (ORF)

3 UCF JUNIOR STUDENTS RECEIVED THE SHAPIRO PRIZE FOR ACADEMIC EXCELLENCE 2010-2011

William Minshew (ELE)
Taman Narayan (ECO)
Brian Tubergen (COS)

SENIOR THESES AND INDEPENDENT PROJECTS OF THE CLASS OF 2012

This table shows the senior thesis and independent project titles from the UCF Class of 2012.

Timothy Abbott	ECO	Can Algorithmic Trading Strategies Outperform Benchmark Indices? An Empirical Test of the Efficient Market Hypothesis
Ahsan Barkatullah	ECO	Credit Rating Agencies and Ratings Inflation
Kevin Baumler	ECO	Deconstructing the Wage Premium in the United States Investment Banking Industry
Ka Wai Chan	ECO	Macroeconomics of the Medium Run
Erica Che	ECO	Sustainability Sentiments: Evidence from Constituent Changes to the FTSE4Good
Steven Chen	ORF	Natural Gas Power Generation in the Presence of Wind: A Mixed Integer Linear Programming Approach to the Hour-Ahead Unit Commitment Problem
Yanran Chen	WWS	Politics over Property: Effects of the Housing Market on Presidential Approval and Public Opinion
Vijay Chetty	ECO	How Yesterday's Merchants of Venice Led to Today's Margins and Volatility: An Intermediation-Based Comparative Approach to the Leverage Cycle
Amelia Chivetta	ORF	Analyzing the Regional Greenhouse Gas Initiative: A Model of Carbon Dioxide Emissions in New Jersey
Daniel Condronimpuno	ORF	Leading Industries: Evidence from Emerging Markets and Application of Regime-Switching Investment Models
Chance Cross	ECO	A Ratings Roadblock: How the Issuer Pay Model Left Rating Agencies Unable to Properly Rate Debt
Jamie Ding	MAE	"Heterogeneous Beliefs, Short Sales Constraints and German Equity Returns Around Earnings Announcement Dates"
Maxwell Frost	ECO	An Empirical Analysis of the Liquidity and Tax Disadvantage of Tips and Their Effect on Treasury Borrowing Costs
Jack Gang	ORF	Applications of Recombining Stochastic Volatility Trees
Anish Goel	ORF	Too Big to Fail: A Market Study of the Banking Consolidation Phenomenon on Wall Street
Ethan Goldstein	COS	Playing in the Markets: A Reinforcement Learning Approach to Automated Market Making
Tiao Guan	ECO	Price Divergence Between Dual-listed A and H-shares: The Roles of Speculation, Market Liquidity, and Arbitrage
Ji Un Han	ECO	A Test of the Expectations Hypothesis of the Term Structure of Sovereign Credit Default Swaps: Is Sovereign Risk Premium Time-Varying?
Daniel Hong	PHI	An Examination of Firm Value and Leverage Under the Modigliani-Miller Propositions and Agency Theory
Nan Hu	ECO	Are You in or Are You Out: The Effect of Social Interaction on Household Market Participation in a Post-Crash Market
Quzhao Hu	ECO	Post-Acquisition Anomaly Revisited
Sida Huang	ORF	Future Prospects of OPEC and the Oil Market
Yu-Sung Huang	ORF	Dynamic Pricing of Electric Vehicle Charging Locations: An Application of Optimal Learning

Andrew Kaier	COS	Weather to Buy or Sell: How Sunshine Changes Wall Street's Performance
Kenichi Kaneko	ECO	Battle-Ready Behavior: Market Volatility and Corporate Finance Through the Financial Crisis
Shafiq Kashmiri	ORF	Online Portfolio Selection in U.S. and Emerging Markets Equities
Tyler King	ECO	Passenger Reaction Aboard a Sinking Ship: Market Response to the Events of the European Sovereign Debt Crisis
Laiyin Li	ECO	"Spillovers" from the Environment to Equities: Investor Sentiment from Oil Spills and U.S. Stock Performance
Yang Li	CHE	The Impact of the Global Financial Crisis on Momentum Profits in the Commodity Futures Market
Jonathan Lin	ECO	Internal Migration in the Great Recession: Trends, Determinants, and Returns
Lucy Lin	COS	Modeling Cascading Failures in Financial Networks
James Luo	ECO	Asset Pricing Implications of Information Asymmetries in Large Investor Networks
Trung Luong	ECO	Agricultural Commodity Futures: Evidence on Seasonality and Forecast Power
Rachel Marx	ECO	The Efficiency of the Chinese Stock Markets: An Empirical Analysis of Pricing Anomalies in the Context of Disagreement Models
Jonathan Mattern	ECO	The Impact of High-Frequency Trading on Market Quality in Systematically Volatile Equity Markets
Juan Mazzini	ORF	Adding the Missing Player: The Effect of Including Consumers in the Oil Futures Market
Alexander Meyer	ENG	Online Payment Systems for the News Industry
Ilina Mitra	EEL	Do the Size Effect and Price-to-Book Effect Exist in India
Michael Monovoukas	WWS	Sovereign Debt: Levers Long Enough to Move the Earth
Xiaolei Mou	ECO	Rising Dragon and Crouching Peacock: A Comparative Event Study of Shareholder Value Effects of Cross-Border Acquisitions by China and India Firms & Limitations of Event Study Method
Catherine O'Rourke	HIS	The House that Wald Built: An Examination of the Holistic Approach to Healthcare at Lillian D. Wald's Henry Street Settlement
Bill Pang	ELE	Building an Algorithmic Trading Platform & Developing Automated Trading Algorithms
Tianyi Peng	ECO	The Application of a Four-Factor Asset-Pricing Model in the Chinese Stock Market
Harris Perlman	ORF	Imitating Masters: On Replicating the Investment Returns of Fine Art
Atanas Petkov	ECO	Understanding Catastrophe Bond Pricing: Empirical and Theoretical Approaches
Kunal Poddar	ECO	Bank-Dependent Versus Bond-Issuing Firms: An Analysis of Monetary Tightening in India
Shasanka Pradhan	ECO	Effect of Acquirers' Venture Capital-Backing On Their Announcement Period Abnormal Returns
Alexander Pretko	ECO	An Analysis of RMB Valuation on the Yield of Dim Sum Bonds: Macroeconomic Factors and Evidence from the Non-Deliverable Forwards Market
Justin Rau	CHE	ISNetwork

Karthik Ravi	ECO	Exploring the Effects of Sports Lockouts on Attendance in the NBA and NHL: Are Sports Substitute Goods?
Jonathan Samorajski	MAT	The Relative Performance of Equal-Weighted and Cap-Weighted Portfolios Across β Deciles
Carlos Sanchez	ECO	Executive Turnover and Firm Performance in Brazil: An Empirical Investigation
Bryton Shang	ORF	Analyzing, Modeling, & Trading the NASDAQ Crosses
Yohei Shoji	ECO	The Effect of U.S. Unemployment Rate Announcements on Chinese Stock Returns: A Comparison of Pre- and Post-Chinese W.T.O. Accession
Steven Shonts	GEO	Financial Viability of Soil Carbon Sequestration in the Amazon: Opportunities and Challenges
Russell Slater	CHE	Sterling Biomedical, Inc
S Duane Stroebel III	ORF	Over or Under: Using Machine Learning Techniques to Beat NCAA Football Totals
Shu Haur Tang	ECO	A Comparison of Bank Competition Indicators and their Relation to Financial Access
Benjamin Tsui	ECO	An Empirical Study of Return and Volatility Spillover Effects of Cross-Listed Companies across Hong Kong, Chinese, and US Markets
Randi Vogt	PSY	Understanding the Biases that Affect Investment Behavior and the Subsequent Market Outcomes
Lindsay von Clemm	ECO	A Macro Stress Testing Framework of Liquidity Risk in the Latin American Banking Sector
John Votta	ECO	Game of Trends: Institutional Ownership, Short Selling, and the Post-Earning Announcement Drift
Daniel Xiaochen Wang	MAT	Analytical Approaches to Calculating Value-at-Risk of a Quadratic Approximation of a Stock and Options Portfolio
Jack Wang	ORF	A Comparison of Methods of Pricing Spread Options in Markets with Transaction Costs
Jonathan Wang	ORF	Explaining Credit Default Swap
Matthew Wender	ECO	Hospice Ownership: The Impact of Profit Status on the Quality and Cost of End-of-Life Care in California
Robert Weylandt Jr.	ORF	Simulation Techniques for Bayesian Image Recovery in Lenz-Family Models
Huijia (Emily) Wu	ECO	Information Shocks and Bubble Crashes
Chenyu Xu	ORF	Grid Impacts of Charging Electric Vehicles in Urban Areas: A Case Study of Queens, NY
Benjamin Yao	ORF	Replication and Comparison of Commodity Futures Trading Strategies
Pearl Zhou	POL	To Get Rich is Glorious: The Politics of Stock Issuance in the Chinese Capital Market



MASTER IN FINANCE



The distinctive feature of our Master in Finance program is its strong emphasis on financial economics in addition to financial engineering and computational methods. Graduates of our program have a solid understanding of the fundamental quantitative tools from economic theory, probability, statistics, optimization, and computer science, all of which are becoming increasingly vital in the financial industry.

To a greater degree than at any time in the past, there now exists a body of knowledge that is widely agreed to be essential for the proper analysis and management of financial securities, portfolios, and the financial decisions of firms. A driving force behind these developments is a lively exchange of ideas between academia and the financial industry, a collaboration that is the closest parallel in the social sciences to the academic-private sector interactions routinely seen in engineering and the applied sciences.

The Master in Finance program prepares students for a wide spectrum of careers in the financial industry, ranging from quantitative trading strategies, risk management, and financial engineering, to quantitative asset management and macroeconomic and financial forecasting. The program does not require prior work experience, although it can be a plus. The Bendheim Center for Finance provides extensive career assistance to students, including help with internships and job placement, through its own staff. Our placement record has been excellent.

The curriculum is designed to be completed in four terms. Admission letters will specify the expected program length. Individual meetings between students admitted into the program and the director of graduate studies will determine, on the basis of courses previously completed at Princeton or another institution, which courses need to be taken. This format allows exceptionally well-prepared students to complete the program in as little as one academic year. The program is designed to be completed on a full-time basis. Classes are taught during the day, and full-time students take four or five courses per term. Given the logistics, the only possibility for part-time enrollment would be for students who already work in the Princeton area and who would be able to attend class during the day. Part-time students are expected to take a minimum of two classes per term, and a maximum of four years (eight terms) to finish the program. All students are subject to an annual review of academic progress.

Princeton's master's program draws upon the combined strength of a variety of departments at Princeton, including the Department of Economics, the Department of Operations Research and Financial Engineering, the Department of Computer Science, and others. The program has two major course components. First, required core courses will provide (a) the prerequisite skills in mathematics, economics, and probability and statistics necessary for the study of finance at a sophisticated level and (b) an integrated introduction to modern financial analysis. Second, a wide range of elective courses, drawn from many departments, will allow students to tailor the program to fit their own needs and interests. These courses will permit a range of opportunities for specialization and in-depth study of topics of interest to the student. Finally, the required summer internship is meant to provide additional practical experience in addressing real-world finance issues.

ADMISSION REQUIREMENTS

The Master in Finance program is designed both for students with training in mathematical or quantitative fields such as physics or engineering who want to make finance their main field of application, and for students with an economics or business background who want to acquire the quantitative skills essential for well-rounded training in finance. In either case, students must have an interest in, and be able to handle the combination of, economic analysis, mathematics, econometrics, and computer science, which are pervasive in modern finance. An intensive two-week refresher course covering the relevant probability, statistics, and mathematics topics, as required for the core courses, is offered prior to the beginning of classes in the fall. In addition, we organize in September for every incoming class a three-day “boot camp” with industry professionals where various career options are reviewed and help is provided (including resume writing, one-on-one videotaped interview sessions, interviewing techniques, etc.).

Applicants must take either the GRE or the GMAT. Applicants whose native language is not English and who have not received their undergraduate education in the United States must take the TOEFL (Test of English as a Foreign Language) or the IELTS (International English Language Testing System) exam. Applicants whose native language is not English but who have received their undergraduate education in an English-speaking country do not have to submit these scores. Non-native English speakers who graduate with an undergraduate degree from an institution whose language of instruction is English but not in an English-language country must submit scores from either of these tests. All requirements are based on undergraduate education regardless of any graduate education. The Graduate School does not offer waivers of this requirement.

STATISTICS ON THE ADMISSION PROCESS

ADMISSION

	Applications	Offers	Acceptances
January '04	200	19	9
January '05	296	31	19
January '06	418	47	27
January '07	425	49	32
January '08	660	40	30
January '09	591	24	19
January '10	601	31	25
January '11	729	36	29
January '12	815	48	43

HIGHEST DEGREE BEFORE APPLYING TO PRINCETON'S M.FIN .

	Bachelor	Master	Ph.D.
January '04	85%	14%	1%
January '05	60%	35%	5%
January '06	66%	30%	4%
January '07	68%	28%	4%
January '08	72%	26%	2%
January '09	75%	23%	2%
January '10	8%	20%	2%
January '11	78%	20%	2%
January '12	83	15	2

APPLICANT PROFILE : GENDER AND AGE

	Female	Male	Median Age
January '04	29%	71%	24
January '05	26%	74%	26
January '06	29%	71%	25
January '07	31%	69%	23
January '08	31%	69%	24
January '09	36%	64%	24
January '10	39%	61%	24
January '11	38%	62%	25
January 12	38	62	24

APPLICANT PROFILE : GRE SCORES MEAN (MEDIAN)

		Analytical	Quantitative	Verbal
January '04	Applicants	714 (810)	776 (790)	554 (560)
September '04	Entering Class	768 (780)	786 (800)	609 (620)
January '05	Applicants	705 (745)	781 (800)	547 (580)
September '05	Entering Class	765 (765)	789 (800)	642 (640)
January '06	Applicants	4.47 (4.5) (<i>new test</i>)	781 (800)	568 (580)
September '06	Entering Class	5.1 (5) (<i>new test</i>)	786.5 (800)	647.5 (655)
January '07	Applicants	4.44 (4.5)	786.77 (800)	563.75 (570)
September '07	Entering Class	4.75 (5)	795.39 (800)	600.38 (630)
January '08	Applicants	4.18 (4)	786.43 (800)	553.09 (560)
September '08	Entering Class	4.67 (5)	788.43 (800)	573.75 (570)
January '09	Applicants	4.17 (4)	787.19 (800)	566.05 (580)
September '09	Entering Class	4.58 (4.5)	795.74 (800)	606.32 (610)
January '10	Applicants	4.01 (4)	788.34 (800)	566.63 (570)
September '10	Entering Class	4.42 (4.5)	798.95 (800)	597 (590)
January '11	Applicants	3.84 (4) 7	91 (800)	580
September '11	Entering Class	4.48 (4.5)	796.8 (800)	632
January '12	Applicants (<i>new scale</i>)	3.79 (40%)	165.3 (93%)	161.2 (83%)
September '12	Entering Class (<i>new scale</i>)	4.6 (71%)	165.3 (93%)	161.1 (81%)

PROGRAM REQUIREMENTS

The program requirements consist of six core courses and 10 elective courses (see list below), with the following provisions:

- At least five of the elective courses must be at the level 500 or higher.
- At least five of the elective courses must be taken from List 1 below.
- Students must maintain an overall grade average of B or better as well as earn a passing grade in all core and elective courses.
- Audited courses cannot be used to fulfill the program's requirements.

While no master's thesis is required, students interested in independent research may work with a Bendheim Center for Finance-affiliated faculty member on a topic relevant to finance, and by enrolling in the appropriate courses (FIN 560/561), they can receive academic credit equivalent to one or two elective courses (thereby reducing the number of required electives).

CORE COURSES

The core courses of the Master in Finance program provide students with analytical fundamentals of modern finance, both theoretical and empirical. Core courses for students entering the program are:

- Financial Economics—ECO 362 (fall) and FIN 502 (spring)
- Asset Pricing—FIN 501/ORF 514 (fall) and ORF 515/FIN 503 (spring)
- Statistics and Econometrics—ORF 505/FIN 505 (fall) and ORF 504/FIN 504 (spring)

ELECTIVE COURSES

In addition to core courses, which provide a broad survey of topics and techniques of modern finance, the program offers students the opportunity to choose among a variety of elective courses. Some of these courses have prerequisites or require permission of the respective instructors.

LIST 1: FINANCE APPLICATIONS COURSES

FIN 515: Portfolio Theory and Asset Management	FIN 591: Cases in Financial Risk Management
FIN 516: Topics in Corporate Finance, Corporate Governance, and Banking	FIN 592: The Rise of Asian Capital Markets
FIN 517: Venture Capital and Private Equity Investment	FIN 593: Financial Crises
FIN 518: International Financial Markets	ECO 414: Introduction to Economic Dynamics
FIN 519: Corporate Restructuring, Mergers, and Acquisitions	ECO 525/FIN 595: Financial Economics I
FIN 521: Fixed Income: Models and Applications	ECO 526/FIN 596: Financial Economics II
FIN 522: Options, Futures, and Financial Derivatives	ECO 575/FIN 575: Topics in Financial Economics
FIN 523: Forecasting and Time Series Analysis	ORF 527: Stochastic Calculus and Finance
FIN 560: Master's Project I	ORF 530: Statistical Analysis of Large Financial Datasets
FIN 561: Master's Project II	ORF 531/FIN 531: Computational Finance in C++
FIN 567: Institutional Finance, Trading, and Markets	ORF 534/FIN 534: Financial Engineering
FIN 568: Behavioral Finance	ORF 535/FIN 535: Financial Risk Management
FIN 570: Valuation and Security Analysis	ORF 538: Analytical and Computational Methods of Financial Engineering
FIN 590: Financial Accounting	ORF 555: Fixed Income Models
	ORF 569: Special Topics in Statistics and Operations Research
	ORF 574: Special Topics in Investment Science

LIST 2: GENERAL METHODOLOGY FOR FINANCE

- APC 350: Introduction to Differential Equations
 APC 503: Analytical Techniques in Differential Equations
 APC 518/ORF 518: Applied Stochastic Analysis and Methods
 CEE 513: Introduction to Finite-element Methods
 CEE 532: Advanced Finite-element Methods
 CEE 548: Risk Assessment and Management
 CHE 508: Numerical Methods for Engineers
 CHE 530: Systems Engineering
 COS 318: Operating Systems
 COS 323: Computing for the Physical and Social Sciences
 COS 333: Advanced Programming Techniques
 COS 423: Theory of Algorithms
 COS 424: Interacting with Data
 COS 425: Database Systems
 COS 432: Information Security
 COS 436: Human-computer Interface Technology
 COS 444/ECO 444: Electronic Auctions
 COS 461: Computer Networks
 ECO 418: Strategy and Information
 ECO 501: Microeconomic Theory I
 ECO 502: Microeconomic Theory II
 ECO 503: Macroeconomic Theory I
 ECO 504: Macroeconomic Theory II
 ECO 511: Advanced Economic Theory I
 ECO 512: Advanced Economic Theory II
 ECO 513: Advanced Econometrics: Time Series Models
 ECO 517: Econometric Theory I
 ECO 518: Econometric Theory II
 ECO 519: Advanced Econometrics: Nonlinear Models
 ECO 521: Advanced Macroeconomic Theory I
 ECO 522: Advanced Macroeconomic Theory II
 ECO 523: Public Finance I
 ECO 524: Public Finance II
 ECO 531: Economics of Labor
 ECO 541: Industrial Organization and Public Policy
 ECO 551: International Trade I
 ECO 552: International Trade II
 ECO 553: International Monetary Theory and Policy I
 ECO 554: International Monetary Theory and Policy II
 ELE 591: High-tech Entrepreneurship
 MAE 503: Basic Numerical Methods for Ordinary and Partial Differential Equations
 MAT 301/MAE 305: Mathematics in Engineering I (ODE, PDE)
 MAT 302/MAE 306: Mathematics in Engineering II
 MAT 305: Mathematical Programming
 MAT 591 & MAT 592: Applied Partial Differential Equations
 MAT 594/APC 584 Wavelets: Applications of Wavelets in Mathematics and Other Fields
 ORF 307: Optimization
 ORF 311: Optimization under Uncertainty
 ORF 401: Electronic Commerce
 ORF 474: Special Topics in Operations Research and Financial Engineering
 ORF 522: Linear Optimization
 ORF 523: Nonlinear Optimization
 ORF 524: Statistical Theory and Methods
 ORF 526: Probability Theory
 ORF 533: Convex Analysis for Mathematical Finance
 ORF 542: Stochastic Control and Stochastic Differential Games
 ORF 547: Dynamic Programming
 ORF 548: Large-scale Optimization
 ORF 549: Stochastic Programming
 ORF 551: Probability Theory
 ORF 553: Stochastic Differential Equations
 ORF 554: Markov Processes

TRACKS

Elective courses can be chosen according to either individual needs and preferences, or to conform to one of the suggested tracks, listed below. It is not necessary for a student to designate or complete a particular track to satisfy the master's requirements; the tracks listed below are merely illustrations of coherent courses of study that students might choose. Beyond the tracks listed below, we offer a number of electives in corporate finance, dealing with the choice and financing of investment projects, firms' determination of dividend policy, optimal capital structure, financial reorganization, mergers and acquisitions, start-up financing, deal structure, incentive design, valuation of high-risk projects, initial public offerings, etc. However, we believe that our students' comparative advantage often lies in other areas encompassed within the modern investment bank such as asset management, risk management, derivatives pricing and trading, fixed income analytics, and other areas where a quantitative background in theoretical and practical aspects of modern finance is essential.

FINANCIAL ENGINEERING AND RISK MANAGEMENT

Financial engineers design and evaluate products that help organizations manage risk-return tradeoffs. Financial engineering is no longer limited to quantitative traders and derivatives specialists, and it is now used widely throughout the private sector for purposes including hedging foreign currency exposures, financing real investment, and managing real and financial risks. The aim of this track is to provide students with the background they need to be leaders and innovators in this growing field. The track includes courses in dynamic programming and stochastic control, financial economics, optimization under uncertainty, probability, and stochastic calculus and computational finance. Special attention is given to the development of the efficient computational techniques that are needed in "real-time" computing environments. In addition, students can elect to focus on the computer-based technologies that are becoming increasingly important in finance, such as the design of efficient trading systems, algorithms, interfaces, large databases, and the security of computer networks. Several courses provide students with the opportunity to acquire practical experience. In particular, full-time students will have the opportunity to work in a small group on actual financial engineering problems under the joint guidance of a faculty member and a high-level industry practitioner.

QUANTITATIVE ASSET MANAGEMENT AND MACROECONOMIC FORECASTING

Highly trained financial specialists are increasingly utilized in the fields of portfolio management and macroeconomic forecasting. Among the quantitative tools used in this area are analysis of earnings revisions, "attribute" screening, and quantitative forecasting methods. Quantitative techniques are widely employed to control portfolio risk and to establish portfolios balanced with different assets (stocks, bonds, real estate, etc.) so as to minimize the variance of returns. Finally, major asset managers, commercial banks, life insurance companies, securities firms, etc., all employ financial economists to formulate strategies consistent with the expected performance of the macroeconomy; required skills include expertise in applied time series analysis and an understanding of the major statistical macroeconomic models.

FINANCIAL TECHNOLOGIES

Computer-based technologies, such as algorithms, efficient trading systems, large databases, multimedia and Web interfaces, parallel processing, and the security of computer networks, are becoming increasingly important in finance. The continued development of e-commerce, the growth of electronic trading, and the renewed emphasis on risk management in all firms are creating a new competitive environment in which increasing the speed and lowering the costs of trading and other financial operations become essential components of success. This track gives students access to the latest tools and techniques of computer science and computational methods applied to finance.

SEMINARS AND COMPUTING ENVIRONMENT

Students are involved in regular seminars offered by academic researchers and industry representatives, and they will have the opportunity to participate in collaborative projects in some of the elective courses. The Financial Engineering Laboratory (equipped with financial data feeds, personal computers, and workstations) has been set up to facilitate such projects. The program provides a standardized computing environment based on Mathematica, MATLAB, S-Plus, and Microsoft Office. Computational skills are taught in a series of workshops and in a course on computational finance in C++.

SELECT COURSE DESCRIPTIONS

ECO 362: Financial Investments

This course surveys the field of investments with special emphasis on the valuation of financial assets. Issues studied include how portfolios of assets should be formed, how to measure and control risk, how to evaluate investment performance, and how to test alternative investment strategies and asset pricing models.

FIN 501: Asset Pricing I: Pricing Models and Derivatives

This course provides an introduction to the modern theory of asset pricing. Topics include: no arbitrage, Arrow-Debreu prices and equivalent martingale measures, security structure and market completeness, mean-variance analysis, Beta-pricing, CAPM, and introduction to derivative pricing.

FIN 502: Corporate Finance and Financial Accounting

This course covers the basics of financial statements, the analysis and recording of transactions, and the underlying concepts and procedures. In addition, a more detailed study of some aspects of financial accounting that have widespread significance is undertaken, such as inventories, long-term productive assets, bonds and other liabilities, stockholders equity, and the statement of changes in financial position. The course provides students with the skills necessary to become informed users of financial statements. Problem sets emphasize an ability to interpret and analyze financial statement disclosures.

FIN 515: Portfolio Theory and Asset Management

This course covers a number of advanced topics related to asset management and asset pricing, including mean-variance analysis, CAPM, APT, market efficiency, delegated money management, stock return predictability, bubbles and crashes, social interaction and investor behavior, security analysts and investor relations, and mutual fund performance and organization.

FIN 516: Topics in Corporate Finance, Corporate Governance, and Banking

The course covers agency and control issues in corporate finance such as managerial compensation, the role of corporate boards, takeovers, leveraged buyouts, and bankruptcy. It also studies the role of banks and other intermediaries' activities in facilitating investment and promoting sound corporate governance.

FIN 518: International Financial Markets

This course studies the assets and institutions of international financial markets. A key difference between these markets and others is the role of exchange rates relating the value of two or more national currencies. The course studies the market-making institutions, the market conventions, and market practices. It also studies the interrelationships between different assets and their pricing, trading, and use by corporations.

FIN 519: Corporate Restructuring, Mergers, and Acquisitions

This course examines some of the most popular restructuring options available to corporate managers and will construct a framework to evaluate the implications they may have to shareholder value.

FIN 521: Fixed Income: Models and Applications

This course deals with the valuation for fixed-income securities. Topics include: (i) interest rate contracts: zero-coupon bonds, coupon bonds, floating rate notes, yields, forwards and futures, swaps, options, caps, swaptions; (ii) arbitrage free pricing in discrete time: Vasicek model, Ho-Lee model, Black-Derman-Toy model; (iii) introduction to continuous-time fixed income modeling: Black model, Heath-Jarrow-Morton; (iv) applications of arbitrage free models to pricing of interest rate contracts; (v) credit risk; and (vi) mortgage-backed securities.

FIN 522: Options, Futures, and Financial Derivatives

The objective of this course is to study the essential techniques of pricing financial derivatives. These techniques include the Black-Scholes formula (awarded 1997 Nobel Prize in economics), binomial tree method, and risk-neutral valuation method. We will also discuss extensively the trading strategies associated with financial derivatives for different purposes and potential problems that can arise in the application of financial derivatives. This course is technical by nature and requires extensive use of calculus, statistics, and Excel spreadsheet programming.

FIN 560/561: Master's Project I and II

Under the direction of a Bendheim Center for Finance-affiliated faculty member, students carry out a master's project and write a report.

FIN 567: Institutional Finance, Trading, and Markets

This course studies financial institutions and focuses on the stability of the financial system. It covers important theoretical concepts and recent developments in financial intermediation, asset pricing under asymmetric information, behavioral finance and market microstructure. Topics include market efficiency, asset price bubbles, herding, liquidity crisis, risk management, market design, and financial regulation.

FIN 568: Behavioral Finance

This course will present models that are psychologically more realistic than the standard “rational actor” model. About 30 percent of the course will be devoted to economics, 70 percent to finance. Applications to economics will include decision theory, happiness, fairness, and neuroeconomics. Applications to finance will include theory and evidence on investor psychology, predictability of the stock market and other markets, limits to arbitrage, bubbles and crashes, experimental finance, and behavioral corporate finance.

FIN 570: Valuation and Security Analysis

This is a specialized corporate finance course. The objective is to teach valuation methods. The course uses accounting and finance concepts for valuing firms and covers the necessary corporate finance concepts with an equal mix of theory and application. Topics include financial statement analysis, capital budgeting methods, estimating cash flows, estimating various costs of capital, valuation of projects, valuation of companies and security valuation, LBOs, mergers and acquisitions, valuing a drug licensing opportunity, the initial public offering valuation, and valuation of strategic and real options.

FIN 590: Financial Accounting

A survey of the concepts and techniques that non-managers use to hold the managers of organized human activity—chiefly corporations—accountable for the resources entrusted to them. Alerts students to the judgments and assumptions that regulators and managers make in that process, even when the managers wish to report honestly. Explores the methods that the managers of resources can (and often do) use to lie about their actual performance. While this course aims to make you a sophisticated user, not producer, of financial statements, you must master some record keeping procedures and vocabulary in order to be the boss, not the servant.

FIN 591: Cases in Financial Risk Management

This course examines the concept of risk and its mitigation, and how the ideas can be applied in the practice of risk management for financial and non-financial companies. The basic toolkit draws on economics, probability theory, and statistics, and they are integrated with more advanced concepts drawn from portfolio choice, derivative securities, and dynamic hedging. The overall aim of the course is to demonstrate how the main concepts have practical applications.

FIN 592: The Rise of Asian Capital Markets

This course explores the increasing weight of Asia in global equity financial markets and its implications, and frames the discussion in the macroeconomic context of the globalization of financial markets and the evolution of the global monetary system. The course puts particular emphasis on concepts of economic development, market efficiency, and corporate governance. Discussions combine analysis of historical trends and recent data and events with insights from practical experience in Asian equity markets. The course also explicitly considers the policy decisions faced by the U.S. and Chinese governments relative to existing global imbalances.

FIN 593: Financial Crises

This course uses economic theory and empirical evidence to study the causes of financial crises and the effectiveness of policy responses to them. Particular attention is given to some of the major economic and financial crises of the past century and to the crisis that began in August 2007.

ECO 525/FIN 595: Financial Economics I

This course covers asset pricing in competitive markets in which traders have homogeneous information. Empirical tests of asset-pricing models and associated “anomalies” are also surveyed. Measures of riskiness and risk aversion, intertemporal asset-pricing models, dynamic portfolio choice, option pricing and the term structure of interest rates, corporate investment and financing decisions, and taxation are studied.

ECO 526/FIN 596: Financial Economics II

This course studies theories and empirical evidence regarding financial markets and institutions that focus on asymmetric information, transaction costs, or both; and rational expectation models of asset pricing under asymmetric information, dynamic models of market making, portfolio manager performance evaluation, principal-agent models of firm managerial structure, takeover bids, capital structure, and regulation of financial markets.

ECO 575/FIN 575: Topics in Financial Economics

This course is intended for Ph.D. students who have already completed the yearlong Ph.D. sequence in finance (ECO 525 and 526) and who intend to write their dissertation in finance. Topics vary by year, focusing on recent developments in the field.

ORF 504/FIN 504: Financial Econometrics

This course covers econometric and statistical methods as applied to finance. Topics include measurement issues in finance, predictability of asset returns and volatilities, value at risk and extremal events, linear factor pricing and portfolio problems, intertemporal models of the stochastic discount factor and generalized method of moments, vector autoregressive and maximum likelihood methods in finance, risk neutral valuation in discrete time, estimation methods for continuous-time models, volatility smiles and alternatives to Black-Scholes, and nonparametric statistical methods for option pricing.

ORF 505/FIN 505: Modern Regression and Time Series

This course examines linear and mixed effect models, nonlinear regression, nonparametric regression and classification, time series analysis, stationarity and classical linear models (AR, MA, ARMA), nonlinear and nonstationary time-series models, state space systems, and hidden Markov models and filtering.

ORF 515/FIN 503: Asset Pricing II: Stochastic Calculus and Advanced Derivatives

This course begins with an overview of basic probability theory and covers the elements of stochastic calculus and stochastic differential equations that are widely used in derivatives modeling, pricing, and hedging. Topics include Brownian motion, martingales, and diffusions and their uses in stochastic volatility; volatility smiles; risk management; interest-rate models; and derivatives, swaps, credit risk, and real options.

ORF 531/FIN 531: Computational Finance in C++

The intent of this course is to introduce the student to the technical and algorithmic aspects of a wide spectrum of computer applications currently used in the financial industry, and to prepare the student for the development of new applications. The student will be introduced to C++, the weekly homework will involve writing C++ code, and the final project will also involve programming in the same environment.

ORF 534/FIN 534: Financial Engineering

This course surveys central topics in the area of financial engineering and multi-period financial planning systems. It covers pricing methodologies integrated with financial planning systems and linking asset and liability strategies to maximize surplus wealth over time. We model the organization as a multi-stage stochastic program with decision strategies.

ORF 535/FIN 535: Financial Risk Management

This course is about measuring, modeling, and managing financial risks. It introduces the variety of instruments that are used to this effect and the methods of designing and evaluating such instruments. Topics covered include risk diversification, planning models, market and nonmarket risks, and portfolio effects.

ORF 538: Analytical and Computational Methods for Financial Engineering

This course introduces analytical and computational methods that are common in financial engineering problems. It is aimed at Ph.D. students and advanced M.A. students who have studied stochastic calculus. The focus is on uses of partial differential equations: their appearance in pricing financial derivatives, connection with Markov processes, and occurrence as Hamilton-Jacobi-Bellman equations in stochastic control problems, and analytical, asymptotic, and numerical techniques for their solution.

ORF 555/FIN 555: Fixed Income Models

This course is an introduction to continuous-time models for the arbitrage-free pricing of interest rate derivatives. Topics include primitives of the bond market and the relation between their dynamics, short rate models, the Heath-Jarrow-Morton methodology and related consistency problems, LIBOR market models, affine term structure models, and risk of default.

MASTER IN FINANCE PLACEMENT

Our program has continued to enjoy excellent success with 95 percent of our 2012 graduates being placed in finance industry jobs and 100 percent internship placement. The candidates for the Master in Finance receive support and assistance with their postgraduate career planning from a coordinated program of resources, including Princeton's Office of Career Services and the Bendheim Center for Finance's director of corporate relations. They also benefit from support from our Corporate Affiliates Program and Advisory Council.

OUR GRADUATES WILL BE PURSUING THEIR CAREERS AT:

Akuna Capital, Chicago
Barclays Capital Market Risk, New York
Bridgewater Associates, Westport, CT
Cerberus Private Equity, New York
Citadel Investments, Chicago
Citi Market Quantitative Analysis
Credit Suisse Sales & Trading, Hong Kong
Credit Suisse Fixed Income Sales & Trading,
London
Eladian Trading, New York

Goldman Sachs Securities, New York
Goldman Sachs Strats, Securities, London
Goldman Sachs Securities, Hong Kong
KAUST Endowment Management,
Washington, DC
Monetary Authority of Singapore
Morgan Stanley Market Risk, New York
Singaporean Government
Sun Trading LLC, Chicago

OUR FIRST-YEAR STUDENTS HAVE OBTAINED SUMMER INTERNSHIPS AT:

Acadian Asset Management, Boston
Bank of Japan, New York
BONY Mellon Structured Products, New York
Credit Suisse Fixed Income Sales & Trading,
New York
Goldman Sachs Sales and Trading, New York
Hedge fund, New York
JPMorgan FX Strategy, New York
JPMorgan Sales & Trading, Hong Kong

JPMorgan Sales and Trading, Singapore
JPMorgan Sales and Trading/Quant Research,
New York
Korean Hedge Fund
Morgan Stanley Sales & Trading, New York
New York Federal Reserve - Credit Group
Sungard Risk Management, New York
Susquehanna International Group, Philadelphia
Track Research, New York

FELLOWSHIPS AWARDED:

The Gerhard R. Andlinger '52 Graduate Fellowship in Finance was awarded to Yijie (Sissi) Chen (University of Toronto).

The Bendheim Graduate Fellowships in Finance were awarded to Michael Kraus (Georgia Institute of Technology), Chihiro Seko (University of Tokyo), and Qiong (Franklin) Wang (Peking University).

MFIN MATH CAMP/BOOT CAMP

For the seventh year, the Bendheim Center for Finance conducted a two-week “math camp” program, August 29–September 9, taught by Matt Lorig. The purpose of the math camp is to enrich the finance mathematics background of the incoming students so that they are ready for the mathematical rigors of the program.

Following math camp, we continued our three-day “boot camp” program, which was developed for the incoming students prior to the beginning of classes in September. The camp focuses on a refresher of various finance topics, the types of careers for which the Master in Finance degree prepares students, and some useful information on interviewing and networking skills. Boot camp presenters included the Bendheim Center for Finance faculty, Master in Finance alumni, and speakers from the financial services industry. This program was well received by the incoming students, particularly those who would have to begin interviewing for permanent jobs less than six weeks after starting the program. In 2011, the program’s agenda was as follows:

SATURDAY, SEPTEMBER 10

Panel Discussion among Recent Graduates on Careers in Finance and Job Search Best Practices—Nicolas Cojocaru-Durand, Citadel; Theo Kim, Princeton University Investment Company; Adam Lichtenstein, Kepos Capital; Nestor Macias, Credit Suisse, Chad Shampine, Morgan Stanley; and Dennis Walsh, Goldman Sachs Asset Management.
Mock Interviews with Roundtable Participants.

MONDAY, SEPTEMBER 12

Portfolio Management—John D. Naud, Senior Portfolio Manager, Global Rates, Citadel
Morgan Stanley Strats Group—Eric Pan and Pankaj Khandelwal
Princeton Investment Company—Andy Golden, President
Leveraged Finance Sales/Global Credit Products—Amy Emanuel, Managing Director, Credit Suisse
Kohlberg Kravis Roberts & Co.—John Massad, Director, and Antoine Chiche, Principal

TUESDAY, SEPTEMBER 13

Citi Markets Quantitative Analysis—Arnold Miyamoto, Managing Director, Global Head, Markets
Quantitative Analysis
Economics and Finance Library— Todd Hines
Career Services Resources—Amy L. Pszczolkowski and Julie Shurts
Careers Landscape from an Employer View—Chris Resto and Ann Guo, GETCO
Perspectives from a Global Career—Peter Lighte, JPMorgan, Vice Chairman, Global Corporate Bank,
China
Equity Research, Nomura Securities—Brian Foran, Managing Director and Senior Analyst, Banking
Sector
Risk Management—Ji Park, Barclays Capital
Goldman Sachs Strats: Paul Walker, Partner and Managing Director, Global Head of Core Strats

MFIN WEEKLY LUNCH AND LEARNS

In addition to boot camp, a number of guest speakers from a variety of areas of finance visited the Bendheim Center in 2011/2012 to address Master in Finance, undergraduate, and PhD students.

Steven Mayer '81, Cerberus Capital Management—Sept 23, 30, Oct. 14
Kenneth Hersh, CEO and Co-Founder, NGP Energy Capital Management,—Sept 26
Credit Suisse Sales and Trading and Investment Banking—Oct 5, 12
Mark Higgins (MD) and Anil Bangia (ED) of JPMorgan Quantitative Research—Oct. 11
Robert Khoury '90, World Wide Financial Industry Recruiting—Oct. 18
Carl Riccadonna '01, Senior US Economist, Deutsche Bank—Oct. 20
Harold Kim PhD '93, MD, Citi Hong Kong—Nov. 14
Alan DeRose '83, MD, Oppenheimer—Dec. 1
Eric Taylor, Citadel Recruiting—Dec. 6
Jeff Pagano and Michael Sternberg, Morgan Stanley Job Shadowing—Dec.
Josh Dunn and Aaron Katz, Edgestream Partners—Dec. 13
Robert Eaton, MD, BlackRock—Dec 13
Princeton Quant Trading Conference (various speakers)—March 31
Lito Camacho, Credit Suisse Vice Chairman, Asia Pacific; CEO, Singapore—April 16
Jay Powell, Bipartisan Policy Institute—May 3
John Porter, Barclays Capital, MD, Global Strategic Bank Portfolio—May 9

ADVISORY COUNCIL AND SUPPORTERS



ADVISORY COUNCIL

The Advisory Council for the Bendheim Center for Finance is made up of a group of distinguished leaders in the financial industry. The council meets on campus once a year. In 2012, the meeting took place on May 3-4. We continued our format of including a dinner the night before the morning meeting to enable the council members to exchange ideas in a more informal setting.

COUNCIL MEMBERS

Hamid Biglari

Vice Chairman
Citicorp

John C. Bogle

President
Bogle Financial Markets Research Center
Vanguard

Richard H. Bott

Vice Chairman (retired)
Morgan Stanley Investment Banking Division

John L. Cecil

Chairman and Chief Executive Officer
Eagle Knolls Capital

Christopher A. Cole

Managing Director
Goldman, Sachs & Co.

Howard E. Cox Jr.

General Partner
Greylock Management Corporation

David A. DeNunzio

Vice Chairman, Mergers and Acquisitions
Crédit Suisse

Jeremy Diamond

Managing Director
Annaly Capital Management, Inc.

J. Michael Evans

Vice Chairman
Goldman, Sachs & Co.

Arminio Fraga

Chairman and Chief Investment Officer
Gavea Investimentos

John K. Hepburn

Advisory Vice Chairman
Morgan Stanley & Co.

Kenneth Hersh

Chief Executive Officer
NGP Energy Capital Management

William H. Heyman

Vice Chairman and Chief Investment Officer
The Travelers Companies, Inc.

Alfred F. Hurley Jr.

Vice Chairman
Emigrant Bank

William H. Janeway

Senior Adviser
Warburg Pincus

Hugh E. McGee III

Head of Global Investment Banking
Barclays Capital

Heidi G. Miller

Former President, International
JPMorgan Chase

Jeffrey M. Peek (Chair)

Vice Chairman, Investment Banking
Barclays Capital, Inc.

Lynn Bendheim Thoman

Co-president
Leon Lowenstein Foundation

CORPORATE AFFILIATES PROGRAM

The annual Corporate Affiliates Program offers companies an opportunity to build a significant relationship with the Bendheim Center for Finance faculty and students. Corporate affiliates gain a strong presence and visibility in the Bendheim Center for Finance, interact with faculty and students, learn about important faculty research, and secure a competitive recruiting advantage.

2012 AFFILIATES

AXA Equitable	DC Energy
Barclays Capital	Deutsche Bank
Citadel Investments Group	Edelman & Associates
Citigroup	Goldman Sachs
Crédit Suisse	Prediction Company, LLC (subsidiary of UBS)

- Annual Report of the Bendheim Center for Finance
- Opportunity to advertise internships and employment opportunities to both Undergraduate Certificate in Finance and Master in Finance students
- Opportunity to use the Bendheim Center for Finance facilities to host recruiting events
- Access to the Bendheim Center for Finance director of corporate relations as a resource for recruiting
- Recognition in the publicly disseminated materials of the Bendheim Center for Finance, including the center's reports and website, which both list corporate affiliates, as well as a hyperlink to each member's website
- Access to research authored by the center's affiliated faculty within the academic year
- Access to Bendheim Center for Finance faculty for internal or client presentations or for sponsored research
- Opportunity to work with the center's faculty and staff to create customized training programs and to design and access distance-learning courses and events such as special lectures and conferences
- Invitation to deliver a guest lecture on campus or to participate as a presenter at Bendheim Center for Finance-sponsored conferences
- Invitation and two reserved seats for all public events hosted by the center

GIFT OPPORTUNITIES

Early in 1998, a \$10 million gift from the Leon Lowenstein Foundation enabled Princeton to launch the Bendheim Center for Finance. To establish the University as a national resource for innovative thinking on finance and finance-related topics, the Bendheim Center for Finance brings together leading experts in teaching and scholarship in financial economics. But to realize this vision, significant support beyond the generous Bendheim gift is needed for faculty, curriculum development, and facilities. True excellence in financial economics requires a critical mass of finance researchers, approaching the size of a finance department in a leading business school, as well as important educational initiatives in a state-of-the-art setting.

ACADEMIC PERSONNEL

Endowed Professorships (five committed, two additional needed)
To support the appointment of a distinguished senior faculty member
\$4,000,000

Endowed Visiting Professorship (one needed)
To support a distinguished senior visitor who provides expertise in a particular area of study
\$2,000,000

Postdoctoral Fellows (one needed)
\$1,500,000

Junior Faculty Fellow (one committed, one additional needed)
\$1,500,000

FELLOWSHIPS

Graduate Fellowships (three committed, seven additional needed)
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