

# *Princeton University*

*Bendheim Center for Finance*

## *Annual Report 2006*

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## *Director's Introduction*

The mission of Princeton University's Bendheim Center for Finance is twofold: First, to develop new courses and programs in finance that will afford exciting learning opportunities to Princeton students; and second, to establish a leading center for modern financial research.

Under the aegis of the BCF, Princeton's existing finance curriculum is being expanded and improved, and two new academic programs have been created: an Undergraduate Certificate in Finance in 1999 and a Master Program in Finance in 2001. Center-affiliated faculty 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 BCF is an ideal environment in which to conduct significant research in finance. It also serves 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 provide an additional source of intellectual stimulation and interchange for the BCF. Students are able to explore internships and longer-term job opportunities in a wide variety of finance-related areas. The BCF also encourages students at all levels to conduct finance-related research at the University by providing such services as funding senior thesis projects, serving as a clearinghouse and major source of data, and providing expert faculty advisors.

### **Faculty**

The scholars in the BCF are chosen for their ability to deploy cutting-edge methodologies to a wide range of finance-related topics, from stock-price determination to 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 BCF.

Thirty-one faculty members, representing six different departments, are currently affiliated with the BCF. Our newest hire is Stephen Morris, an economic theorist whose work ranges from game theory to applied microeconomic theory to financial economics. He taught at the University of Pennsylvania from 1991 to 1998. He then joined the Yale faculty as Professor of Economics in 1998. In 2005 he was appointed as Professor of Economics at Princeton University and was named the Harold T. Shapiro \*64 Professor of Economics for the period July 1, 2005 to July 1, 2006. He received his Ph.D. in economics from Yale University in 1991.

I am pleased to announce that two faculty affiliated with the Center were awarded tenure effective July 1, 2006: Markus Brunnermeier and Jonathan Parker. Also, effective July 1, 2006, Jianqing Fan was named the Frederick L. Moore, Class of 1918, Professor of Finance.

## **Undergraduate Certificate in Finance**

Now in its eighth year, the Undergraduate Certificate in Finance (UCF) continues to do extremely well. The UCF has been attracting record numbers of students, from the Class of '00: 61 students, '01: 82, '02: 85, '03: 122, '04: 113, '05: 125, '06: 158, '07: 154. As a result, the total number of undergraduate students in the program (juniors and seniors) during the academic year 2005-06 was over 300.

Students earning the UCF are drawn from a wide cross-section of departments on campus, 22 in total for the Class of 2006. In addition, UCF students are an extremely talented subgroup of the already high-achieving Princeton classes. They continue to receive a high proportion of the prizes awarded by their respective departments: 53 UCF students received a combination of departmental prizes and honors and athletic awards; 23 UCF students received departmental prizes and honors; 4 UCF students received athletic awards; 3 UCF students received U.S. Military Awards; 14 UCF students were elected to Phi Beta Kappa Society; 26 UCF students were elected to membership in Society of Sigma Xi; 14 UCF students were elected to membership in Tau Beta Pi National Engineering Society; 3 UCF students received Major Scholarships and Fellowships; and finally, 77 UCF students received academic honors (42 cum laude, 23 magna cum laude and 12 summa cum laude).

Fenil Ghodadra was the recipient of the Birch Family Prize which was presented at our Class Day ceremonies. This prize was established in 2004 by William D. Birch, Jr. '64 and William Marco Birch '92. This is the first year we were able to present it to a graduating senior with the highest grade point average in coursework related to the Undergraduate Certificate in Finance.

The large size of the UCF has stretched our limited advising resources. In conjunction with the Dean of the College, we put in place tougher admission requirements into the UCF, starting with the Class of 2008, in order to cap the size of the program at a more manageable level. Specifically, a minimum B+ average in the three prerequisite courses (mathematics, statistics and microeconomics) and a minimum grade of B in each of them will be required for ECO and ORF majors. Once admitted, a minimum B average computed over the two core courses ECO 362 and 363, the three elective courses, and the independent work will be required of all students to earn the certificate. We set these cutoffs based on grade data from previous classes, with the objective of limiting the number of UCF students to approximately 100, of which we expect about two-thirds to major in the ECO or ORF departments. We designed the tougher criteria for ECO and ORF students specifically to avoid "crowding out" the non-ECO/ORF majors from the UCF. With these new requirements in place, in May 2006 we admitted 99 students from the Class of 2008 into the UCF. We expect that the reduced size of the UCF will provide an even better experience for students and faculty alike.

## **Master in Finance**

The fourth full class of the Center's Master in Finance (MFin) graduated in June 2006. Reflecting the interdisciplinary nature of the BCF, the MFin program is nearly unique in producing students with extensive training in both quantitative methods (drawing on the strengths of our Engineering, Computer Science, Mathematics and other departments) and in Economics. This set of skills makes our Master students highly sought after in the job market. The program is designed to be completed in four semesters, but students with strong backgrounds will be able to finish more quickly, in as little as one year.

Because business schools do not generally offer so specialized a program, or expect their students to have such a strong mathematical background, Princeton's MFin offers students a significant advantage in obtaining coveted positions in investment banking, brokerage houses, and similar firms. BCF faculty also benefit from the program because it provides a forum in which they can

develop an active intellectual interchange with leading private-sector financial researchers and practitioners.

We have continued to invest heavily in the placement of our graduating students. The networking efforts of our two dedicated placement advisors, the strong support from our Corporate Affiliates and Advisory Council, and the success enjoyed by our first three graduating classes has been reflected in a strong demand for our 2006 graduates, all of whom accepted permanent employment in financial firms or went on to Ph.D. programs. Our two year students all accepted offers of summer internships from financial firms.

We repeated in September 2005 our three-day “boot camp” introductory program which was introduced in 2003 for the incoming students prior to the beginning of classes, and will continue to do so in future years. The camp focuses on a refresher of various finance topics, the types of careers for which the MFin degree prepares students and some useful information and interviewing skills (such as mock videotaped interviews).

MFin applications for 2006-07 exceeded the level of the previous year, reaching 418 in January 2006. We intend to continue keeping the program small and selective. We admitted 47 students this year, and 27 will be enrolling this coming fall. Our selectivity rate continues to be exceptionally high, with our program admitting 7% of its applicant pool. This is a substantially smaller percentage than our peer programs in quantitative finance (NYU, Columbia, Carnegie-Mellon, Berkeley, Chicago, Stanford, etc.) and one that is comparable to the most selective business schools. Our yield (58% this year) was also excellent, despite the absence in most cases of financial aid. Overall, this is a very good sign for the continued success of our program.

We have continued to conduct interviews of the most promising subset of our applicant pool using our Advisory Council and placement officers. This process 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. In addition to the obvious benefit of collecting very useful information about potential students, we get a positive “halo” effect with the strongest candidates who get to meet our industry-leading Advisory Council members.

### **Ph.D. Students**

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. Seven students graduated in 2006. Our students continue to achieve high quality placements which will further raise the visibility of the Center in the world of academic finance and industry.

- **Alvaro Bustos** graduated from the Department of Economics. His thesis studied the role and impact of courts in the dynamic efficiency of Corporate Common Law and also in the optimal composition of precise and vague clauses written in contracts. He has accepted a fellowship offered by the School of Law of Northwestern University in order to obtain a Master in Legal Studies.
- **Rodrigo Guimaraes** graduated from the Department of Economics. His thesis “A Dynamic Arbitrage Approach to Exchange Rates and Interest Rates” dealt with the informational content in currency and fixed income markets and the relation between both markets imposed by arbitrage arguments. He has accepted a Quantitative Currency Research Associate position within the Global Research group of Barclays Capital in London.

- **Marc Martos-Vila** graduated from the Department of Economics. His dissertation studied the market for corporate control, paying special attention to the conflicts of interest between managers and shareholders. He has accepted a position as an Assistant Professor at UCLA's Anderson School of Management.
- **Brad Strum** graduated from the Department of Economics. He has been engaged in understanding theoretical and empirical issues related to the design and implementation of monetary policy. His dissertation explored the relationship of input-output linkages between firms and the setting of monetary policy. Brad has accepted an Economist position at the Board of Governors of the Federal Reserve System.
- **Jamey Thompson** graduated from the Department of Operations Research and Financial Engineering. His thesis developed a Lévy process-based model for default dependence. He has accepted a position as a Quantitative Analyst with King Street Capital Management, a hedge fund based in New York City.
- **Cenk Ural** graduated from the Department of Operations Research and Financial Engineering. His thesis topic was "A Modeling Framework for Multi-Strategy Hedge Funds." He has accepted an Associate position in the Equity Proprietary Trading group at Lehman Brothers.
- **Zhuojuan Zhang** graduated from the Department of Operations Research and Financial Engineering. Her thesis topic was "Stochastic Optimization for Enterprise Risk Management." She has accepted an Associate position in the Financial Modeling group at BlackRock, Inc.

## Fund Raising

Looking forward, our greatest challenge will be to continue to recruit and retain top-flight faculty. Faculty recruitment and retainment is essential to our new educational initiatives and for continued expansion of course offerings. To be successful in this very competitive market, we have found it necessary to make commitments to provide research support for faculty members. All of this requires active fund raising and we continue to work closely with the Development Office to increase the Center's resources.

A generous gift from William H. Janeway has made possible research collaboration between Cambridge Endowment for Research in Finance and the Bendheim Center for Finance. The first conference was held at Princeton on September 16-17, 2005.

Another generous gift from Kenneth Hersh '85 was dedicated to support the Faculty Development Initiatives of the Bendheim Center.

With the improving economy, our Corporate Affiliates Program has been quite successful. Under this program, financial firms are asked to make annual gifts to the Center. In exchange, member firms are given certain privileges, such as the right to receive Center publications, to send representatives to Center events, and to receive assistance in recruiting our students (both undergraduate and master students) for internships and permanent jobs. Members for 2005-06 include Barclays Capital, Citadel Investments Group, Citigroup, Crédit Suisse, Global Environmental Fund, Goldman Sachs, JP Morgan Chase, Lehman Brothers, Merrill Lynch, Moody's Corporation, and Morgan Stanley. We welcome our two newest members: Barclays Capital and Global Environmental Fund.

## Advisory Council

The Center relies on the help and advice of prominent alumni working in the financial sector. The sixth annual meeting of the Advisory Council took place on campus on June 8-9, 2006. Our meeting format was changed to include a dinner before the morning meeting. This enabled the Council members to exchange ideas in a more informal setting. The agenda was centered on the placement of future Master students, fine-tuning of the Undergraduate Certificate in Finance, and the design of the benefits offered to Corporate Affiliates. Council members were pleased to note the continued success of the Center's programs.

## Conclusion

Finance is important to Princeton's continued success as an educational and research institution because of 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 is not 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 it 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 BCF.

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 enhances the education, training and career opportunities of many of the world's very best students.



Yacine Ait-Sahalia  
Otto A. Hack '03 Professor of Finance and Economics  
Director, Bendheim Center for Finance  
August 2006

## 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 current 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 Oxford University and a Ph.D. in Economics from Princeton.

Courses taught:

- ECO 418: Strategy and Information
- ECO 502: Microeconomic Theory
- ECO 514: Game Theory

Undergraduate students advised:

- Howard Deutsch, "On-campus Recruiting as a Two-sided Matching Problem or, How I Managed to Find a Job"
- Adam Nebesar, "Oil and War: New Methods for Estimating the Macroeconomic Effects of Oil Shocks, using War in Iraq as a Case Study"

Graduate student advised:

- Attila Ambrus, "Coalitional Rationalizability"

Representative publications:

- "Evolutionary Stability in a Reputational Model of Bargaining," *Games and Economic Behavior*, August 2003 (with R. Sethi).
- "Bubbles and Crashes," *Econometrica* 71(1), 173-204, January 2003 (with M. Brunnermeier).
- "Synchronization Risk and Delayed Arbitrage," *Journal of Financial Economics* 66, 341-360, December 2002 (with M. Brunnermeier).
- "Bargaining and Reputation," *Econometrica* 68(1), 85-117, January 2000 (with F. Gul).
- "On the Theory of Infinitely Repeated Games with Discounting," *Econometrica* 56(2), 383-396, March 1988.

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**Yacine Aït-Sahalia** is the Otto A. Hack '03 Professor of Finance and Economics and the Director of the Bendheim Center for Finance at Princeton University. He was previously a professor at the University of Chicago's Graduate School of Business. A past Sloan Research Fellow, he was



named an outstanding faculty by *Business Week's 1997 Guide to the Best Business Schools*, and is the recipient of the 1997 Michael Brennan Award, the 1998 Cornerstone Research Award, the 2001 FAME Research Award and the 2003 Aigner Award. He is a Fellow of the Econometric Society, the Institute of Mathematical Statistics, and a Research Associate for the National Bureau of Economic Research. He currently serves as an Editor of the *Review of Financial Studies*. He received his Ph.D. in Economics from the Massachusetts Institute of Technology in 1993 and his undergraduate degree from France's École Polytechnique.

Course taught:

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

Graduate students advised:

- Jialin Yu, "Saddlepoint Methods in Finance"
- Julio Cacho-Diaz, "Optimal Portfolio Choice in the Presence of Jumps"
- Rodrigo Guimaraes, "Comparing the Information in Currency Options and the Domestic and Foreign Term Structures of Interest Rates"

Representative publications:

- "A Tale of Two Time Scales: Determining Integrated Volatility with Noisy High-frequency Data," *Journal of the American Statistical Association*, 2005 (with L. Zhang and P. Mykland).
- "How Often to Sample a Continuous-time Process in the Presence of Market Microstructure Noise," *Review of Financial Studies*, 2005 (with P. Mykland and L. Zhang).
- "Estimators of Diffusions with Randomly Spaced Discrete Observations: A General Theory," *Annals of Statistics*, 2004 (with P. Mykland).
- "Disentangling Diffusions from Jumps," *Journal of Financial Economics*, 2004.
- "The Effects of Random and Discrete Sampling when Estimating Continuous-time Diffusions," *Econometrica*, 2003 (with P. Mykland).

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**Alexandre d'Aspremont** joined Princeton's ORF department in September 2004. His research focuses on interest rate option pricing and risk-management, applications of convex optimization to finance, statistics and machine learning and large-scale convex optimization in general. He received his undergraduate and graduate degrees from École Polytechnique and his Ph.D. from Stanford University in 2004. He is a member of the Institute for Operations Research and the Management Sciences (INFORMS) and the Society for Industrial and Applied Mathematics (SIAM).

Courses taught:

- ORF 307: Linear Programming
- ORF 523: Nonlinear Programming

Undergraduate students advised:

- Tiffany Eng, "News or Noise: Text Classification of Financial News using Support Vector Machines"
- Andrew Lieu, "Interest Rate Model Calibration: An Analysis of Rank vs. Stability"
- Vidal Sadaka, "The Effect of Political Reforms on Interest Rates as Turkey Negotiates Accession to the European Union"

Representative publications:

- "Sparse Covariance Selection via Robust Maximum Likelihood Estimation," International Conference on Machine Learning, Pittsburgh 2006 (submitted with O. Banerjee and L. El Ghaoui).
- "Static versus Dynamic Arbitrage Bounds on Multivariate Option Prices," preprint on ArXiv: cs.CE/0407029. To appear in *IMA Volumes in Mathematics and its Applications*.
- "A Direct Formulation for Sparse PCA using Semidefinite Programming," preprint on ArXiv: cs.CE/0406021, NIPS 2004, to appear in *SIAM Review* (with L. El Ghaoui, M. Jordan and G. Lanckriet).
- "Static Arbitrage Bounds on Basket Option Prices," Preprint on ArXiv: math.OC/0302243. *Mathematical Programming, Series A* 106(3), pp. 467-489, July 2006 (with L. El Ghaoui).
- "Risk-management Methods for the Libor Market Model using Semidefinite Programming," preprint on ArXiv: cs.CE/0302035, *Journal of Computational Finance* 8(4), pp. 77-99, summer 2005.

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**Swati Bhatt** has been a lecturer at Princeton since September 1992, teaching at the Woodrow Wilson School and in the Department of Economics. She obtained her Ph.D. in Economics from Princeton University in 1986 and worked as a research economist at the Federal Reserve Bank of New York until 1990. She then taught at the Stern School of Business, New York University, prior to joining Princeton. She is currently Director of Student Programs (undergraduate and graduate) at the Bendheim Center for Finance, Member of the Princeton Marshall Committee and the Princeton Rhodes Committee and Lecturer. Her research interests center on empirical corporate finance, venture capital and the entrepreneurship process. She runs the Bendheim Finance Seminar Series, a guest lecture program where leaders in business and finance interact with undergraduates. She is the liaison for several student organizations such as the Princeton Entrepreneurship Club, the Princeton Pre-Business Society, Business Today, 85Broads (a global network for women in finance, founded by Janet Hanson, Lehman Brothers), and the alumni organization, the Princeton Entrepreneurship Network (PEN).

Courses taught:

- ECO 320: Financial Derivatives and Arbitrage
- WWS 582: Topics in Applied Economics

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**David Blair** is Director of Corporate Relations for the Bendheim Center for Finance. Previously he had been a Managing Director with Morgan Stanley and, prior thereto, a partner in the law firm of White & Case. His responsibilities with the Center include i) managing the Corporate Affiliates program which seeks support for the Bendheim 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 Bendheim Center, and iv) developing and teaching a special seminar in applied finance. He received his undergraduate degree from Princeton and graduate degrees in law and business from Columbia University.

Course taught:

- Freshman Seminar FRS 126: Modern Financial Markets

Undergraduate students advised:

- Gordon Grant, "The Georgia Fair Lending Act: The Cost of Exclusion from the Secondary Mortgage Market"
- David W. Roberts, "Unlocking Value for Institutional Investors: The Effectiveness of the Proxy Fight"

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**Alan Blinder** is the Gordon S. Rentschler Memorial Professor of Economics. He is also the Co-Director of the Center for Economic Policy Studies at Princeton University, which he founded in 1989. He is former Vice Chairman of the Board of Governors of the Federal Reserve System (1994-1996) and before that was a member of President Clinton's original Council of Economic Advisers (1993-1994). He also served briefly as Deputy Assistant Director of the Congressional Budget Office in 1975. He is a partner in the Promontory Financial Group, Vice Chairman of Promontory Interfinancial Network, Vice Chairman of the G7 Group, a Trustee of the Russell Sage Foundation, and has been elected to the American Philosophical Society and the American Academy of Arts and Sciences. He is the author or co-author 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 593c: Policy Analysis: The Political Economy of Central Banking

Representative publications:

- *The Quiet Revolution: Central Banking Goes Modern*, Yale University Press, 2004.
- *Downsizing in America: Reality, Causes, and Consequences*, Russell Sage Foundation, 2003 (with W. Baumol and E. Wolff).
- "Offshoring: The Next Industrial Revolution?" *Foreign Affairs*, March/April 2006.

- “Understanding the Greenspan Standard,” in Federal Reserve Bank of Kansas City, *The Greenspan Era: Lessons for the Future*, Proceedings of the 2005 Jackson Hole Symposium, 2005 (with R. Reis).
- “Are Two Heads Better than One? Monetary Policy by Committee,” *Journal of Money, Credit, and Banking*, October 2005 (with J. Morgan).

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**Markus Brunnermeier** is a Professor in the Department of Economics and faculty affiliate of the Bendheim Center for Finance and the International Economics Section. He is also a research associate at CEPR, NBER and CESifo, and an academic consultant to the Federal Reserve Bank of New York. Prof. Brunnermeier was awarded his Ph.D. by the London School of Economics (LSE), where he was also affiliated with its Financial Markets Group. His research focuses on stock market bubbles, financial and liquidity crisis, as well as behavioral economics. He shows that bubbles persist since sophisticated traders prefer to ride a stock market bubble rather than to go against it. His work on financial crisis and risk management studies the interaction between funding and market liquidity and “predatory trading” and explains why liquidity dries up when it is needed most. His research in behavioral finance proposes a shift away from the rational expectations paradigm towards “optimal expectations.” He is associate editor of the *Journal of Finance*, the *Review of Financial Studies* and is on the editorial board of the *Journal of Financial Intermediation*. He won various awards, including the Sloan Research Fellowship, the Smith-Breedon Prize for the best paper published in the *Journal of Finance* 2004, grants from the National Science Foundation and he was selected for the Review of Economic Studies Tour.

Course taught:

- FIN 501: Asset Pricing I: Pricing Models and Derivatives
- ECO 575/FIN 595: Topics in Financial Economics

Representative publications:

- “Optimal Expectations,” *American Economic Review*, 95(4), 1092-1118 (with J. Parker).
- “Information Leakage and Market Efficiency,” *Review of Financial Studies*, 18(2), 417-457, 2005.
- “Predatory Trading,” *Journal of Finance*, 60(4), 1825-1863 (with L. Pedersen).
- “Hedge Funds and the Technology Bubble,” *Journal of Finance*, 59(5), 2007-2034, 2004 (with S. Nagel). Smith Breedon Prize for the best article published in the *Journal of Finance*, 2004 (First Prize).
- “Bubbles and Crashes,” *Econometrica*, 71(1), 173-204, 2003 (with D. Abreu).

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**René Carmona**, Paul M. Wythes '55 Professor of Engineering and Finance, is with the Department of Operations Research and Financial Engineering. As Director of Graduate Studies of the Bendheim Center, he is responsible for the Master in Finance program. He joined Princeton

University in 1995. He was granted the “Agregation” of Mathematics (federal degree) in June 1969, and a “These d’Etat” in Probability from the University of Marseille in June 1977. He was elected Fellow of the Institute of Mathematical Statistics in 1984. He is a member of the American Mathematical Society, the Society for Industrial and Applied Mathematics, the Institute of Mathematical Statistics and the Bachelier Finance Society. His research interests center on stochastic analysis as applied to financial engineering and statistical analysis of financial data. He works on mathematical models for incomplete markets and computational methods for energy and credit markets.

Courses taught:

- ORF 505/FIN 505: Modern Regression and Time Series
- ORF 531/FIN 531: Computational Finance in C++
- ORF 557,558: Stochastic Analysis Seminar

Graduate students advised:

- Albina Danilova, “Indifference Pricing for Weather Derivatives”
- Valdo Durrleman, “From Implied to Spot Volatility”
- Mike Ludkovski, “Monte Carlo Pricing of Energy Tolling Agreements”
- Lixin Wang, “Applications of the Malliavin Calculus to the Analysis of Stochastic Partial Differential Equations”

Recent publications:

- *Indifference Pricing* (editor), Princeton University Press, forthcoming 2007.
- *Interest Rate Models: An Infinite Dimensional Stochastic Analysis Perspective*, Springer Verlag, 2006.
- *Statistical Analysis of Financial Data in S-Plus*, Springer Verlag, 2nd Printing, 2006.
- “Optimal Switching with Applications to Energy Tolling Agreements” (with M. Ludkovski)
- “Gas Storage and Supply Guarantees: An Optimal Switching Approach” (with M. Ludkovski)

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**Patrick Cheridito** received his Ph.D. from ETH Zurich (Switzerland) in 2001 and visited universities in Vienna, Paris, Barcelona and Pisa in the academic year 2001-02, before visiting the BCF in 2002-03. Since September 2003, he has been an Assistant Professor in the Department of Operations Research and Financial Engineering. His research interests center on the theory of stochastic processes and their applications to finance. In the last year he has been working on the following research projects: Together with Damir Filipović (University of Munich) and Robert Kimmel (Bendheim Center), he worked on affine models for interest rates; with Mete Soner (Koc

University in Istanbul) and Nizar Touzi (Crest in Paris), he studied the problem of hedging contingent claims under gamma constraints; and with Freddy Delbaen and Michael Kupper (both ETH Zurich), he studied dynamic risk measures.

Courses taught:

- ORF 435: Financial Risk Management
- ORF 535: Financial Risk Management
- ORF 527: Stochastic Calculus and Finance
- ORF 558: Stochastic Analysis Seminar

Undergraduate students advised:

- Richard Apple, "How Deep is the Hole? A Stochastic Analysis of the Pension Benefit Guaranty Corporation"
- Ceyda Dagdelen, "Risk Measures and Capital Requirements"
- Elizabeth Larkins, "The Wealth of Nations: An Analysis of the Correlation between United States Economic Indicators and the Probability of Default of Emerging Market Countries"
- Andrea Leewong, "The Stock Market Overreaction Mystery: Human Judgment Bias in Financial Decision-making"
- Joseph McConnell, "Optimal High School Sizes in Relation to School Demographics"
- Joseph Solomond, "Measuring Risk in Sectors of the S&P 500: Calculating VaR and Expected Shortfall Assuming Heavy Tailed Distributions"

Graduate student advised:

- Andrew Moroz, "Determining the Minimum Super-replication Cost of a Contingent Claim under Delta and Gamma Constraints in Discrete Time"

Recent publications:

- "Composition of Time-consistent Dynamic Monetary Risk Measures in Discrete Time," preprint (with M. Kupper).
- "Monetary Risk Measures on Maximal Subspaces of Orlicz Classes," preprint (with T. Li).
- "Time-consistency of Indifference Prices and Monetary Utility Functions," preprint (with M. Kupper).
- "Second Order Backward Stochastic Differential Equations and Fully Non-linear Parabolic PDEs," forthcoming in *Communications on Pure and Applied Mathematics* (with M. Soner, N. Touzi and N. Victoir).

- “Market Price of Risk Specifications for Affine Models: Theory and Evidence,” forthcoming in *Journal of Financial Economics* (with D. Filipović and R. Kimmel).
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**Gregory Chow** is Professor of Economics and Class of 1913 Professor of Political Economy, Emeritus, at Princeton University. He was Manager of Economic Research at the I.B.M. Thomas J. Watson Research Center from 1962-1970, and Director of the Econometric Research Program at Princeton University from 1970-1997. The Program was renamed the Gregory C. Chow Econometric Research Program in 2001. Professor 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*. Professor 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.

Course taught:

- ECO 379: The Chinese Economy

Representative publications:

- *Knowing China*. Singapore: World Scientific Publishing Co., 2004.
  - “A Time-series Analysis of the Shanghai and New York Stock Price Indices,” *Annals of Economics and Finance*, 17-35, May 2003 (with C. Lawler).
  - *China’s Economic Transformation*. Oxford: Blackwell Publishers, 2002.
  - *Dynamic Economics: Optimization by the Lagrange Method*. Oxford: Oxford University Press, 1997.
  - “Equity Premium and Consumption Sensitivity when the Consumer-investor Allows for Unfavorable Circumstances,” *Journal of Economic Dynamics and Control*, 26(9-10), 1417-1429, August 2002 (with L. Zheng).
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**Erhan Çinlar** first came to Princeton University as a Visiting Professor of Statistics in 1979-80. He is currently the Norman J. Sollenberger Professor of Engineering in the Department of Operations Research and Financial Engineering. He is a Fellow of the Institute of Mathematical Statistics, a Fellow of INFORMS, an elected member of the International Statistical Institute and is the recipient of the Science Prize of TÜBİTAK. He has served as editor or associate editor of over 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.

Courses taught:

- ORF 309: Probability and Stochastic Systems
- ORF 526: Stochastic Modeling
- ORF 551/APC 521: Probability Theory
- ORF 554: Markov Processes
- ORF 557: Stochastic Analysis Seminar

Representative publications:

- "Lyapunov Exponents of Poisson Shot-noise Velocity Fields," *Stochastic Processes and Their Applications*, 94, 29-49, 2001 (with M. Caglar).
- "Spectral Expansion of the Occupation Measure for Birth and Death on a Flow," *Stochastic Processes and Their Applications*, 74, 203-215, 1998 (with J. Kao).
- "Dispersion of Particle Systems in Brownian Flows," *Advances in Applied Probability*, 28, 53-74, 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, 993-997, 2003.

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**Savas Dayanik** joined Princeton's ORF Department in September 2002. His research interests include applied probability, stochastic processes and modeling, optimal stopping, optimal stochastic control with applications to finance, investment decision analysis and operations management. He completed his Ph.D. degree in Operations Research with concentration in Applied Probability at Columbia University in 2002. He received the first prizes in the INFORMS 2002 George E. Nicholson Student Paper Competition and in the INFORMS 2005 Junior Faculty Interest Group Paper Competition. He has been recently selected as the recipient of the IMS 2006 Inaugural Richard L. Tweedie New Researcher Award. He is a member of Institute for Operations Research and the Management Sciences (INFORMS) and Institute of Mathematical Statistics (IMS).

Courses taught:

- ORF 245: Fundamentals of Engineering Statistics
- ORF 526: Stochastic Modeling
- ORF 542: Controlled Markov Processes

Undergraduate students advised:



- Shern Frederick, "Ideal Damping Factor for Simulating Portfolio Returns: A Market-representative Approach"
- Neset Pirkul, "Insights into the Nature of Successful Acquisitions: An Empirical Approach"
- Todd Levy, "Buying and Selling Movies: An Analysis of the Hollywood Stock Exchange"
- Nishani Siriwardane, "Investment under Uncertainty: Optimal Strategies of CO2 Emitting Firms under the Kyoto Global Emissions Trading Market"
- Kevin Foster, "Your Team is Going Broke! Now Switch to Variable Ticket Pricing. An Analysis of NBA Game Attendance to be used with Revenue Management Techniques"
- Nada Siddiqui, "Re-engineering Portfolio Theory: Optimizing the Diversification of Moet Hennessy-Louis Vuitton (LVMH)"
- Devaushi Singham, "The Option to Abandon as Applied to the Sequential Investment Problem"
- Carl Zhang, "Speculation, Liquidity, and Information: The Puzzle of Chinese B-shares"

Graduate students advised:

- Masahiko Egami
- Semih S. Sezer
- Kazutoshi Yamazaki
- Christian Goulding

Representative publications:

- "Filling the Gap between American and Russian Options: Adjustable Regret," submitted to *Stochastics*, 2006 (with M. Ludkovski).
  - "Compound Poisson Disorder Problem," submitted to the *Mathematics of Operations Research*, 2005 (with S. Sezer).
  - "Adaptive Poisson Disorder Problem," *Annals of Applied Probability*, 2005 (with E. Bayraktar and I. Karatzas).
  - "Poisson Disorder Problem with Exponential Penalty for Delay," *Mathematics of Operations Research*, 2005 (with E. Bayraktar).
  - "On the Optimal Stopping Problem for One-dimensional Diffusions," *Stochastic Processes and their Applications*, 107(2), 173-212, 2003 (with I. Karatzas).
-

**Jianqing Fan** has been Professor of Operations Research and Financial Engineering since 2003. He was previously a faculty member at the University of North Carolina, University of California at Los Angeles, and the Chinese University of Hong Kong where he served as chair of the statistics department and received teaching awards in 2001 and 2002. Professor Fan received the 2000 President's Award from the Committee of Presidents of Statistical Societies, recognizing the most outstanding statistician under age 40. He is an elected member of the International Statistical Institute and an elected Fellow of the Institute of Mathematical Statistics, the American Statistical Association, and The American Association for Advancement of Science. He currently serves as the editor of *The Annals of Statistics* and as an Associate Editor of the *Journal of the American Statistical Association*. He earned his bachelor's degree from Fudan University in China, his master's degree from Academia Sinica in China, and his doctoral degree from the University of California at Berkeley. His research interests are financial econometrics, asset pricing, risk management, computational biology, nonlinear time series, high-dimensional data analyses, likelihood theory, nonparametric tests, generalized linear models, analysis of longitudinal data, and model selections.

Courses taught:

- ORF 245: Statistics for Engineering
- ORF 504/FIN 504: Financial Econometrics
- ORF 569: Statistical Learning and Nonparametrics
- ORF 570: Advanced Statistical Theory and Methods

Undergraduates advised:

- Evan Coopersmith: "Asymmetric Objectives and Inefficient Markets: A Non-parametric Predictor for Baseball Games and the Evaluation of Betting Lines"
- Darius Crator: "Towards an American Model: The Impact of Venture Capital Investment Characteristics on Performance: A Comparative Study of the United States, United Kingdom and Canada"
- Caroline W. Holst: "Evaluating the Hedge Fund Hype: Is There a Truer Performance Profile of Hedge Funds?"
- Mark Christopher Price: "Modern Examination of Investor Sentiment Theory behind the Closed-end Fund Discount"

Graduate students advised:

- Yingying Fan
- Clifford Lam
- Jinchu Lv
- Yue Niu

- Forest Zhang

Representative publications:

- "A Selective Overview of Nonparametric Methods in Financial Econometrics" (with discussion), *Statistical Science*, 20, 317-357, 2005.
- "Non-concave Penalized Likelihood with Diverging Number of Parameters," *The Annals of Statistics*, 32, 928-961, 2004 (with H. Peng).
- "Re-examination of Stanton's Diffusion Estimations with Applications to Financial Model Validation," *Journal of American Statistical Association*, 98, 118-134, 2003 (with C. Zhang).
- *Nonlinear Time Series: Nonparametric and Parametric Methods*, 570pp, New York: Springer-Verlag, 2003.
- *Figures and Computer Programs*, 2003 (with Q. Yao).

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**Victoria Henderson** is an Assistant Professor in the Department of Operations Research and Financial Engineering. She received her Ph.D. from the University of Bath in 1999 and has since held research positions at ETH Zurich, Warwick Business School and the University of Oxford. Her research interests are in the area of derivatives, including incomplete markets, non-traded assets, real options, executive stock options, and exotic options. She is also interested in optimal portfolio choice problems.

Courses taught:

- ORF 309: Probability and Stochastic Systems
- ORF 515/FIN 503: Asset Pricing II: Stochastic Calculus and Advanced Derivatives
- ORF 555: Fixed Income Models

Undergraduate students advised:

- Jessica Feng, "Analyzing Exercise Behavior after IPO Lockups: A Theoretical Incentive Model to Optimize Shareholder Exercise Strategy"
- Daniel Klemperer, "An Empirical Analysis of Executive Stock Option Exercise Principles"
- Jacqueline Ng, "Pricing Crash Options under Jump Diffusions Models"
- James Yu, "A Discrete Model for Real Options and a Fair Gamble"

Graduate student advised:

- Milda Darguzaitė, "Implied Volatility Modeling--Theory and Applications to Currency Options Data"

Representative publications:

- “Analytical Comparisons of Option Prices in Stochastic Volatility Models,” *Mathematical Finance*, 15(1), 49-59, January 2005.
- “On the Equivalence of Floating and Fixed-strike Asian Options,” *Journal of Applied Probability*, 39(2), June 2002 (with R. Wojakowski).
- “Valuation of Claims on Non-traded Assets using Utility Maximization,” *Mathematical Finance*, 12(4), 351-373, October 2002.
- “Local Time, Coupling and the Passport Option,” *Finance and Stochastics*, 4(1), 69-80, January 2000 (with D. Hobson).

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**Harrison Hong** joined Princeton University in 2003 as a Professor of Economics and Finance after having spent the year visiting us from the Graduate School of Business at Stanford University. His interests focus on behavioral finance, asset pricing with differences of opinion and short-sales constraints, asset pricing with market imperfections, career concerns and herding, social interaction and investor behavior in stock markets, and mutual funds. He is a member of the American Economic Association, American Finance Association, and the Western Finance Association. He received his Ph.D. from the Massachusetts Institute of Technology in 1997.

Courses taught:

- ECO 462/FIN 515: Portfolio Theory and Asset Management
- ECO 525: Financial Economics I

Undergraduate students advised:

- Kevin Crowe, Jr., “The Emergence of an Asset Class: An Empirical Analysis of Private Equity Performance”
- Donald Komorous, “The Stock Split Anomaly: An Analysis of Underreaction to Stock Splits”
- Lauren Washychyn, “Does Expensing Stock Options Cause Share Prices to Decline?”
- Scott Willig, “Dividend Taxation and Market Valuation”

Representative publications:

- “Does Fund Size Erode Mutual Fund Performance? The Role of Liquidity and Organization,” *American Economic Review*, December 2004 (with J. Chen and J. Kubik).
- “Talking up Liquidity: Insider Trading and Investor Relations,” *Journal of Financial Intermediation*, January 2005 (with M. Huang).
- “Thy Neighbor's Portfolio: Word-of-mouth Effects in the Holdings and Trades of Money Managers,” *Journal of Finance*, December 2005 (with J. Stein and J. Kubik).

- "Asset Float and Speculative Bubbles," *Journal of Finance*, forthcoming (with J. Scheinkman and W. Xiong).
- "Do Industries Lead Stock Markets?" *Journal of Financial Economics*, forthcoming (with W. Torous and R. Valkanov).

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**Harold James**, who holds a joint appointment as Professor of International Affairs in the Woodrow Wilson School and Professor in the History Department, studies economic and financial history and modern German history. He was educated at Cambridge University (Ph.D. in 1982) and was a Fellow of Peterhouse for eight years before coming to Princeton University 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 Chairman of the Editorial Board of *World Politics*.

Course Taught:

- WWS 460: History of Financial Crises

Graduate Students advised:

- Conor Healy, "Politics in a Tight Fix" (Politics of Exchange Rate Regimes)
- Klaus Veigel, "Politics of Stabilization in Argentina"

Representative publications:

- *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 MA.: Harvard University Press (also available in Chinese, German, Greek, Japanese, Korean, and Spanish translations), 2001
- *Europe Reborn: A History 1914-2000*, London: Longman/Pearson Education, 2003.
- *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 MA: Harvard University Press, (also available in German: Munich, Verlag C.H. Beck), 2006.

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**Daniel Kahneman** is the Eugene Higgins Professor of Psychology and Professor of Public Affairs in the Woodrow Wilson School since 1993. He was presented with the Thomas C. Schelling Award by Harvard's Kennedy School of Government in early May 2006. He is the co-recipient of the 2002 Nobel Prize in Economic Sciences. He is a member of the National Academy of Sciences, and in 2002 received (together with his late colleague Amos Tversky) the prestigious Grawemeyer Award in Psychology. He is a Fellow of the American Academy of Arts and Sciences, the Econometric Society, the American Psychological Association and the Canadian Psychological Association. He is currently on the Editorial Boards of the *Journal of Behavioral*

*Decision Making, Thinking and Reasoning, and Economics and Philosophy.* He received his Ph.D. in 1961 from the University of California.

Courses taught:

- PSY 101: Introduction to Psychology
- PSY 528/WWS 519: Negotiation, Persuasion, and Social Influence: Theory and Practice
- WWS 312/PSY 321: The Psychology of Decision Making and Judgment
- WWS 502: Psychology for Policy Analysis and Implementation
- WWS 515/PSY 529: Conceptions of the Human Agent: Implications for Policy

Representative publications:

- *Choices, Values and Frames*, New York: Cambridge University Press and the Russell Sage Foundation, summer 2000 (with A. Tversky).
- "Maps of Bounded Rationality: A Perspective on Intuitive Judgment and Choice," *Les Prix Nobel 2002*, T. Frangsmyr (ed.), 416-499.
- "A Perspective on Judgment and Choice: Mapping Bounded Rationality," *American Psychologist*, 58(9), 697-720, 2003.
- "Social Experiences of Research," *American Psychologist*, 58(9), 697-720, 2003.
- "Zeroing in on the Dark Side of the American Dream: A Closer Look at the Negative Consequences of the Goal for Financial Success." *Psychological Science*, 14(6), 531-536, 2003 (with C. Nickerson, N. Schwarz, and E. Diener).

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**Robert Kimmel** received his Ph.D. in Finance from the University of Chicago, Graduate School of Business in 2001. Prior to that, he also received an M.B.A. from the University of Chicago, Graduate School of Business, concentrating in Analytic Finance and Econometrics; an M.S. in Computer Science from Columbia University; and a B.S.E. in Computer Science and Engineering from the University of Pennsylvania. His research interests are focused mainly on new approaches to term structure modeling and estimation of continuous time stochastic processes.

Courses taught:

- ECO 462/FIN 515: Portfolio Theory and Asset Management
- ECO 466/FIN 521: Fixed Income: Models and Applications
- FIN 502: Corporate Finance and Financial Accounting

Representative publications:

- "Market Price of Risk Specifications in Affine Models: Theory and Evidence," *Journal of Financial Economics*, forthcoming (with P. Cheridito and D. Filipović).

- “Maximum Likelihood Estimation of Stochastic Volatility Models,” *Journal of Financial Economics*, forthcoming (with Y. Aït-Sahalia).
- “Modeling the Term Structure of Interest Rates: A New Approach,” *Journal of Financial Economics*, 2004.

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**Paul Krugman** is the author or editor of dozens of books and several hundred articles, primarily about international trade and international finance. He is also nationally 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. 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 524: Advanced Macroeconomics: Domestic Policy Issues

Representative publications:

- *Currency Crises* (ed.), University of Chicago Press, 2000.
- *The Return of Depression Economics*, Norton, 1999.
- *The Spatial Economy*, MIT Press, 1999 (with M. Fujita and A. Venables).

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**Burton Malkiel** has been the Chemical Bank Chairman’s Professor of Economics at Princeton since 1988. His research interests center on financial markets, asset pricing, and investment strategies. He is a regular op-ed page writer for *The Wall Street Journal*. He also serves on the boards of several financial and non-financial corporations. He has been awarded the Honorary Doctor of Humane Letters Degree from the University of Hartford (June 1971), Phi Beta Kappa, and the Harvard Business School Alumni Achievement Award for 1984. He received his Ph.D. from Princeton University.

Course taught:

- ECO 362: Financial Investments

Undergraduate students advised:

- George X. Zeng, “The Efficiency of the Chinese Stock Market”
- Teong Jun, “Dynamic Indexing”

Representative publications:

- *A Random Walk Down Wall Street*, W. W. Norton & Co., New York, 8th edition paperback, January 2004.
- “Investigating the Behavior of Idiosyncratic Volatility,” *The Journal of Business*, 76(4), October 2003 (with Y. Xu).
- “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]
- “The Growth of Index Funds and the Pricing of Equity Securities,” *Journal of Portfolio Management*, 27(2), winter 2001 (with A. Radisich). [Best Article for the Third Annual Bernstein Fabozzi/Jacobs Levy Awards]
- “Hedge Funds: Risk and Return,” *Financial Analysts Journal*, November/December 2005 (with A. Saha).

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**Stephen Morris** is an economic theorist whose work ranges from game theory to applied (microeconomic) theory to topics in financial economics. He taught at the University of Pennsylvania from 1991 to 1998, first as assistant and then as (tenured) associate professor. He joined the Yale faculty as Professor of Economics in 1998. In 2005 he was appointed as Professor of Economics at Princeton University and was named the Harold T. Shapiro \*64 Professor of Economics for the period July 1, 2005 to July 1, 2006. He received his Ph.D. in economics from Yale University in 1991. He was on leave 2005-06.

Representative publications:

- “Central Bank Transparency and the Signal Value of Prices,” *Brookings Papers on Economic Activity* 2, 1-66, 2005 (with H. Shin).
- “Multidimensional Private Value Auctions,” *Journal of Economic Theory* 126, 1-30, 2006 (with H. Fang).
- “Social Value of Information: Morris and Shin (2002) is Actually Pro Transparency, Not Con: Reply,” *American Economic Review* 96, 453-455, 2006 (with H. Shin and H. Tong).
- “Inertia of Forward Looking Expectations,” *American Economic Review Papers and Proceedings* 96, 152-157, 2006 (with H. Shin).
- “Beauty Contests and Bubbles,” *Review of Financial Studies* 19, 2006 (with F. Allen and H. Shin).

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**John Mulvey** is Professor of Operations Research and Financial Engineering. His research interests center on designing integrated financial planning systems for institutions, primarily pension plans and 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 Towers Perrin-Tillinghast investment system in 1999. He received his Ph.D. in Management from the University of California, Los Angeles.



Courses taught:

- ORF 311: Optimization under Uncertainty
- ORF 534: Financial Engineering

Undergraduate students advised:

- Nick Rowland, "Mergers and Acquisitions: A Behavioral Economics Approach"
- Nicole Thie, "A Parametric Analysis of Private Equity Performance"
- James Ma, "Dynamic Optimal Portfolio Rebalancing: Strategies for Corporate Finance"
- Colin Zima, "An Investigation of Efficiency in National Football League In-game Betting Markets"
- Andrei Greco, "The Soccer World Cup: A Mathematical Approach"

Graduate students advised:

- Batur Bicer, "Optimizing Merger and Acquisition Decisions"
- Mehmet Bilgili, "Optimizing a Multi-strategy Hedge Fund"
- Hafize Erkan, "Decentralized Risk Management for Global Financial Companies"
- Hakan Kaya, "Stochastic Models for Soybeans and Conditional Investment Strategies"
- Woo Chang Kim "Modeling Implied Correlation in Equity Markets"
- Richard Liao, "Optimizing Active Managers within Asset Allocation"
- Suraj Sujanani, "Securitizing Micro-finance Markets"
- Jamey Thompson, "A New Approach for Credit Risk Modeling"
- Cenk Ural, "Developing a Modeling Language for Optimizing a Multi-strategy Hedge Fund"
- Zhuojuan Zhang, "Stochastic Programming Models for the Defined Benefit Pension Industry"

Representative publications:

- "Decentralized Risk Management for Global Property and Casualty Insurance Companies," *Applications of Stochastic Programs*, SIAM Publication, 2005.
- "Applying CVaR for Decentralized Risk Management," *Journal of Banking and Finance*, 2005.

- "Applying Optimization Technology to Portfolio Management," *Journal of Portfolio Management*, 30<sup>th</sup> Anniversary Issue 2004.
- "Evaluating a Trend Following Commodity Index for Multi-period Asset Allocation," *Journal of Alternative Investments*, summer 2004.
- "The Role of Hedge Funds for Long Term Investors," *Journal of Financial Transformations*, spring 2004.

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**Jonathan A. Parker** is an Assistant Professor of Economics and Public Affairs at Princeton University where he is affiliated with the Department of Economics, the Bendheim Center for Finance, and the Woodrow Wilson School of Public and International Affairs. Dr. Parker received his Ph.D. in Economics from the Massachusetts Institute of Technology where he was awarded the Robert Solow Endowment Prize for excellence in research and teaching. Prior to his present position at Princeton, he held positions at the University of Michigan Business School, where he was a Society of Scholars Fellow, and at the Department of Economics at the University of Wisconsin, where he was the Maude P. and Milton J. Shoemaker Fellow. Since coming to Princeton, Professor Parker has been named an Alfred P. Sloan Research Fellow and a National Bureau of Economics Aging and Health Economics Fellow, and his research has received support from the National Science Foundation and the Sloan Foundation. He is also a National Bureau of Economic Research Faculty Research Fellow, an Associate Editor for the *Journal of Money, Credit and Banking*, and a member of the American Economic Association and Econometric Society. Professor Parker teaches macroeconomics, and his research has focused on the risk of the stock market, optimism and portfolio choice, taxation and consumer spending, national saving, income risk and consumer demand, corporate profit taxes and investment, and how wages adjust in recessions.

Courses taught:

- ECO 503: Macroeconomic Theory I
- ECO 521: Advanced Macroeconomic Theory I
- ECO 562: Topics in Development
- WWS 512c: Macroeconomic Analysis Advanced

Representative publications:

- "Consumption Risk and the Cross-section of Expected Returns," *Journal of Political Economy*, 113(1), 185-222, February 2005 (with C. Julliard).
  - "Luxury Goods and the Equity Premium," *Journal of Finance*, December 2004 (with Y. Aït-Sahalia and M. Yogo).
  - "Consumption over the Life Cycle," *Econometrica*, 70(1), 47-89, January 2002 (with P. Gourinchas).
  - "The Consumption Risk of the Stock Market," *Brookings Papers on Economic Activity*, 2, 279-348, 2001.
-

**Hélène Rey** received her Ph.D. from the London School of Economics and from the École des Hautes Études en Sciences Sociales in 1998. She came to Princeton in 2000 as an Assistant Professor. She was awarded an Alfred P. Sloan Research Fellowship in 2005. She is currently a Faculty Research Fellow in International Finance and Macroeconomics for the National Bureau of Economic Research. She is also a Research Affiliate in International Macroeconomics for the Centre for Economic Policy Research, and an Associate Editor of the *Journal of the European Economic Association* and of the *Economic Journal*. Her research interests focus mainly on international capital flows, exchange rates and financial crises.

Courses taught:

- ECO 553: International Monetary Theory and Policy I
- ECO 554: International Monetary Theory and Policy II
- WWS 544: International Macroeconomics

Graduate students advised:

- Deniz Igan
- Jordi Mondria
- Thomas Wu

Representative publications:

- "PPP Strikes Back: Aggregation and the Real Exchange Rate," *Quarterly Journal of Economics*, 120(1), 1-43, February 2005 (with J. Imbs, H. Mumtaz and M. Ravn).
- "The Determinants of Cross Border Equity Transaction Flows," *Journal of International Economics*, 64(2), 269-296, March 2005 (with R. Portes).
- "Financial Super-markets: Size Matters for Asset Trade," *Journal of International Economics*, 64(2), 335-361, December 2004 (with P. Martin).
- "Exchange Rates, Equity Prices and Capital Flows," *Review of Financial Studies*, 19(1), 2006 (with H. Hau).
- "Globalization and Emerging Markets: With or Without Crash?," forthcoming *American Economic Review* (with P. Martin).

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**José 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. He is a Research Associate of the National Bureau of Economic Research, a Fellow of the American Academy of Arts and Sciences and of the Econometric Society, and a "docteur honoris-causa" from the University of Paris-Dauphine. From 1973 to 1998, he taught at the University of Chicago, where he was from 1995 to 1998 the Chairman of the Economics Department, and since 1997 the Alvin H. Baum Distinguished Service Professor of Economics. From June 1987 to December 1988, Professor

Scheinkman was Vice President of the Financial Strategies Group at Goldman, Sachs & Co. He has been a visiting professor at 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, Professor Scheinkman held a Blaise Pascal Research Chair (France). His current research interests are the study of asset-price bubbles, developing tools for empirical studies of asset markets, and the economics of social interactions.

Courses taught:

- ECO 371/LAS 346: Topics in Country and Regional Economics: Latin American Economies
- ECO 502: Microeconomic Theory II
- ECO 525/FIN 595: Financial Economics I
- ECO 526: Finance Economics II

Representative publications:

- "Executive Compensation and Short-termist Behavior in Speculative Markets," *The Review of Economic Studies*, forthcoming (with P. Bolton and W. Xiong).
- "Pay for Short-term Performance: Executive Compensation in Speculative Markets," *Journal of Corporate Law*, forthcoming (with P. Bolton and W. Xiong).
- "Equilibria in Systems of Social Interactions," *Journal of Economic Theory*, forthcoming (with U. Horst).
- "Asset Float and Speculative Bubbles," *Journal of Finance*, forthcoming (with H. Hong and W. Xiong).
- "Overconfidence and Speculative Bubbles," *Journal of Political Economy*, 1183-1219, December 2003 (with W. Xiong).

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**Hyun Song Shin** joined Princeton in 2006 as Professor of Economics. Before coming to Princeton, he was Professor of Finance at the London School of Economics, and Senior Research Fellow of Nuffield College, Oxford. His 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 of the British Academy. He received his Ph.D. from Oxford University in 1988.

Courses taught:

- ECO 363: Corporate Finance and Financial Institutions
- ECO 526: Financial Economics II

Representative publications:

- "Central Bank Transparency and the Signal Value of Prices" *Brookings Papers on Economic Activity*, Issue 2, 2005 (with S. Morris)

- “Liquidity and Contagion: The Crisis of 1763,” *Journal of the European Economic Association*, 2, 929-968, 2004 (with I. Schnabel)
- “Disclosures and Asset Return,” *Econometrica*, 71, 105-133, 2003.
- “Social Value of Public Information,” *American Economic Review*, 52, 1521-1534, 2002, (with S. Morris)
- “Unique Equilibrium in a Model of Self-fulfilling Currency Attacks,” *American Economic Review*, 88, 587-597, 1998 (with S. Morris)

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**Christopher Sims** has been Professor of Economics at Princeton University since 1999. 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 also served as president and as a co-editor of *Econometrica*. He has intermittently served as 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.

Representative publications:

- “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, 1-60, 2002.
- “The Precarious Fiscal Foundations of EMU,” *De Economist*, 147(4), 415-436, 1999.
- “Error Bands for Impulse Responses,” *Econometrica*, 67(5), 1113-1156, 1999 (with T. Zha).
- “What Does Monetary Policy Do?,” *Brookings Papers on Economic Activity*, 2, 1-63, 1996 (with E. Leeper and T. Zha).

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**Ronnie Sircar** received his doctorate in 1997 from Stanford University. He taught for three years at the University of Michigan in the Department of Mathematics before coming to Princeton’s ORF Department, where he is an Associate Professor. He has been the recipient of National Science Foundation Research Grants during the period 1998-present. He was a recipient of the E-Council Excellence in Teaching Award for his teaching spring term 2002 and 2005, and the Howard B. Wentz Jr. Junior Faculty Award in 2003. His research interests center on stochastic models in finance, particularly for market volatility and credit risk; optimal control and utility indifference pricing in incomplete markets; employee stock options; and market microstructure models.

Courses taught:

- ORF 335/ECO 364: Introduction to Financial Engineering
- ORF 512: Stochastic Modeling

- ORF 515: Stochastic Calculus for Finance & Engineering
- ORF 575: Financial Engineering Seminar: Computational Finance (2003); Credit Risk (2004)

Graduate students advised:

- Siu-Tang Leung
- Evangelos Papageorgiou
- Antoine Toussaint

Representative publications:

- "Stochastic Volatility Corrections for Interest Rate Derivatives," *Mathematical Finance*, 14(2), April 2004 (with P. Cotton, J.-P. Fouque and G. Papanicolaou).
- "Stochastic Volatility Effect on Defaultable Bonds," *Applied Mathematical Finance*. 2006, forthcoming (with J.-P. Fouque and K. Solna).
- "Optimal Static-dynamic Hedges for Barrier Option," *Mathematical Finance*, 16(2), 2006 (with A. Ilhan).
- "Optimal Investment with Derivative Securities," *Finance & Stochastics*, 9(4), 2005 (with A. Ilhan and M. Jonsson).
- "A Limit Theorem for Financial Markets with Inert Investors," *Mathematics of Operations Research*, 2006, forthcoming (with E. Bayraktar and U. Horst).

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**Kenneth Steiglitz** received his doctorate in 1963 from New York University and has been teaching at Princeton ever since. He was promoted to Associate Professor in 1967 and Professor in 1973. He is a Fellow of the IEEE (1981), a Fellow of the ACM (1997) and has been awarded the Technical Achievement Award of the Signal Processing Society (1981), the Signal Processing Society Award (1986), the IEEE Centennial Medal in 1984, the School of Engineering Distinguished Teacher Award in 1997, and the IEEE Third Millennium Medal in 2000. His research interests are in agent-based modeling of markets and auctions, and in computing using soliton collisions.

Courses taught:

- COS 444: Electronic Auctions
- COS 576: Nonstandard Computation
- FRS 119: Beyond Silicon: The Future(s) of Computers

Undergraduate students advised (agent-based simulation projects):

- Kimberly Tzeng, "A Simulation of Price Bubbles in the Market"
- John Pym, "Performance of Alternative Pricing Models for S&P 500 Index Options"

Representative publications:

- "Snipers, Shills, and Sharks: EBay and Human Behavior," Princeton University Press, forthcoming, 2007.
- "Quantum Theory of Manakov Solitons," *Phys. Rev. A* 71, 053805, 1-10, May 11, 2005 (with D. Rand and P. Prucnal).
- "The Spite Motive and Equilibrium Behavior in Auctions," *Contributions to Economic Analysis & Policy*, 2(1), Article 5, 2003 (with J. Morgan and G. Reis).
- "Effects of Price Signal Choices on Market Stability," *Journal of Economic Behavior and Organization*, 52(2), 235-251, October 2003 (with H. Mizuta and E. Lirov).
- "Computing with Solitons: A Review and Prospectus," Chapter 10 in *Collision-Based Computing*, A. Adamatzky (ed.), Springer, 2002 (with M. H. Jakubowski and R. Squier).

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**Lars E. O. Svensson** joined the Economics Department in the fall of 2001. He had been Professor of International Economics at the Institute for International Economic Studies, Stockholm University, since 1984. He has published extensively in scholarly journals on monetary economics and monetary policy, exchange rate theory and policy, and general international macroeconomics. He has lectured and visited at universities, central banks and international organizations in many countries. He is a member of the Royal Swedish Academy of Sciences, a member of Academia Europae, a foreign member of the Finnish Academy of Science and Letters, a foreign honorary member of the American Academy of Arts and Sciences, a Fellow of the Econometric Society, a research associate of the National Bureau of Economic Research, a research fellow of the Centre for Economic Policy Research, London, and a Fellow of the European Economic Association. He was a member of the Prize Committee for the Alfred Nobel Memorial Prize in Economic Sciences through 2002 and its chair during 1999-2001. He is active as advisor to Sveriges Riksbank (Bank of Sweden) and regularly consults for international, U.S. and Swedish agencies and organizations. In 2000-2001, he undertook a review of monetary policy in New Zealand, commissioned by the New Zealand government. In 2002, he chaired a committee evaluating monetary policy in Norway. He is a member of the Academic Advisory Board and the Monetary Policy Advisory Panel of the Federal Reserve Bank of New York. He received his Ph.D. in Economics from Stockholm University.

Courses taught:

- ECO 200: Advanced Principles of Economics: Concepts and Applications
- ECO 504: Macroeconomic Theory II
- ECO 522: Advanced Macroeconomic Theory
- ECO 554: International Monetary Theory and Policy II

Undergraduate students advised:

- Nicole Baraff, "For Richer and For Poorer: Disproving the Trade-off Between Profitability and Outreach Depth in Commercial Microfinance"
- Bobbie King, "Stock-bond Co-movement in Response to Federal Reserve FFR"
- Vivian Tan, "The Profitability of China's Credit Card Industry"

Graduate students advised:

- Brad Strum, "Stochastic Optimization for Enterprise Risk Management"
- Rujikorn Pavasuthipaisit

Representative publications:

- "Time Consistency of Fiscal and Monetary Policy: A Solution," *Econometrica* 74, 193-212, 2006 (with M. Persson and T. Persson).
- "Implementing Optimal Policy through Inflation-forecast Targeting," in Ben S. Bernanke and Michael Woodford (eds.), *The Inflation-Targeting Debate*, University of Chicago Press, 19-83, 2005 (with M. Woodford).
- "Indicator Variables for Optimal Policy," *Journal of Monetary Economics*, 50, 691-720, 2003 (with M. Woodford).
- "What Is Wrong with Taylor Rules? Using Judgment in Monetary Policy through Targeting Rules," *Journal of Economic Literature*, 41, 426-477, 2003.
- "The Zero Bound in an Open-economy: A Foolproof Way of Escaping from a Liquidity Trap," *Monetary and Economic Studies*, 19(S-1), 277-312, February 2001.

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**Robert Vanderbei** is a Professor in Operations Research and Financial Engineering since 1999. He is currently the Chair of that Department. Broadly viewed, his research interests are in 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 Associate Editor for *Optimization in Engineering* and *Mathematical Programming*. He is a member of the American Mathematical Society, Society for Industrial and Applied Mathematics, Institute for Operations Research and the Management Sciences, Mathematical Programming Society, SPIE, and American Astrophysical Society. He received his Ph.D. in Applied Mathematics from Cornell University in 1981.

Courses taught:

- ORF 307: Optimization
- ORF 522: Linear Optimization



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, 695-701, 2003 (with W. Traub).
- “Circularly Symmetric Apodization via Starshaped Masks,” *Astrophysical Journal*, 590, 593-603, 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, 2<sup>nd</sup> edition, 2001.

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**Erik VanMarcke** is Professor of Civil and Environmental Engineering. He was on the faculty of the Massachusetts Institute of Technology until 1985, since receiving his doctorate there in 1970. At MIT, he was the Gilbert W. Winslow Career Development Professor and served as Director of the Civil Engineering Systems Methodology Group. He held visiting appointments at Harvard University, the Technical University of Delft (The Netherlands), and the University of Leuven (Belgium), his undergraduate alma mater, and was the Shimizu Corporation Visiting Professor at Stanford University. His principal expertise is in risk assessment and applied systems science. He authored *Random Fields: Analysis and Synthesis*, published by the MIT Press, and extended this work to modeling space-time processes and complex systems. He won several research prizes of the American Society of Civil Engineers, 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 360 & 548: Risk Assessment and Management
- CEE 558: Random Fields and Random Media

Undergraduate students advised:

- Rolando Amaya, “Assessing and Reducing the Risk of Terrorist Attacks on Municipal Water Distribution Systems”
- Lisa Kamran Bilir, “Comparing Costs under Uncertainty as a Guide for Public Policy: An Application of Markov Chains to Region-based Water Management in California”
- Geoffrey P. Adamson, “Catastrophic Risk of Florida Landfalling Hurricanes: The Effect of El Nino on Financial Engineering Applications”
- Allison L. Smitten, “Cost-effectiveness Models and Decision Analysis in Health and Medicine”

Graduate student advised:

- Nan Ding, "Enterprise Risk Management: Applications in Software Development and Data Security"

Representative publications:

- *Acceptable Risk Processes: Lifelines and Natural Hazards*, Monograph No. 21, Council on Disaster Reduction and Technical Council on Lifeline Earthquake Engineering, Published by the American Society of Civil Engineers, March 2002 (with C. Taylor).
- "Evaluating Models of Risks from Natural Disasters for Insurance and Government," in *Paying the Price: The Status and Role of Insurance against Natural Hazards in the United States*, R. Roth & H. Kunreuther (eds.), Joseph Henry Press (N.A.S.), 239-249, 1999 (with C. Taylor and J. Davis).
- *Random Fields: Analysis and Synthesis*, The MIT Press, 1983; Second (Web) Edition by Rare Book Services, Princeton NJ, 1998.

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**Mark Watson** is Professor of Economics and Public Affairs in the Economics Department 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 been awarded National Science Foundation research grants from 1982-2005 and has received the Galbraith Award for Graduate Teaching in 1986. 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:

- Economics 513: Advanced Econometrics: Time Series Models
- Economics 518: Econometric Theory II
- WWS 507b: Quantitative Analysis

Undergraduate students advised:

- Luke Friedman, "An Evaluation of the Performance of Univariate Forecasting Models"
- Arthur Han, "The Socioeconomic Determinants of Specialty Choice by U.S. Medical Students"

Representative publications:

- "Forecasting using Principal Components from a Large Number of Predictors," *Journal of the American Statistical Association*, 2002 (with J. Stock).
- "Forecasting Output and Inflation: The Role of Asset Prices," *Journal of Economic Literature*, 2003 (with J. Stock).

- “Understanding Changes in International Business Cycle Dynamics,” *Journal of the European Economic Association*, 2005 (with J. Stock).
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**Wei Xiong** is an Assistant Professor in the Economics Department. He received his Ph.D. from the Fuqua School of Business, Duke University, in 2001. His research interests center on speculative bubbles, financial market crisis, and behavioral finance. His recent papers provide a framework to analyze speculative behavior of investors and its implications for stock price dynamics and managerial incentives. His earlier papers analyze the contagion and market liquidity during crisis periods. He is a fellow of the National Bureau of Economic Research. He was invited by the *Review of Economic Studies* to present his research on its annual European tour in 2000.

Courses taught:

- ECO 465/FIN 522: Futures, Options and Financial Derivatives
- ECO 525/FIN 595: Financial Economics I
- ECO S500: Mathematics for Economists

Undergraduate students advised:

- Olga Zhilaeu, “Valuation of Executive Stock Options: A Comparative Analysis”
- Sean Cameron, “Heterogeneity in Mortgage Refinancing: An Analysis of Homeowner Background Variables”
- Jeremy Fazli, “QQQ and the Nasdaq-100: Modeling Structural Differences in the Associated Options Markets”
- Brian Shiao, “Event Contracts: New Financial Applications and Implementation in Theory”

Representative publications:

- “Executive Compensation and Short-termist Behavior in Speculative Markets,” *Review of Economic Studies*, 2006 (with P. Bolton and J. Scheinkman).
- “Asset Float and Speculative Bubbles,” *Journal of Finance*, 2006 (with H. Hong and J. Scheinkman).
- “Investor Attention, Overconfidence and Category Learning,” *Journal of Financial Economics*, 2006 (with L. Peng).
- “Overconfidence and Speculative Bubbles,” *Journal of Political Economy*, 2003 (with J. Scheinkman).
- “Contagion as a Wealth Effect,” *Journal of Finance*, 2001 (with P. Kyle).



## Visiting Faculty

During the academic year 2005-06, the BCF welcomed the following visiting faculty:

**Shmuel Baruch** is an Assistant Professor of Finance at the University of Utah, and he received his Ph.D. from Washington University in St. Louis. His papers in market microstructure were published in *Econometrica*, the *Journal of Finance*, and the *Journal of Business*.

Courses taught:

- ECO 363: Corporate Finance
- ECO 461/FIN 512: Trading and Securities Markets
- ECO 467/FIN 567: Institutional Finance

**David Hobson** was at Princeton during 2004-2006 as a Senior Research Mathematician. He is a Reader at the University of Bath and an Engineering and Physical Sciences Research Council Advanced Fellow. In 2003 he won the prestigious Adams Prize for doing first-class international research in the Mathematical Sciences. David studied as an undergraduate and postgraduate at the University of Cambridge, and then undertook a postdoctoral fellowship funded by Record Treasury Management before moving to Bath in 1994.

Representative publications:

- "Maximising the Probability of a Perfect Hedge using an Imperfectly Correlated Instrument," *International Journal of Theoretical and Applied Finance*, 8, 763-790, 2005 (with J. Penn).
- "Local Martingales, Bubbles and Option Prices," *Finance and Stochastics*, 9, 477-492, 2005 (with A. Cox).
- "Skorokhod Embeddings, Minimality and Non-centered Target Distributions," *Probability Theory and Related Fields*, 135, 395-414, July 2006 (with A. Cox).
- "Static-arbitrage Upper Bounds for the Prices of Basket Options," *Quantitative Finance* 5, No. 4, 329-342, August 2005 (with P. Laurence and T-H. Wang).
- "Static-arbitrage Optimal Subreplicating Strategies for Basket Options," *Insurance: Mathematics and Economics* 37, No. 3, 553-572, 2005 (with P. Laurence and T-H. Wang).

**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. Mr. Sexton graduated from Princeton University 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 May 1995, Mr. Sexton became an active Advisory Director of Morgan Stanley. In September 1995, Mr. Sexton became an Adjunct Professor at Columbia University's Graduate School of Business, teaching two courses in the subject of Corporate Finance. In the spring of 2000, he became a Visiting Lecturer at Princeton University. Mr. Sexton is a member of the Board of Directors of Morgan Stanley, and is a Director of Investor AB, a publicly traded company based in Stockholm, Sweden, and of two other privately held companies.

Course taught:

- ECO 464/FIN 519: Corporate Restructuring

## *Visiting Fellows*

The Center welcomed the following visiting fellows during the academic year 2005-06:

**Alfred Galichon** is a Ph.D. candidate at Harvard University and an alumni of École Polytechnique and Corps des Mines. He spent the spring 2006 semester at the Bendheim Center for Finance. His research topics include partial identification in econometrics and asset pricing models based on implied correlation. He is expecting to complete his Ph.D. from Harvard in the academic year 2006-2007.

**Tommaso Padoa-Schioppa** visited Princeton during the fall term. He was a member of the European Central Bank's six-member executive board from its foundation in 1998 until the end of May, 2005. While here, he presented an informal seminar on the monetary policy of the ECB on November 9, 2005. He has since become Finance Minister of Italy.

**Gauhar Turmuhambetova** received her Ph.D. degree from the University of Chicago in 2005. She spent her academic year 2005-06 at the Bendheim Center for Finance and Department of Economics at Princeton University. Her research interests include decision making with information constraints and its applications in finance.

## *Graduating Ph.D. Students*

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. Seven Ph.D. students graduated in 2005-06.

- **Alvaro Bustos** graduated from the Department of Economics. His thesis studied the role and impact of courts in the dynamic efficiency of Corporate Common Law and also in the optimal composition of precise and vague clauses written in contracts. The thesis was written under the supervision of Patrick Bolton. He has accepted a fellowship offered by the School of Law of Northwestern University in order to obtain a Master in Legal Studies.
- **Rodrigo Guimaraes** graduated from the Department of Economics. His thesis "A Dynamic Arbitrage Approach to Exchange Rates and Interest Rates" dealt with the informational content in currency and fixed income markets and the relation between both markets imposed by arbitrage arguments. The thesis was written under the supervision of Yacine Ait-Sahalia. He has accepted a Quantitative Currency Research Associate position within the Global Research group of Barclays Capital in London.
- **Marc Martos-Vila** graduated from the Department of Economics. His dissertation, under the supervision of Professor Patrick Bolton, studied the market for corporate control, paying special attention to the conflicts of interest between managers and shareholders. He has accepted a position as an Assistant Professor at UCLA's Anderson School of Management.
- **Brad Strum** graduated from the Department of Economics. He has been engaged in understanding theoretical and empirical issues related to the design and implementation of monetary policy. His dissertation explored the relationship of input-output linkages between firms and the setting of monetary policy, and was written under the supervision of Lars Svensson. Brad has accepted an Economist position at the Board of Governors of the Federal Reserve System.
- **Jamey Thompson** graduated from the Department of Operations Research and Financial Engineering. His thesis, written under the supervision of John Mulvey, developed a Lévy process-based model for default dependence. He has accepted a position as a Quantitative Analyst with King Street Capital Management, a hedge fund based in New York City.
- **Cenk Ural** graduated from the Department of Operations Research and Financial Engineering. His thesis topic "A Modeling Framework for Multi-Strategy Hedge Funds" was written under the supervision of John Mulvey. He has accepted an Associate position in the Equity Proprietary Trading group at Lehman Brothers.
- **Zhuojuan Zhang** graduated from the Department of Operations Research and Financial Engineering. Her thesis topic "Stochastic Optimization for Enterprise Risk Management" was written under the supervision of John Mulvey. She has accepted an Associate position in the Financial Modeling group at BlackRock, Inc.



## *Finance Seminars*

Each week, the Bendheim Center for Finance organizes a seminar where academics are invited to present their latest research to the faculty and Ph.D. students of the Center. The seminar usually meets on Wednesdays, 2:50-4:00 p.m. in the Bendheim Center for Finance classroom.

### *Civitas Foundation Finance Seminar Fall 2005*

September 21	Harry M. Markowitz, UCSD Rady School	Portfolio Theory: Past, Present and Future
September 28	Kent D. Daniel, Northwestern University	Testing Factor-model Explanations of Market Anomalies
October 5	Marc Martos-Vila, Princeton University	Executive Compensation and the Search for Corporate Control
October 12	Tano Santos, Columbia University	Cash-flow Risk, Discount Risk, and the Value Premium
October 20	Tom Palfrey, Princeton University (Department-wide Seminar)	The Paradox of Voter Participation? A Laboratory Study
November 9	Bernard Dumas, INSEAD	What Can Rational Investors Do about Excessive Volatility and Sentiment Fluctuations?
November 16	Shmuel Baruch, University of Utah	Limit-order Markets and Working Orders in Floor Exchanges
December 7	Rodrigo Guimaraes, Princeton University	Taking Arbitrage Restrictions on Interest Rates and Exchange Rates Seriously
December 14	Wei Xiong, Princeton University	What Drives the Disposition and Momentum Effects? An Analysis of Some Recent Preference-based Explanations
January- February	Job Market Talks	

*Civitas Foundation Finance Seminar Spring 2006*

March 1	Holger Mueller, NYU	Concentrated Ownership and Labor Relations
March 8	Tobias Adrian, NY Federal Reserve	Stock Returns and Volatility: Pricing the Short-run and Long-run Components of Market Risk
March 15	James Vickery, NY Federal Reserve	Fannie and Freddie's Excellent Adventure: GSEs, Consumer Choice and Pricing in the Residential Mortgage Market
March 29	Ioanid Rosu, University of Chicago	The Success Probability and Synergies of a Tender Offer via Stock and Option Prices
April 5	Yacine Aït-Sahalia, Princeton University (Department-wide Seminar)	Estimating Continuous-time Models using Discretely Sampled Data
April 12	Borja Larrain, Boston Federal Reserve	Do IPOs Affect the Prices of Other Stocks?
April 19	Stefano Della Vigna, UC Berkeley	Using Financial Markets to Detect Illegal Arms Trade
April 26	David Lando, Copenhagen Business School	Decomposing Swap Spreads
May 3	Andres Almazan, University of Texas, Austin	Firm Location and the Creation and Utilization of Human Capital
May 10	Sheridan Titman, University of Texas, Austin	Financial Structure, Liquidity and Firm Locations

## Conferences

During the past year, the Bendheim Center for Finance organized the following conferences and events on campus.

### *The Princeton Lectures in Finance*

Each year, the BCF organizes a series of public lectures. The Princeton Lectures in Finance are delivered by a leader in the field of finance. The author is invited to the BCF to deliver the contents of his or her book in the form of three two-hour lectures to the Center's faculty and students. The lectures form the basis of a book to be subsequently published by Princeton University Press.

The **2006** *Princeton Lectures in Finance* were given by **Hayne Leland** of the University of California at Berkeley, on the topic of "Structural Models in Corporate Finance," on September 20-22, 2006, in BCF 103:

- Wednesday, September 20, 3:00-4:20 p.m., Lecture 1: Structural Models of Corporate Financial Choice
- Thursday, September 21, 3:00-4:20 p.m., Lecture 2: Optimal Financial Decisions using Structural Models
- Friday, September 22, 10:30-11:50 a.m., Lecture 3: Optimal Financial Scope and Structured Finance

In previous years, Professor **Stephen A. Ross**, the Franco Modigliani Professor of Financial Economics at the Massachusetts Institute of Technology, delivered the May 2001 lectures at the BCF on the theme of **Arbitrage and Finance**. These published lectures are now available from the Princeton University Press. The second lecturer and author was Professor **Myron Scholes**, Emeritus Professor at Stanford University and 1997 Nobel Laureate. He delivered his lectures at the BCF on the theme of **Liquidity and Finance** in May 2002. There were no lectures in 2003. In 2004, **William Sharpe**, Professor Emeritus at Stanford University delivered his lectures on **Asset Prices and Portfolio Choice**. The 2005 lectures were given by **Douglas Diamond**, Professor at the University of Chicago, on the topic of **Financial Intermediation and Financial Systems**.

## *Cambridge-Princeton Conference*

This conference 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. The conference took place on **September 16-17, 2005** in room 103 of the Bendheim Center.

### **Friday, September 16, 2005**

12:30 - 2:00 p.m.

Lunch (Bendheim Center for Finance)

Session Chair: René Carmona

2:00 - 2:45 p.m.

**Wolf Wagner** (joint with Benedikt Goderis): Credit Derivatives and Sovereign Debt Crises

Discussant: **Jose Scheinkman**

2:45 - 3:30 p.m.

**Wei Xiong** (joint with Harrison Hong and Jose Scheinkman): The Road to a Technology Bubble is Paved with Good Intentions: A Model of Advisors and Asset Prices

Discussant: **John Eatwell**

Session Chair: Chris Rogers

4:00 - 4:45 p.m.

**Mardi Dungey** (joint with Demosthenes Tambakis): The US Treasury Market in August 1998: Untangling the Effects of Hong Kong and Russia with High Frequency Data

Discussant: **Yacine Aït-Sahalia**

4:45 - 5:30 p.m.

**Markus Brunnermeier** (joint with Christian Julliard): Money Illusion and Housing Frenzies

Discussant: **Demosthenes Tambakis**

7:00 p.m.

Conference Dinner

### **Saturday, September 17, 2005**

Session Chair: Mark Watson

9:00 - 9:45 a.m.

**Peter Friz**: Volatility Derivatives and the Implied Volatility Smile

Discussant: **Robert Kimmel**

9:45 - 10:30 a.m.

**Vicky Henderson**: The Curious Incident of the Investment in the Market: Real Options and a Fair Gamble

Discussant: **Michael McKenzie**

Session Chair: John Eatwell

11:00 - 11:45 a.m. **Chris Rogers** (joint with Arnaud Jobert and Alessandro Platania): A Bayesian Solution to the Equity Premium Puzzle  
Discussant: **Chris Sims**

11:45 - 12:30 p.m. **Jianqing Fan** (joint with Yacine Ait-Sahalia and Heng Peng): Nonparametric Transition-based Tests for Diffusions  
Discussant: **Peter Friz**

Session Chair: Chris Sims

14:00 - 14:45 **Vanessa Smith** (joint with Hashem Pesaran): Exploring the International Linkages of the Euro Area: A Global VAR Analysis  
Discussant: **Mark Watson**

2:45 - 3:30 p.m. **Burton G. Malkiel** (joint with Atanu Saha): Hedge Funds: Risk and Return  
Discussant: **Hashem Pesaran**

Session Chair: Bill Janeway

4:00 - 4:45 p.m. **Elena A. Medova** (joint with M. Dempster, M. Germano, M.I. Rietbergen, F. Sandrini and M. Scrowston): Managing Guarantees  
Discussant: **Robert Vanderbei**

4:45 - 5:30 p.m. **John M. Mulvey** (joint with Koray Simsek, Zhuojuan Zhang, Frank Fabozzi, and Bill Pauling): Assisting Defined-benefit Pension Plans  
Discussant: **Michael Dempster**

## *Liquidity Conference*

This conference was jointly sponsored by the Federal Reserve Bank of New York and the Bendheim Center for Finance at Princeton University.

Liquidity is essential for the working of financial markets but can dry up periodically, posing the risk of a financial crisis. To avoid a crisis, a comprehensive understanding of the forces that affect liquidity is needed.

There are multiple facets to liquidity. The macroeconomic, corporate finance, and banking literatures approach liquidity as ease of accessing funds (“funding liquidity”), while researchers specializing in market microstructure focus on the ease of trading assets (“market liquidity”). The asset pricing literature primarily studies the price implications of time-varying market liquidity.

This conference aimed to bridge the gap between different liquidity concepts and stimulated an exchange among researchers working on different aspects of liquidity. To highlight the practical relevance of the papers, a practitioner or regulator as well as an academic discussed each paper.

It took place on October 6-7, 2005, at the Federal Reserve Bank of New York. Tobias Adrian (Federal Reserve Bank of New York), Markus Brunnermeier (Princeton University) and Jiang Wang (MIT) organized the conference.

### **Thursday, October 6, 2005**

- 11:00 a.m. Registration and buffet lunch
- 12:15 p.m. Welcome remarks by Timothy Geithner, President, Federal Reserve Bank of New York
- 12:30 p.m. **Asset Fire Sales (and Purchases) in Equity Markets**  
*Joshua Coval and Erik Stafford, Harvard University*  
Discussant: *Lasse Pedersen, New York University*  
Practitioner view: *Ulrike Hoffmann-Burchardi, Tudor Investment*
- 1:30 p.m. **Episodic Liquidity Crises**  
*Bruce Carlin, Miguel Lobo, and S. Viswanathan, Duke University*  
Discussant: *Matthew Pritsker, Board of Governors of the Federal Reserve System*  
Practitioner View: *Louis Scott, Morgan Stanley*
- 3:00 p.m. **Cross-Sectional Variation in Stock Returns: Liquidity and Idiosyncratic Risk**  
*Matthew Spiegel and Xiatong Vivian Wang, Yale University*  
Discussant: *Robert Stambaugh, University of Pennsylvania*  
Practitioner View: *Russell Fuller, Fuller and Thaler Asset Management*
- 4:00 p.m. **Financial System Risk and Flight to Quality**  
*Ricardo Caballero, Massachusetts Institute of Technology and Arvind*

*Krishnamurthy*, Northwestern University  
Discussant: *Dimitri Vayanos*, London School of Economics  
Practitioner View: *Mike Rashes*, Bracebridge Capital

**Friday, October 7, 2005**

- 8:30 a.m.      **Asset Prices and Liquidity in an Exchange Economy**  
*Ricardo Lagos*, Federal Reserve Bank of Minneapolis and New York University  
Discussant: *Nobuhiro Kiyotaki*, London School of Economics  
Practitioner View: *David Mordecai*, Risk Economics
- 9:30 a.m.      **Firms as Buyers of Last Resort**  
*Harrison Hong*, Princeton University; *Jiang Wang*, Massachusetts Institute of Technology; and *Jialin Yu*, Columbia University  
Discussant: *Ronnie Sadka*, University of Washington  
Practitioner View: *Paul Bennett*, New York Stock Exchange
- 11:00 a.m.     **Credit Risk Transfer**  
*Christine Parlour* and *Guillaume Plantin*, Carnegie Mellon University  
Discussant: *Viral Acharya*, London Business School  
Practitioner View: *Rupert Cox*, Bear Stearns
- 12:00 a.m.     **Public Provision of Private Liquidity Prior to the Millenium Date Change**  
*Suresh Sundaresan*, Columbia University and *Zhenyu Wang*, Federal Reserve Bank of New York  
Discussant: *Bengt Holmstrom*, Massachusetts Institute of Technology  
Practitioner View: *Spence Hilton*, Federal Reserve Bank of New York
- 2:00 p. m.     **Panel Discussion: Liquidity, Financial Institutions and Economic Policy**  
*Franklin Allen*, University of Pennsylvania  
*Bengt Holmstrom*, Massachusetts Institute of Technology  
*Chi-Fu Huang*, Oak Hill Platinum Partners  
*Maureen O'Hara*, Cornell University  
*Albert "Pete" Kyle*, Duke University

***Third Oxford/Princeton Conference on Financial Mathematics***

This workshop brought together faculty from Princeton and Oxford with interests in financial mathematics and stochastic analysis. The first workshop took place in Princeton in 2002, and the second in Oxford in 2004.

It was part of the University-wide Oxford-Princeton collaboration. The third workshop took place on November 10-12, 2005 at the Friend Center on Princeton's campus. This conference was open to the public.

#### **Friday November 11, 2005**

- 8:45 - 9:00 a.m.            Welcome/Opening Remarks
- 9:00 - 9:45 a.m.            **David Lando** (Copenhagen Business School, visiting Princeton) "Decomposing Swap Spreads"
- 9:45 - 10:30a.m.           **Nicolas Victoir** (JPMorgan Chase) "Multiname Credit Models"
- 11:00 - 11:45a.m.           **Bruno Dupire** (Bloomberg) "A Free Boundary Approach to Volatility Derivatives"
- 11:45 - 12:30 p.m.           **David Hobson** (Princeton) "Optimal Timing for an Asset Sale in an Incomplete Market"
- 1:30 - 2:15 p.m.            **Yacine Ait-Sahalia** (Princeton) "Volatility Estimators for Discretely Sampled Levy Processes"
- 2:15 - 3:00p.m.            **Jianqing Fan** (Princeton) "Modelling Multivariate Volatilities via Conditionally Uncorrelated Components"
- 3:30 - 4:15p.m.            **Michael Monoyios** (Oxford) "Robust Optimal Hedging Under Parameter Uncertainty"
- 4:15 - 5:00p.m.            **Christoph Reisinger** (Oxford) "Hierarchical Approximation to Multi-factor Models"

#### **Saturday November 12, 2005**

- 9:00 - 9:45a.m.            **Alex d'Aspremont** (Princeton) "A Market Test for the Positivity of Arrow-Debreu Prices"
- 9:45 - 10:30a.m.           **Patrick Cheridito** (Princeton) "Dynamic Monetary Risk Measures"
- 11:00 - 11:45a.m.           **Peter Carr** (Bloomberg) "Options on Maxima, Drawdown, Trading Gains, and Local Time"
- 11:45 - 12:30p.m.           **Terry Lyons** (Oxford) "Recombination and Higher Order Methods for Solving Subelliptic PDE's"
- 1:30 - 2:05p.m.            **Mike Giles** (Oxford) "Fast Calculation of Greeks by Monte Carlo using Adjoint Methods"
- 2:05 - 2:40p.m.            **Liuren Wu** (CUNY) "Modeling Financial Security Returns using Levy Processes"
- 2:40 - 3:15p.m.            **Savas Dayanik** (Princeton) "Adaptive Poisson Disorder Problem"



## ***Ethics, Families, Entrepreneurship, and the Corporation: How the Family Molds Capitalism: A Conference in Honor of Peter Bauer***

This conference was organized by Harold James and took place on March 9-11, 2006, at Princeton University. The conference was co-sponsored by the Department of History, the Program in Contemporary European Politics, the Bendheim Center for Finance, and the Witherspoon Institute.

One of Peter Bauer's great contributions to the public dialogue about economics and economic policy-making was to shift the focus from macro-economic Keynesian approaches to a concrete look at the microeconomic preconditions for success. What institutions produce the most efficient operation of a market, and how are market forces obstructed by political interventions? Peter Bauer was especially worried about the way in which state planners subverted and destroyed traditional institutions which were actually essential to the smooth functioning of a market. One of the most obvious of these foundations was the family, and Peter Bauer devoted a considerable part of his analysis of the problems of West Africa to the discussion of how traditional family units were being dislocated by the interventions first of British colonial planners and then of the post-independence governments.

This conference took some of these insights and applied them to a wide range of different national settings by discussing the link between the family and business enterprise and success. Much of the story of the last two or three centuries can be described in terms of the interplay of three major social organizations: family, state, and market. Recently a great deal of literature has been devoted to demonstrating that there is no simple opposition between state and market, in particular that a well-functioning market needs a secure institutional framework that can only be provided by well-functioning states. However, a great deal of this discussion about the way in which an efficient and just operation of markets and states can proceed has ignored the contribution of the family to the better functioning of markets and states.

This conference studied how the family has played, does play, and will continue to play a decisive role in the history of capitalism, that form of economic organization characterized by the legal possibility of the transfer of ownership rights. The family encourages economic responsibility across generations, but it also generates greater corporate responsibility towards society as a whole. So the family plays a very important part in the proper ordering and workings of capitalism.

The meeting at Princeton University was the first in a series of programs on topics related to the intersection of the family, the market, and ethics. Harold James is directing the Witherspoon Institute's program on these issues. The second major public event on these themes will take place in Fiesole, Italy at the European University Institute in the spring of 2007, with funding from the European Union.

### **Friday, March 10, 2006:**

9:00 a.m. Session 1: An Overview of Entrepreneurship and the Family Business

**John Ward**, Northwestern University, "The Role of Family Business in our Economy: A Review of Family Business Performance and How it Works Differently"

**Harold James**, Princeton University, "An Historical Perspective on the Family Firm"

11:00 a.m. Session 2: Strategies of Family Businesses

**Isabelle Le Breton-Miller**, University of Alberta School of Business and **Danny Miller**, University of Alberta School of Business, "Priorities, Practices and Strategies in Successful vs. Struggling Family Businesses"

2:00 p.m. Session 3: Characteristics of the Family Firm

**Randall Morck**, University of Alberta School of Business, "Why Family Firms Came to Predominate in Some Countries, but Not Others"

**Christopher Kobrak**, ESCP/EAP, European School of Management, Paris, "The Rise and Fall of International Family Banking: Private Banks, Capital Markets and Regulation"

4:00 p.m. Session 4: Lessons from Europe

**Andrea Colli**, Università Bocconi, "When the Family is Strong, When the Family is Weak: Lessons from a Century of Italian Capitalism"

**Hartmut Berghoff**, Georg-August-Universität Göttingen, "Persistence of Demise of the Classic 'Mittelstand': Small and Medium-sized Family Firms in the Federal Republic of Germany"

**John Padgett**, University of Chicago, "Organizational Invention and Elite Transformation: The Birth of Partnership Systems in Renaissance Florence"

**Saturday, March 11, 2006:**

9 a.m. Session 5: Marriage's Effect on Income, Poverty, and Economic Behavior, and the Work Place's Effects on Families

**Robert Lerman**, American University and Urban Institute, and **W. Bradford Wilcox**, University of Virginia, "The Wages of Wedlock: How and Why Marriage Reduces Poverty and Material Hardship"

**Nuria Chinchilla**, IESE Business School, "Why Become a Family Responsible Employer"

11:00 a.m. Session 6: The Family Business in the Larger Social Order: Internal and External Views

**Samuel Gregg**, Acton Institute, "The Family and the Market: Insights from Adam Smith"

**Michael Novak**, American Enterprise Institute, "The Forgotten Family"

## *Undergraduate Certificate in Finance*

In 1999, the BCF started offering an Undergraduate Certificate in Finance 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, if there is no possibility of finance content in their senior thesis or junior paper, a separate, shorter piece of independent work is required instead.

Now in its eighth year, the Undergraduate Certificate in Finance continues to do extremely well, attracting record numbers of students. We expect to enroll about 100 juniors from the Class of 2008. In previous years, the numbers were as follows: Class of '00: 61, '01: 82, '02: 85, '03: 122, '04: 113, '05: 126, '06: 158, '07: 154. This brings our total number of undergraduate students in the program (juniors and seniors) to more than 250 this coming year. The success of the program has been overwhelming, especially in light of our limited senior thesis advising resources. As discussed in the Director's introduction, we have introduced grade requirements starting with the Class of '08 in order to admit a more manageable number of students into the program.

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 '06**

Total number of certificates awarded: 158 (48 to women or 30%)

<b>Major</b>	<b>Number of Students</b>
Anthropology	1
Chemical Engineering	3
Chemistry	1
Civil and Environmental Engineering	1
Classics	1
Comparative Literature	1
Computer Science (COS)	8
East Asian Studies	1
Ecology & Evolutionary Biology	1
Economics	55

Electrical Engineering	4
English	2
History	1
Mathematics	3
Mechanical and Aerospace Engineering	2
Molecular Biology	1
Operations Research & Financial Engineering (ORF)	42
Philosophy	1
Physics	2
Psychiatry	4
Politics	9
Woodrow Wilson School	14

### **Class of '07**

Total expected number of certificates to be awarded: 154 (42 to women or 28%)

<b>Major</b>	<b>Number of Students</b>
Chemical Engineering	2
Classics	1
Comparative Literature	1
Computer Science (COS)	3
East Asian Studies	2
Economics	66
Electrical Engineering	4
German	1
History	3
Mathematics	3
Molecular Biology	1
Music	1
Operations Research and Financial Engineering (ORF)	40
Physics	4
Politics	5
Psychology	1
Religion	3
Woodrow Wilson School	13

### ***Departmental Prizes, Honors and Athletic Awards to UCF '06 Students***

In addition, UCF students are an extremely talented subgroup of the already high-achieving Princeton classes. They continue to receive a high proportion of the prizes awarded by their respective departments:

23 UCF students received departmental prizes and honors:

- Perla Amsili (ECO): *John Glover Wilson Memorial Award*

- Vikram Bellapravalu (ORF): *Kenneth H. Condit Prize (co-winner)*
- Ana Book (POL): *The New York Herald Prize*
- Jason Brein (WWS): *David F. Bowers Prize*
- Joshua Brodie (MAT): *George B. Wood Legacy Junior Prize, George B. Covington Prize in Mathematics, and Applied Computational Mathematics Independent Project Prize*
- Lindsey Cant (ORF): *Ahmet S. Cakmak Prize*
- Laura Collins (ENG): *Priscilla Glickman '92 Memorial Prize*
- Andrew Dayton, Jr. (POL): *Philo Sherman Bennett Prize in Politics*
- Dominick Fuccillo (ECO): *Senior Thesis Prize in Finance*
- Fenil Ghodadra (ECO): *Birch Family Prize*
- Karen Karniol-Tambour (WWS): *Gale F. Johnston Prize in Public Affairs*
- Robert Kennelley (EAS): *Marjory Chadwick Buchan Senior Thesis Prize*
- Cecilia Muldoon (PHY): *Allen G. Shenstone Prize in Physics*
- Marin Nitzon (MAE): *Donald Janssen Dike Awards for Excellence in Undergraduate Research (Honorable Mention)*
- Jacqueline Ng (ORF): *Calvin Dodd MacCracken Senior Thesis/Project Award*
- Alexandra Ovetsky (MAT): *George B. Covington Prize in Mathematics*
- Julian Rachlin (PHY): *Kusaka Memorial Prize in Physics*
- Sashank Rishyasringa (ECO): *Daniel I. Rubinfeld '67 Prize in Empirical Economics (Honorable Mention)*
- Vidal Sadaka (ORF): *Kenneth H. Condit Prize (co-winner)*
- Kyle Rebecca Scott (ECO): *Daniel I. Rubinfeld '67 Prize in Empirical Economics*
- Philip Solomond (ORF): *Dr. Frank S. Castellana Prize in Operations Research and Financial Engineering*
- Paul Thompson (ECO): *Senior Thesis Prize in Finance (Honorable Mention)*
- Michael Vu (POL): *Lyman H. Atwater Prize in Politics*

14 UCF students were elected to Phi Beta Kappa Society:

Vikram Bellapravulu (ORF), Jessica Blankshain (ORF), Joshua Brodie (MAT), Jason Cherry (ECO), Fenil Ghodadra (ECO), Fletcher Gibson, IV (PSY), Robert Guelich (ECO), Wayne Hu (ECO), Alexandra Ovetsky (MAT), David Rosner (ECO), Vidal Sadaka (ORF), Kyle Rebecca Scott (ECO), Philip Solomond (ORF), Jason Yen (ORF)

26 UCF students were elected to membership in Society of Sigma Xi:

Vikram Bellapravalu (ORF), Christopher Bohn (CHE), Joshua Brodie (MAT), Lindsey Cant (ORF), Kent Cheng (COS), Evan Coopersmith (ORF), James Davidson (ORF), Peter Forsberg (PSY), Fletcher Gibson, IV (PSY), Caroline Holst (ORF), Daniel Klemperer (ORF), Matthew Klitus (CHM), Cristina Moldovan (ORF), Robert Moore (ORF), Cecilia Muldoon (PHY), Jacqueline Ng (ORF), Marin Nitzov (MAE), Curtis Ohlendorf (ORF), Alexandra Ovetsky (MAT), John Pym (COS), Julian Rachlin (PHY), Vidal Sadaka (ORF), Anshuman Sahoo (CHE), Andrew Sandell (ORF), Philip Solomond (ORF), Nitin Walia (ORF)

14 UCF students were elected to membership in Tau Beta Pi National Engineering Society:

Vikram Bellapravalu (ORF), Jessica Blankshain (ORF), Christopher Bohn (CHE), Lindsey Cant (ORF), Evan Coopersmith (ORF), Tiffany Eng (WWS), Andrei Greco (ORF), Cristina Moldovan (ORF), Miran Mujicic (ELE), Jacqueline Ng (ORF), Mark Price (ORF), Vidal Sadaka (ORF), Philip Solomond (ORF), Nitin Walia (ORF)

4 UCF students received athletic awards:

- Darius Craton (ORF): *The Leon Lapidus Memorial Award – Men* (Tennis)
- Robert Guelich (ECO): *The Dr. William Trevor Trophy* (Soccer)
- Curtis Ohlendorf (ORF): *The George J. Mueller Award*
- Charles Wendell (ECO): *Frederick W. Kafer Award* (Baseball)

3 UCF students received U.S. Military Awards:

- Stephen Lambe (ORF): *Commissions United States Army*
- Alejandro Lulli (ECO): *Commissions United States Army and Cadre Merit Award*
- Edward Reynolds (ECO): *Commissions United States Army, The American Legion Award, and Department of the Army Distinguished Military Graduate*

3 UCF students received Major Scholarships and Fellowships:

- Christopher Bohn (CHE): *Gates Cambridge Trust Scholarship*
- Elizabeth Groch (COM): *Rotary Foundation Scholarship* (Austria)
- Alexandra Ovetsky (MAT): *Department of Defense (DOD)*

Finally, 77 UCF students received some form of honors (42 cum laude, 23 magna cum laude and 12 summa cum laude).

### ***Senior Theses of the Class of '06***

This table shows the senior thesis titles from the Undergraduate Certificate in Finance Class of 2006:

Marilyn Agbeko (ECO)	<i>Good Intentions Gone Awry: Credit Liberalization Failures and Microfinance in Ghana</i>
Perla Amsili (ECO)	<i>Unveiling the Shadow: A Study of Tariffs and Evasion in Brazil</i>
Nicole Baraff (ECO)	<i>For Richer and for Poorer: Disproving the Trade-off between Profitability and Outreach Depth in Commercial Microfinance</i>
John Basler (ORF)	<i>Optimal Portfolio Rebalancing: An Approximate Dynamic Approach</i>
Mark Batsiyan (PHI)	<i>Re-examining Insider Trader Law from a Philosophical and Economic Perspective</i>
James Behrens (ECO)	<i>Global Trends in Initial Public Offerings</i>
Vikram Bellapralu (ORF)	<i>Are Multiple Acts of Deception Preferable to One? A Comparison of Hierarchical and Centralized Resource Allocation</i>
Anthony Bitz (ECO)	<i>Corporate Governance in Latin America: Evaluating Recent Equity Market Reforms in Brazil, Chile, and Mexico</i>
Jessica Blankshain (ORF)	<i>Centralization and the Robustness of Military Supply Chains: A Scenario Analysis for the Design of Fuel Distribution Infrastructure</i>
Christopher Bohn (CHE)	<i>Market Timing in Sector Funds</i>
Lucia Bonilla (ORF)	<i>Fueling Change in the United States: An Analysis of Gasoline Price Elasticity</i>
Ana Book (POL)	<i>Spitzer v. Federal Government: The Politics of Financial Regulation in the Post Enron Era</i>
Ilya Boroditsky (ECO)	<i>Bracing for Turbulence: An Empirical Analysis of the Legacy Carriers' Financial Performance</i>
Jason Brein (WWS)	<i>The Commission-only Pricing Option: Solution to the Payment for Order Flow Controversy</i>
Joshua Brodie (MAT)	<i>Index Replication in the Presence of Trading Costs using Wavelet Denoising Techniques</i>
Jonathan Brosterman (ORF)	<i>Applications of the Beer Distribution Game in Supply Chain Decision-making</i>
William Brown (ORF)	<i>Dynamic Jet Fuel Hedging Strategies</i>
Adam Burgoyne (WWS)	<i>Role of Remittances in Promoting Haitian Development</i>
William Butler (COS)	<i>An Open Platform for Equity Trading Strategy Testing</i>
Diana Campbell (ECO)	<i>Redefining the Cross-border Effect in American Takeover Targets</i>
Lindsey Cant (ORF)	<i>Life Saving Decisions: A Model for Optimal Blood Inventory Management</i>
Lauren Carpenter (POL)	<i>Reform in the German University System: The Politics of Effective Implementation</i>
Diane Chang (WWS)	<i>Buying Identity: The Role of Consumerism in China's Pragmatic Nationalism</i>
Kent Cheng (COS)	<i>AMPL Excel Integration and Optimization</i>
Jason Cherry (ECO)	<i>The Effects of Managerial Ownership on Closed-end Fund Performance</i>
Kamil Choudhury (ELE)	<i>Efficient Ways of Executing Online Stock Trades</i>
Wamiq Chowdhury (WWS)	<i>Is Money the Root of All Evil? The Role of Counterterrorist Financing Measures in the War on Terrorism</i>
Fred Chu (EEB)	<i>Characterization of IPO Firms: Comparing Firms that Do and Do Not Offer Seasoned Equity</i>

Matthew Chuchla (ECO)	<i>Load Patterns and the Electricity Market: An Examination of Forward Price Premia</i>
Haydar Colakoglu (ECO)	<i>The Advantage of Actively Managed Sector Specific Mutual Funds</i>
John Colling (POL)	<i>The Bankruptcy Abuse Prevention and Consumer Protection Act of 2005: A Historical and Analytical Perspective on Passage of S. 256 in the U.S. Senate</i>
Laura Collins (ENG)	<i>Timshel in East of Eden: A Study of the Importance of the Choices in Farming</i>
Evan Coopersmith (ORF)	<i>Asymmetric Objective and Inefficient Markets: A Non-parametric Predictor for Major League Baseball Games and the Evaluation of Betting Lines</i>
Darius Craton (ORF)	<i>Towards an American Model: The Impact of Venture Capital Investment Characteristics on Performance: A Comparative Study of the United States, United Kingdom and Canada</i>
Kathryn Daviau (ECO)	<i>First-day Returns and the Survival of New Issues in the Aftermath</i>
James Davidson (ORF)	<i>Forecasting Motion Picture Box-office Returns and Analysis of the Hollywood Stock Exchange</i>
Michael Daylamani (ORF)	<i>Optimal Gambling Strategies and their Financial Applications</i>
Andrew Dayton, Jr. (POL)	<i>The Political Economy of Sovereign Debt: Endogenous Default Penalties and the Factor Distribution Effect on Credit Limits</i>
Saahill Desai (ELE)	<i>Pricing of Alternative Derivatives in Developing Markets</i>
Steven Dildine (ECO)	<i>Hedge Fund Performance: Sources of Return</i>
Luke Doramus (ECO)	<i>Determinants of Default: An Analysis of Credit Risk in Multifamily Conduit CMBS</i>
Peter Du (MAT)	<i>Quadratic Term Structure Models for Interest Rate Derivatives</i>
Alison Eng (WWS)	<i>Extraterritorial Income Exclusion Act of 2000</i>
Tiffany Eng (ORF)	<i>News or Noise: Text Classification of Financial News using Support Vector Machines</i>
Jessica Feng (ORF)	<i>Analyzing Exercise Behavior After IPO Lockups: A Theoretical Incentive Model to Optimize Shareholder Exercise Strategy</i>
Alan Fishman (WWS)	<i>Approaches to Controlling Healthcare Expenditures: Rationing Care or Patients</i>
Margaret Flores (ENG)	<i>The Pathology of Capitalism in Fitzgerald's American Dream</i>
Peter Forsberg (PSY)	<i>How Gricean Implicature Impacts on Investor Decision-making</i>
Ryan Foss (CHE)	<i>Wyeth: Combining Innovative Therapies and a Robust Pipeline for Economic Growth</i>
Powell Fraser, III (POL)	<i>Race for the Cure: Was Sarbanes-Oxley an Overreaction?</i>
Dominick Fuccillo (ECO)	<i>Taxes Are Relevant: Empirical Evidence from the Effects of the Jobs and Growth Tax Relief Reconciliation Act on Ex-dividend Market Behavior</i>
Fenil Ghodadra (ECO)	<i>Factors that Affect Exit from Bankruptcy: An Empirical Analysis of Debtor-in-possession Financing, Venue Choice, and CEO Turnover</i>
Fletcher Gibson, IV (PSY)	<i>Paying for Satisfaction: Performance-pay Fairness and Job Satisfaction</i>
Brian Goodwin (ECO)	<i>An Empirical Analysis of the Determinants of Motion Picture Financial Success</i>



Robert Gould (ECO)	<i>Consolidation Bonanza: How U.S. Defense Stocks Outperformed the Market from 1993 to 1998 in Spite of Shrinking Defense Budgets</i>
Gordon Grant (ECO)	<i>The Georgia Fair Lending Act: The Cost of Exclusion from the National Secondary Mortgage Market</i>
Andrei Grecu (ORF)	<i>The Soccer World Cup: A Mathematical Approach</i>
Elizabeth Groch (COM)	<i>Economies of Expenditure: The Role of Loss in Selected Essays of Wislawa Szymborska and Adam Zagajewski</i>
Robert Guelich (ECO)	<i>Emerging Market Returns and U.S. Mutual Fund Flows: Does a Feedback Process Exist?</i>
Yanshu Guo (ECO)	<i>A Search for Alpha: Are Hedge Funds Capitalizing on Liquidity Risk Premiums for Excess Return?</i>
Samuel Hancock (ECO)	<i>Inflation Targeting in the United States: A VAR Approach Modeled on the United Kingdom</i>
Alison Hashmall (WWS)	<i>International Integration of Securities Markets</i>
Robert Hazan (COS)	<i>Personal Finance with Web 2.0: A Case Study for an Overview and Evaluation of Ruby on Rails</i>
Dylan Hogarty (WWS)	<i>Reform of the Trade-through Rule</i>
Caroline Holst (ORF)	<i>Evaluating the Hedge Fund Hype: Is There a True Performance Profile of Hedge Funds</i>
Wayne Hu (ECO)	<i>An Application of Dividend Policy Theory to the Timing of Venture-backed IPOs: Evidence for the Skill Based Smoothing Hypothesis</i>
Jeffrey Huang (ECO)	<i>The Local Impact of Baseball Stadium Construction on Metropolitan Economies</i>
Lisa Jorjorian (ANT)	<i>Interdisciplinary Possibilities: The Future of Institutional Economics and Anthropology</i>
Byoung Jin Kang (HIS)	<i>Averting Disaster: The Role of the Lender of Last Resort in Financial Crises</i>
Karen Karniol-Tambour (WWS)	<i>U.S. Aid to Yemen in the Context of the War on Terrorism</i>
Phillip Kim (WWS)	<i>Freedom of Movement for Workers in Enlarged European Union</i>
Sophia Kim (ORF)	<i>Modeling the Allocation of Trailers in Southeastern United States for Future Hurricane Preparation</i>
Bobbie King (ECO)	<i>Stock-bond Co-movement in Response to Federal Reserve FFR</i>
Daniel Klempner (ORF)	<i>Empirical Analysis of Executive Stock Option Block Exercise</i>
Matthew Klitus (CHM)	<i>Eli Lilly &amp; Company: A Financial Perspective</i>
Stephen Lambe (ORF)	<i>Can PRT Perform? Surge Management Analysis Applied</i>
David Lawrence (ECO)	<i>The Price Discovery of Credit Spreads in the Credit Default Swap and Corporate Bond Markets</i>
Patrick Ledbetter (ORF)	<i>The Valuation of Real Time Information for Road Surface Navigation Systems</i>
John Lee (ECO)	<i>Market Perceptions of Cross-industry Mergers and Acquisitions</i>
Raymond Lenihan (COS)	<i>Credit Derivatives and Hedge Funds: How their Extreme Growth Could Cause Problems for the Broader Economy</i>
Andrew Lieu (ORF)	<i>Interest Rate Model Calibration: An Analysis of Rank vs. Stability</i>
Erik Lillethun (COS)	<i>Efficient Ways of Executing Online Stock Trades</i>
Alan Liu (MOL)	<i>What's 'slit All Worth? A Survey of Current Methods in Biotechnology</i>

	<i>Valuation</i>
Alejandro Lulli (ECO)	<i>An Empirical Study of the Effect of Media Coverage on Donations to Natural Disaster Relief Funds</i>
Samantha Lynch (WWS)	<i>Boardrooms and Bombs: Engaging the Business Sector in Conflict Prevention</i>
James Ma (ORF)	<i>Dynamic Optimal Portfolio Rebalancing: Strategies for Corporate Finance</i>
Susan Meng (ECO)	<i>Money Illusion in International Stock Markets</i>
Cristina Moldovan (ORF)	<i>The Interaction of Behavioral Agent Characteristics and Stock Prices: An Evaluation via Artificial Markets</i>
Robert Montgomery (ORF)	<i>Path Theory: A Model of Pedestrian Route Choice</i>
Robert Moore (ORF)	<i>A Dynamic Programming Approach to Decision-making in Texas Hold'em Poker</i>
Miran Mujicic (ELE)	<i>Testing the Profitability of a Trading System</i>
Cecilia Muldoon (PHY)	<i>Extreme Value Theory: Bright Cluster Galaxies and the Stock Market</i>
Michael F. Murray (WWS)	<i>Market Information: Data Distribution Fees and Market Access Fees</i>
Jacqueline Ng (ORF)	<i>Pricing Crash Options under Jump Diffusion Models</i>
Marin Nitzov (MAE)	<i>Portable Efficient UAV for Civilian and Military Missions</i>
Philip O'Brien (ECO)	<i>Evidence Against the Efficient Markets Hypothesis: A Study of the U.S. Interest Rate Markets, 1999-2005</i>
Jin Oh (COS)	<i>Content Based Similarity Search for Financial Ad-hoc Data</i>
Curtis Ohlendorf (ORF)	<i>Investing in Prospects: A Look at the Financial Successes of Major League Baseball Rate IV Drafts from 1989 to 1993</i>
Nkonye Okoh (ORF)	<i>Dynamic Optimal Staffing of Police Patrol Services</i>
Henry Opoku (ORF)	<i>Revenue Management in Major League Baseball</i>
Andrew Orchulli (POL)	<i>Taming the Dragon: China's Rise and the Future of the Global Order</i>
Thomas O'Rourke (ECO)	<i>Private Equity and Venture Capital Contracts in India: An Application of Financial Contracting Theory to an Emerging Market</i>
Alexandra Ovetsky (MAT)	<i>Looking at Momentum vs. Contrarian Strategies</i>
Joshua Perry (ORF)	<i>Investigating the Risk-neutral Intensity Process for the Electricity and Other Sectors</i>
Matthew Piselli (ORF)	<i>A Physical Approach to Asset Bubbles</i>
Katrina Popielis (CLA)	<i>The Functions of Ancient Greco-Roman Temples as Financial Institutions</i>
Mark Price (ORF)	<i>A Modern Examination of Lee's Investor Sentiment Theory Behind the Closed-End Fund Discount</i>
John Pym (COS)	<i>Performance of Alternative Pricing Models for S&amp;P 500 Index Options</i>
Julian Rachlin (PHY)	<i>Application of Extreme Value Theory in a One-dimensional Diffusion Model to Portfolio Allocation</i>
Prithvi Raj (ELE)	<i>Technology &amp; Development: Telemedicine Technologies for Diabetes</i>
Alexander Reison (ECO)	<i>Socially Responsible Investment: Doing Well, But Doing Good?</i>
Michelle Renda (ECO)	<i>Market Efficiency in the Case of English Premier League Soccer Shares</i>
Edward Reynolds (ECO)	<i>Corporate Spin-offs: An Analysis of Profit Potential and Investment</i>

*Strategies*

- Sashank Rishyasringa (ECO) *Tracking the Storm: An Analysis of Petroleum Futures Markets during Hurricanes Katrina and Rita*
- Dean Riskas, Jr. (ECO) *Privatization of Municipal Assets in the United States: A Proposed Capital Structure to Enhance Economic Viability*
- David Roberts (ECO) *Unlocking Value for Institutional Shareholders: The Effectiveness of the Proxy Fight*
- David Rosner (ECO) *An Analysis of the U.S. Housing Market: Are House Prices Affected by Leverage?*
- Nicholas Rowland (ORF) *Mergers and Acquisitions: A Behavioral Economics Approach*
- Elizabeth Rutledge (ECO) *Portfolio Companies of Private Equity Sponsors: A Test for Long-run Excess Returns after the IPO*
- Vidal Sadaka (ORF) *The Effect of Political Reforms on Interest Rates as Turkey Negotiates Accession to the European Union*
- Anshuman Sahoo (CHE) *Implications of the WTO TRIPS for Research and Development Activity in the Indian Pharmaceutical Industry*
- Andrew Salini (ECO) *Multiple Players, Multiple Markets: Price Discovery in the Market for Major League Baseball Players*
- Andrew Sandell (ORF) *The Effects of Uncertainty in Oil Reserves: Stochastic Resource Levels in Cournot Competition*
- Robert Schimmel (WWS) *Structure and Performance at the Federal Emergency Management Agency: The Lessons of FEMA History, DHS and Katrina*
- Mark Schwartz (ECO) *High Stakes: An Empirical Analysis of the Effects of US Regulatory Activity on Online Gambling Stocks*
- Kyle Rebecca Scott (ECO) *U.S. Gasoline Demand Responsiveness to Tax and Non-tax Components of Price*
- Matthew Seiden (ECO) *Abnormal Returns and Financial Distress: Market Reactions to Earnings Announcements of Bankrupt and Post-reorganization Companies*
- Brett Shapiro (POL) *Physician-assisted Suicide: Liberty and Savings for All? Reconsidering Washington vs. Glucksberg and Vacco vs. Quill in Light of Lawrence vs. Texas and the Crisis in American Health Care*
- David Sheng (ECO) *A Bird's Eye View of the Chinese A-B Share Discount*
- Kevin Shi (ORF) *Forecasting Currency Volatility and Evaluating its Impact on Quantitative FX Strategies*
- Stuart Sinclair (ECO) *Portfolio Liquidity and Hedge Fund Returns*
- Phillip Solomond (ORF) *Measuring Risk in Sectors of the S & P 500: Value-at-risk and Expected Shortfall Using GARCH*
- Dylan Stamer (WWS) *Unocal, UAE Ports, and Foreign Investment vs. National Security*
- Erik Stiller (ECO) *Through the Roof: An Analysis of Recent Price Trends in U.S. Housing Markets*
- Conor Stransky (ECO) *IPO Pricing for Real Estate Investment Trusts: The Influence of Institutional Investors & Abnormal IPO Volume on Initial Return*
- Vivian Tan (ECO) *The Profitability of China's Credit Card Industry*
- Nicole Thie (ORF) *A Parametric Analysis of Private Equity Performance*
- Jason Thompson (PSY) *Verbal Descriptions and Visual Imagery in Consumer Real Estate Pricing*

Paul Thompson (ECO)	<i>Short on Shorts: A Documented Long Bias in Experimental Asset Markets</i>
Kimberly Tzeng (COS)	<i>A Simulation of Price Bubbles in the Market</i>
Roshan Varma (PSY)	<i>The Pleasure and Pain of Excessive Choice: From Expectations to Overconfidence to Disappointment</i>
Michael Vu (POL)	<i>The Overlooked Retirement Benefits Crisis: Structural Problems of the PBGC</i>
Nitin Walia (ORF)	<i>Optimal Trading: Dynamic Stock Liquidation Strategies</i>
Justin Warren (ECO)	<i>Towards Third World Economic Growth: The Effects of Debt Relief under the HIPC Debt Initiative on Growth and Poverty Reduction in Developing Countries</i>
Lindsay Watson (ECO)	<i>An Econometric Analysis of Determinants of US Airline Stock Returns</i>
Charles Wendell (ECO)	<i>Are Housing Markets Overpriced in the U.S.? An Analysis of Factors Driving Housing Prices in 16 Different Cities across the Country</i>
Kyle Whitaker (CEE)	<i>The Louisiana Superdome: A Structural and Financial Analysis of One of the Sports' Most Influential Stadiums</i>
Edward Wieser (MAE)	<i>Entrepreneurial Venture: "Real College Essays.com"</i>
Sean Wilder (ECO)	<i>Assessing the Economic Impact of a Sports Mega-event: The Case of the 1994 FIFA World Cup USA</i>
Peter Wong (POL)	<i>Hong Kong and the Asian Financial Crisis: Public Opinion and Party Politics</i>
Brittany Wood (ORF)	<i>How Easy is It to Short a Security?</i>
Wendy Xu (ECO)	<i>China Venture Capital: Analysis of the Market and Investment Process</i>
James Yang (ECO)	<i>Managerial Responses to Investor Capital Flows: Evidence from Retail and Institutional Funds</i>
Jason Yen (ORF)	<i>An Optimization Model for Evaluating Earthquake Mitigation Strategies in San Francisco</i>
James C. Yu (ORF)	<i>A Discrete Model for Real Options and a Fair Gamble</i>
George Zeng (ECO)	<i>The Efficiency of Chinese Financial Markets: A Cross-market and Time Varying Analysis</i>
Colin Zima (ORF)	<i>An Investigation of Efficiency in National Football League In-game Betting Markets</i>

### ***Mini-Course on Financial Modeling, Valuation and Analysis Using Excel***

This four-session, not-for-credit, mini-course, taught students the fundamentals of constructing financial models in Microsoft Excel. It was designed to provide real experience in applying financial concepts to valuation models, and to teach the basic mechanics involved in financial modeling. In the process, students should be better able to recognize the intuition behind financial concepts that they have already been taught in other finance courses.

Students gained a proficiency in Microsoft Excel and its use as a tool for rigorous financial analysis. They were also presented with certain commonly accepted methodologies of presentation in the areas of financial analysis and valuation. As a result of this class, students should be better able to construct a variety of financial analyses such as projections and valuations. This valuable skill will be applicable in areas as diverse as investment analysis, government service, and financial management of non-profit organizations.

All Undergraduate Certificate in Finance and Master in Finance students were strongly encouraged to attend.

The four lectures took place from 7:00-8:30p.m., in the Friend Center Room 101, on the following dates: November 10 and 17 and December 1 and 8, 2005.

Online tutorials in Microsoft Excel were provided to all students. The course was taught by Thayer Patterson, with guest lecturers from investment banking, asset management, and private equity.

### *BCF Finance Industry Seminar Series*

The Princeton Entrepreneurship Club and the Princeton Pre-Business Society assisted Swati Bhatt in organizing the following events for UCF students.

- September 26, 2005: Panel discussion and reception to learn about Investment Banking featuring Lehman Brothers as a case study.
- September 27, 2005: David DeNunzio from Crédit Suisse met with students to discuss "Mergers and Acquisitions." Mr. DeNunzio is Vice Chairman of Mergers and Acquisitions.
- October 3, 2005: Robert Malin '83, Managing Director at Citigroup spoke on "The Anatomy of a Large Investment Bank."
- November 14, 2005: Dr. Jeffrey Leonard '84 discussed "Private Equity Investments and the Quest to Save the Planet: Why Discount Rates Matter." Dr. Leonard is co-founder of Global Environment Fund, an international private equity investment management firm located in Washington, DC. GEF currently manages investment funds with assets in excess of \$500 million.
- November 18, 2005: John Quigley spoke about Entrepreneurial Finance. Mr. Quigley is a managing partner of Nassau Capital L.L.C., the independent firm founded in 1995 to manage the private investment program of the Princeton University endowment.
- December 2, 2005: Valuation Seminar, "Training the Street," taught by Scott Rostan of Merrill Lynch.
- June 2, 2006: Princeton Entrepreneurs' Network Annual Conference. Keynote speaker was Millard "Mickey" Drexler, Chairman and CEO of J. Crew. There were over 30 speakers at this conference.

## *Master in Finance*

The interdisciplinary Bendheim Center for Finance offers a Master in Finance degree. The distinctive feature of Princeton's 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 is intended to prepare students for a wide range of careers both inside and outside the financial industry, including financial engineering and risk management, quantitative asset management, macroeconomic and financial forecasting, quantitative trading, and applied research. The program does not require prior work experience, although it can be a plus. The BCF provides extensive career assistance to students, including help with internships and job placement, through its own staff and our placement record has been excellent. The program does have a small number of merit-based fellowships (in the form of a fraction of the full-year's tuition cost) that we grant to our top applicants.

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 flexible 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 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 (1) the prerequisite skills in mathematics, economics, and probability and statistics necessary for the study of finance at a sophisticated level and (2) 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 mathematical (or physics and engineering) training, who want to make finance their main field of application, and for students with an economics (or business or social science) background, who want to acquire the quantitative skills essential for a 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 that are pervasive in modern finance. An intensive two-week review course covering probability and topics in mathematics, as required for the core courses, will be offered to students prior to the beginning of classes in the fall. In September, for the incoming class, we organize a three-day “boot camp” with industry professionals where various career issues are reviewed and help is provided (including resume-writing, one-on-one videotaped interview sessions, 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 or the IELTS exam.

## ***Statistics on the Admission Process***

	Applications	Offers	Acceptances
January 04	200	19	9
January 05	296	31	19
January 06	418	47	27

### **Highest Degree Before Applying to Princeton’s M.Fin.**

	Bachelor	Master	Ph.D.
January 04	85%	15%	1%
January 05	60%	35%	5%
January 06	66%	30%	4%

### **Applicant Profile: Gender & Age**

	Female	Male	Median Age
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January 04	29%	71%	24
January 05	26%	74%	26
January 06	29%	71%	25

**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) (new test)	781 (800)	568 (580)
September 06 Entering Class	5.1 (5) (new test)	786.5 (800)	647.5 (655)

***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.
- The program can be completed in one or two years; most complete it in two. Admission letters will specify the expected length of study. 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.
- 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-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. The organization of the core courses for students entering the program is:

- 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 will offer 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 512: Trading and Securities Markets
- FIN 515: Portfolio Theory and Asset Management
- FIN 516: Topics in Corporate Finance, Corporate Governance and Banking
- FIN 518: International Financial Markets
- FIN 519: Corporate Restructuring, Mergers and Acquisitions
- FIN 521: Fixed Income: Models and Applications
- FIN 522: Options, Futures and Financial Derivatives
- FIN 523: Forecasting and Time Series Analysis
- FIN 560: Master's Project I
- FIN 561: Master's Project II
- ECO 414: Introduction to Economic Dynamics
- ECO 525/FIN 595: Financial Economics I
- ECO 526/FIN 596: Financial Economics II
- ECO 575/FIN 575: Topics in Financial Economics
- ORF 335/ECO 364: Introduction to Financial Engineering
- ORF 524: Statistical Theory and Methods
- ORF 527: Stochastic Calculus and Finance
- ORF 530: Statistical Analysis of Large Financial Datasets
- ORF 531/FIN 531: Computational Finance in C++
- ORF 534/FIN 534: Financial Engineering
- ORF 535/FIN 535: Financial Risk Management
- ORF 555: Fixed Income Models
- ORF 569: Special Topics in Financial Engineering
- ORF 574: Special Topics in Investment Science
- WWS 451: Special Topics in Public Affairs: Regulation of International Financial Markets

#### **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 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 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
- FIN 567: Institutional Finance
- MAE 306/MAT 302: Mathematics in Engineering II
- MAE 503: Basic Numerical Methods for Ordinary and Partial Differential Equations
- MAT 301/MAE 302: Mathematics in Engineering I (ODE, PDE)
- MAT 305: Mathematical Programming
- MAT 533/534: Elliptic and Parabolic Differential Equations
- 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: Stochastic Modeling
- ORF 542: Controlled Markov Processes

- 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 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, but 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 Track**

Computer-based technologies are becoming increasingly important in finance, such as algorithms, efficient trading systems, large databases, multimedia and web interfaces, parallel processing and the security of computer networks. The continued development of e-commerce, the growth of computer-based trading and the renewed emphasis on risk management in all firms are creating a new competitive environment where 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 and personal computers, 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++.

### *Some Course Descriptions*

#### FIN 501: Asset Pricing I: Pricing Models and Derivatives

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

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 503: Asset Pricing II: Stochastic Calculus and Advanced Derivatives

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.

#### 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.

#### FIN 512: Trading and Securities Markets

The organization and regulation of stock markets; price formation, volatility, and liquidity in the secondary market (market microstructure). The course will also focus on stock market crashes, Keynes beauty contest comparison, and herding behavior. The listing decision and the primary market for raising equity capital for firms.

#### FIN 515: Portfolio Theory and Asset Management

This course covers a number of advanced topics related to asset management and asset pricing. Topics include 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; (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 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 & II

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

#### FIN 567: Institutional Finance

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.

#### ECO 525/FIN 595: Financial Economics I

Asset pricing in competitive markets where 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

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 are studied.

#### ECO 575/FIN 575: Topics in Financial Economics

This course is intended for Ph.D. students who have already completed the year-long 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 335: Introduction to Financial Engineering

Financial engineers design and analyze financial products. These products improve the efficiency of markets and create novel mechanisms for reducing risks. This course is an introduction to financial engineering.

#### ORF 505: Modern Regression and Time Series

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, hidden Markov models and filtering.

### 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

A survey of central topics in the area of financial engineering and multi-period financial planning systems. Pricing methodologies integrated with financial planning systems. 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 555/FIN 555: Fixed Income Models

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, risk of default.

## ***Master in Finance Placement***

Our program has continued to enjoy excellent success with all of our 2006 graduates being placed in finance industry jobs. The candidates for the Master in Finance degree get support and assistance with their post-graduate career planning from a coordinated program of resources, including Princeton's Office of Career Services and the BCF's dedicated placement advisors, David H. Blair (Director of Corporate Relations) and Swati Bhatt (Director of Student Programs). They also benefit from support from our Corporate Affiliates and Advisory Council.

Our graduates will be pursuing their careers at:

JP Morgan	Two in fixed income research and one in emerging markets trading, all in NY
Goldman Sachs	One in derivatives trading, the other in proprietary trading, both in London
Oak Hill Platinum Partners	Two as analysts for a Metro NY-based hedge fund
Apax Partners	Private equity analyst in Munich, Germany
Barclays Capital	Fixed income research in NY



CIT Corporation	Corporate finance analyst in Metro NY
Crédit Suisse	Asset back securities analyst in NY
Deutsche Bank	Global capital markets in NY
Lehman Brothers	Fixed income research analyst in NY
Princo Investment Mgmt	Asset management analyst for endowment fund based in Princeton University

Our first year students have obtained summer internships as follows:

Lehman Brothers	Three in fixed income research or sales and trading in NY
Merrill Lynch	Three in derivatives sales and trading in NY
Dewey Ballantine	Derivatives law in NY
Harvard Management	Asset management for endowment in Boston

### ***MFin Boot 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 MFin degree prepares students and some useful information on interviewing skills. The boot camp presenters came from the BCF faculty, MFin alumni, and the financial services industry. This program was very 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 September 2005, the program’s agenda was as follows:

#### **Thursday, September 8, 2005**

8:30 to 9:00 a.m.	Welcome – Continental Breakfast at Bendheim Center  Sign up for resume writing sessions with Kathleen Mannheimer, Graduate Career Services and interviews with David Blair and Swati Bhatt
9:00 to 10:00 a.m.	Introduction – Yacine Aït-Sahalia and René Carmona
10:00 to 11:00 a.m.	Structure of Modern Investment Bank – David Blair
11:00 to Noon	Introduction to Career Services and Placement Resources plus – Do’s and Don’ts – A Short Guide to Employment Etiquette. Kathleen Mannheimer, Swati Bhatt, David Blair

Noon to 1:00 p.m.	Lunch at Bendheim Center
1:00 to 1:30 p.m.	Economic and Finance Library Resources – Bobray Bordelon
1:30 to 3:00 p.m.	Fixed Income Asset Management: Current Issues and Careers – John Massad, Managing Director, BlackRock, Inc.
3:00 to 3:30 p.m.	Coffee Break
3:30 p.m. to 5:00 p.m.	Issues and Careers in Investment Management – Brian Fullerton, Chief Investment Officer – Merrill Lynch Asset Management

**Friday, September 9, 2005**

8:30 to 9:00 a.m.	Continental Breakfast
9:00 to 10:30 a.m.	Issues and Careers in Commodities Trading – John Shapiro, Managing Director, Morgan Stanley
10:30 to 10:45 a.m.	Coffee Break
10:45 to 12:15 p.m.	Issues and Careers in Proprietary Trading – Kian Esteghamat, JP Morgan Chase
12:15 to 1:00 p.m.	Lunch at Bendheim Center
1:00 to 2:30 p.m.	Issues and Careers in Quantitative Finance – Jeremy Glick, Goldman, Sachs & Co.
2:30 to 3:00 p.m.	Coffee Break
3:00 to 4:30 p.m.	Issues and Careers in Structured Products – Robert Malin, Citigroup

**Saturday, September 10, 2005**

8:30 to 9:00 a.m.	Continental Breakfast
9:00 to 10:00 a.m.	An Executive Recruiter's Perspective on Job Market and Effective Techniques for Career Management – John Gramer from Spherion
10:00 to 12:30 p.m.	Panel Discussion among recent graduates (David Steckl of Merrill Lynch, Gaetan Ciampini of Lehman Brothers, Dario Villani and John Naud of JP Morgan Chase, Chad Shampine of Citigroup) on interviewing techniques and job search methodology
12:30 to 1:15 p.m.	Lunch at Bendheim Center
1:15 to 2:45 p.m.	First Group Applied Interviewing Techniques – Syntaxis
3:00 to 4:30 p.m.	Second Group Applied Interviewing Techniques – Syntaxis
6:30 to 10:00 p.m.	Barbecue at home of David Blair

**Monday-Wednesday, September 12-14, 2005**

Attend scheduled sessions with David Blair, Swati Bhatt and Kathleen Mannheimer

**Week of September 19, 2005**

Appointment for videotape interview training with Kathleen Mannheimer and finalize resume as necessary

**Wednesday, September 21, 2005**

Final form of resumes submitted electronically to David Blair

## *Advisory Council*

The Advisory Council for the Bendheim Center is comprised of a group of distinguished leaders in the financial industry. The Council meets on campus once a year. In 2006, the meeting took place on June 9. We changed the format for this year's meeting by including a dinner on June 8 to enable the Council members to exchange ideas in a more informal setting.

**Mr. Gerhard R. Andlinger**

Chairman of the Board  
Andlinger & Company, Inc.

**Mr. John K. Hepburn**

Vice Chairman  
Morgan Stanley Group (Europe), P.L.C.

**Mr. Hamid Biglari**

Managing Director  
Citigroup Global Markets, Inc.

**Mr. Kenneth Hersh**

Managing Partner  
Natural Gas Partners

**Mr. John C. Bogle**  
President  
Bogle Financial Markets Research Center  
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**Mr. John L. Cecil**  
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**Mr. Christopher A. Cole**  
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**Mr. David A. DeNunzio**  
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**Mr. Benjamin Griswold**  
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Vice Chairman & Chief Investment Officer  
The St. Paul Travelers Companies, Inc.

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President and Chief Executive Officer  
Stanford Management Company

**Ms. Heidi G. Miller**  
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Officer  
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Managing Director  
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**Mr. Jeffrey M. Peek**  
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CIT Group, Inc.

**Ms. Lynn Thoman**  
Managing Partner  
Corporate Perspectives

**Mr. Paul M. Wythes**  
Founding General Partner  
Sutter Hill Ventures

## *Corporate Affiliates Program*

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

### *2005-06 Partners*

Barclays Capital  
Citadel Investments Group  
Citigroup  
Crédit Suisse  
Global Environmental Fund  
Goldman Sachs  
JP Morgan Chase  
Lehman Brothers  
Merrill Lynch  
Moody's Corporation  
Morgan Stanley

### *Benefits*

- Annual Report of the BCF
- Opportunity to advertise internships and employment opportunities to both Undergraduate Certificate in Finance (almost 350 in 2005-06) and Master in Finance students (35 in 2005-06)
- Opportunity to use the BCF facilities to host recruiting events
- Access to the BCF Director of Corporate Relations as a resource for recruiting
- Recognition in the publicly disseminated materials of the BCF, including the Center's reports and website which both list corporate affiliates, as well as a hyperlink to each member's website
- Access to all research authored by the Center's affiliated faculty within the academic year
- Access to BCF faculty for internal or client presentations or for sponsored research

- Opportunity to work with BCF 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 BCF 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 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 BCF 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) <i>To support the appointment of a distinguished senior faculty member</i>	\$4,000,000
Endowed Visiting Professorship (one needed) <i>To support a distinguished senior visitor who provides expertise in a particular area of study</i>	\$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) <i>To support a new generation of scholars concentrating in finance</i>	\$250,000
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### **Support of Financial Research and Teaching**

Research and Course Development Funds <i>Endowed funds to support research and course development</i>	\$50,000 min.
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### **Physical Space**

Director's Office	\$100,000
Graduate Student Suite	\$100,000



## *Acknowledgements 2005-06*

Princeton University gratefully acknowledges those whose generosity continues to make the Bendheim Center for Finance possible.

Gerhard R. Andlinger '52

Chester Baylis, Jr. '29 (d)

Robert M. Baylis '60

Robert Bendheim '37

Hamid Biglari \*87

David H. Blair '67

Charles Brodbeck '71

David Carlin '60

David A. DeNunzio '78

The Family of Carl H. Donner '20

J. Michael Evans '80

Edward B. Goodnow '47

Mr. and Mrs. Randall A. Hack '69

John K. Hepburn '72

Kenneth Hersh '85

William H. Heyman '70

Mrs. Stanley G. Ivins W34

William H. Janeway '65

Richard Korhammer '88

Oliver M. Langenberg '35

Susan Payne Madole '76

Edward E. Matthews '53

John Mayer '62

Reuben M. Morriss, III '58

Sharmin Mossavar-Rahmani '80

Robert B. Payne, Jr. '74

Robert B. Payne, Sr. '45

Jeffrey M. Peek '69

John G. Quigley

John H. Scully '66

Lynn Bendheim Thoman '77

Dario Villani \*02

Evan A. Wyly '84

Mr. and Mrs. Paul M. Wythes '55

William T. Young, Jr. '70

The Civitas Foundation

The Leon Lowenstein Foundation

Princeton Class of 1950

The Starr Foundation