Princeton University

Bendheim Center for Finance

Annual Report
2001

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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 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 a powerful 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.

The BCF is housed in the former Dial Lodge on Prospect Avenue, originally built in 1917. An extensive renovation of the building, supported by an additional gift from the Lowenstein Foundation and overseen by the architectural firm of Michael Landau and Associates, maintains its Tudor Gothic stone exterior while transforming its interior to support cutting-edge teaching and research. It includes a state-of-the-art classroom, private carrels for graduate students with fully equipped computer workstations, a lounge and reading area, and faculty and staff offices. It is located near Fisher Hall, home of the Department of Economics; Bendheim Hall, which houses the Center of International Studies; Corwin Hall, site of the Department of Politics; the new Wallace Hall for the Social Sciences; and the Woodrow Wilson School of Public and International Affairs. The Center's location at the crossroads of so many areas of study is ideally suited to its multidisciplinary nature.

On May 4, 2001, the BCF was formally dedicated in the presence of President Harold Shapiro, Mr. and Mrs. Robert Bendheim '37, Lynn Bendheim Thoman '77 and many of those whose generosity has made the BCF a reality. More than 200 alumni and friends joined us to celebrate the occasion.

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 and encourages these leading scholars by encouraging their individual, collaborative and multidisciplinary research and by providing facilities (including computer and library support), research assistance, financial resources and venues for the exchange of ideas (such as seminars and conferences). The University's existing strengths in areas such as economics, mathematics and statistics, operations research and psychology provide a serious disciplinary basis for this research, leveraging the newly committed 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. Twenty-four faculty members are currently affiliated with the BCF.

The Center welcomed three faculty visitors during the past academic year: Professor Per Mykland, a leading statistician from the University of Chicago, Professor Christopher Harris, a finance theorist from Cambridge University in England, and Mr. John S. Reed, the retired CEO of Citigroup.

The BCF also welcomed three postdoctoral students this year: Dr. Jaya Bishwal from the Indian Statistical Institute in Calcutta, Dr. Damir Filipovic from the Swiss Federal Institute of Technology in Zürich and and Dr. Ulrich Horst from Humboldt University in Berlin.

Dr. Damir Filipovic will come back to Princeton in February 2002 as an Assistant Professor in the Department of Operations Research and Financial Engineering and be affiliated with the BCF.

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.

Professorial Chairs

In addition to the professorial chairs already endowed by Mr. Edward E. Matthews '53, Mr. John H. Scully '66 and Mr. and Mrs. Paul M. Wythes '55, Mr. and Mrs. Randall A. Hack '69 endowed in 2001 the Otto A. Hack '03 Professorship in Finance, in honor of Hack's grandfather, who was the first of many family members to graduate from Princeton. Randy Hack served for five years as president of the Princeton University Investment Company, which is responsible for managing the University's endowment. In 1995, he co-founded Nassau Capital L.L.C., which has had primary responsibility for Princeton's investments in venture capital and private equity.

Ph.D. Students

Two Ph.D. students from the Department of Economics completed their dissertations this year working with BCF faculty: Christopher Hennessy, who accepted a position as Assistant Professor of Finance at the University of California – Berkeley and Ernst Schaumburg, who accepted a position as Assistant Professor of Finance at Northwestern University.

Undergraduate Certificate in Finance

The Undergraduate Certificate in Finance graduated its second class in June 2001. Despite very tough prerequisites and program requirements, student interest in the Certificate continues to be high, with 157 Princeton undergraduate students signed up for the program in 2000 and 168 in 2001. Also encouraging is the fact that the 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.

Master in Finance

The Center's proposal for a Master in Finance was approved by the University and the Trustees at the end of the Spring 2000 semester. After one year for advertising (Fall 2000) and admissions (Spring 2001), the first Master students are arriving on campus in Fall 2001.

I am pleased to report that we had an excellent first admission season for the Master in Finance. We received 216 complete applications. The overall quality of the pool was very strong. We offered admission to 41 students. 26 students are coming in September, including many of our top choices. This is a remarkable yield, especially in light of the fact that

we are not offering any financial aid except to the top two admitted students.

Reflecting the interdisciplinary nature of the BCF, the Master 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. We believe that this set of skills will make our Master students highly sought after in the job market despite the difficult recruiting environment on Wall Street in the years ahead.

The program is designed to be completed in four semesters, but students with strong backgrounds will be able to finish more quickly, perhaps in as little as one year. Part-time students, who may require more than two years to complete the program, are admitted when appropriate. We intend to keep the program small and selective.

Because business schools do not generally offer so specialized a program, or expect their students to have such a strong mathematical background, Princeton's Master in Finance will offer students a significant advantage in obtaining coveted positions in investment banking, brokerage houses, and similar firms. BCF faculty also will benefit from the program because it will provide a forum in which they can develop an active intellectual interchange with leading private-sector financial researchers and practitioners.

New Course Offerings

With the new resources of the BCF, course offerings in finance continue to be expanded to accommodate the Certificate and the incoming Master students.

In 1999 and 2000, we introduced new courses focused on Asset Allocation and Portfolio Management; Options, Swaps, and Futures; Financial Institutions; International Financial Markets; Organization and Regulation of Financial Markets; Corporate Finance, Corporate Governance, and Banking; Financial Reform in Developing and Transition Economies; and a seminar in Financial Research, to list just some of them.

In 2001, we are introducing new courses on Venture Capital and Private Equity; Alternative Investments and Hedge Funds; Politics and Finance; Financial Econometrics; Corporate Finance and Accounting; and a new Freshman Seminar entitled “Wall Street 101.”

The existence of the Certificate and Master allows us to offer a richer set of courses for both sets of students. The Master's courses will be available as advanced electives for undergraduate students in the finance certificate that choose to take a more demanding academic course load. The Master's courses will also be available to Ph.D. students who need to fill a gap in their knowledge of a specific area.

Corporate Relations

Our Corporate Affiliates program was launched in May 2000. Under this program, financial firms would be asked to make annual gifts to the Center. In exchange, member firms will be 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's students) for internships and permanent jobs. Current members include Lehman Brothers, Merrill Lynch, Morgan Stanley Dean Witter, and Salomon Brothers.

David H. Blair '67 serves as the BCF Director of Corporate Relations. The Director of Corporate Relations' role includes establishing relationships between the BCF and financial firms for purposes of corporate development, job placement of students, establishment of internship programs for students and facilitating our corporate affiliates' recruiting efforts on campus. He is also responsible for developing and administering the Center's corporate affiliates program. In the future, we expect this effort to grow into organizing programs and seminars bringing together academics and industry practitioners, and developing proposed executive education programs. Internally, Mr. Blair draws on his extensive expertise in the financial industry to advise students on career plans.

Advisory Council

The Center relies on the help and advice of prominent alumni working in the financial sector. The current list of members of the Advisory Council is included in this report. The third annual meeting of the Advisory Council took place on campus on May 4, 2001, immediately before the Center's dedication ceremony. The agenda was centered on the placement of future Master's students, and the design of the benefits offered to Corporate Affiliates. Council members gave every indication of being very impressed with the progress and potential of the BCF.

Conclusion

Princeton's traditional strengths have been liberal arts education (including, of course, the core sciences) and distinguished scholarship in the humanities, social sciences, and natural sciences. In a limited and focused way in recent decades, Princeton also has built up top-ranked, discipline-based professional programs in engineering, architecture and public affairs. In developing the University's strategic plan, however, the faculty and trustees acknowledged that there were several areas that were not currently part of Princeton's programs but should be, if education and scholarship here is to adequately reflect our rapidly changing world. Finance is clearly one of these underdeveloped areas. The generous Bendheim gift, augmented by significant financial support from other Princeton benefactors, provides the basis for remedying this situation.

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, the University's 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.

My hope and expectation is that the Bendheim Center for Finance will have a large impact on the world of finance education and research and an equally large impact on Princeton itself. By helping to attract outstanding new faculty, by encouraging and supporting the work of existing faculty, and by bringing to campus outstanding scholars and practitioners from private industry, the Center will stimulate exciting new research, dialogue and collaboration. And through its educational programs, the Center will enhance the education, training and career opportunities of many of the nation's very best students.

Yacine Aït-Sahalia
Professor of Economics and Finance
Director, Bendheim Center for Finance
August 2001

Faculty

Yacine Aït-Sahalia

Yacine Aït-Sahalia is Professor of Economics and Finance 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. He was named an outstanding faculty by Business Week's 1997 Guide to the Best Business Schools. His research concentrates on investments, fixed-income and derivative securities, and has been published in leading academic journals. Yacine Aït-Sahalia is a Sloan Foundation Research Fellow. He is also an associate editor for a number of academic finance and econometrics journals, and a Research Associate for the National Bureau of Economic Research. He received his Ph.D. in Economics from the Massachusetts Institute of Technology in 1993 and is a graduate of France's Ecole Polytechnique.

Courses taught:

- ECO 513: Time Series Econometrics
- ECO 526: Financial Economics II
- ECO 415: Portfolio Management

Undergraduate students advised:

- Jonathan Norelli, "Transition Density Approximation: Application to Analysis of the Interest Rate Risk-Neutral Diffusion Process"

Graduate students advised:

- Ernst Schaumburg, "Maximum Likelihood Estimation of Levy Processes"
- Rossen Valkanov, "New Econometric Methods in Finance"

Representative Publications

- "Nonparametric Pricing of Interest Rate Derivative Securities," *Econometrica*, 1996.
- "Nonparametric Estimation of State-Price-Densities Implicit in Financial Asset Prices," *Journal of Finance*, 1998 (with Andrew Lo).

- "Transition Densities for Interest Rate and Other Nonlinear Densities," *Journal of Finance*, 1999.
- "Nonparametric Risk Management and Implied Risk Aversion," *Journal of Econometrics*, 2000 (with Andrew Lo).
- "Maximum-Likelihood Estimation of Discretely-Sampled Diffusions: A Closed-Form Approximation Approach," *Econometrica*, 2001.

Ben S. Bernanke

Ben S. Bernanke taught at the Stanford Graduate School of Business before coming to Princeton in 1985. He is currently the Howard Harrison and Gabrielle Snyder Beck Professor of Economics and Public Affairs and chair of the Department of Economics. His research focuses primarily on monetary policy, the role of financial markets in the macroeconomy, and economic history. Bernanke is a Fellow of the Econometric Society, a Fellow of the American Academy of Arts and Sciences, a Research Associate of the National Bureau of Economic Research, and a Guggenheim Fellow. He is a member of the Academic Advisory Panel of the Federal Reserve Bank of New York. He earned his Ph.D. from the Massachusetts Institute of Technology in 1979.

Courses taught:

- WWS 512b: Macroeconomics

Graduate students advised:

- Josep Comajuncosa, "Three Stochastic Dynamic Economies with Heterogeneous Agents"
- Rochelle Edge, "Three Essays on Monetary Economics"
- Refet Gurkaynak, "Real Appreciations, Capital Flows, and the Twin Crises"

Representative Publications

- "Is Growth Exogenous? Taking Mankiw, Romer, and Weil Seriously," forthcoming in *NBER Macroeconomics Annual* 2001 (with Refet Gurkaynak).

- "Should Central Banks Respond to Movements in Asset Prices?", *American Economic Review*, May 2001 (with Mark Gertler).
- "Measuring Monetary Policy," *Quarterly Journal of Economics,* August 1998, vol. 113, no. 3, pp. 869-902 (with Ilian Mihov).
- *Inflation Targeting: Lessons from the International Experience*, 1998. Princeton: Princeton University Press (with Thomas Laubach, Frederic Mishkin, and Adam Posen).
- *Essays on the Great Depression*, 2000. Princeton: Princeton University Press.

Swati Bhatt

Swati Bhatt has been 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 prior to joining Princeton in 1992. She is currently Program Representative for the Undergraduate Certificate in Finance Program. Her research interests center on empirical corporate finance, venture capital and the entrepreneurship process.

Courses taught:

- ECO320: Financial Derivatives and Arbitrage
- WWS582: Topics in Financial Markets

Undergraduate students advised:

- Sujay Jaswa, "Postulating the Role of Venture Capital in the Formation & Deterioration of High Technology Initial Public Offering Market Bubbles"
- Alexandra Lynn, "Fad and Folly: The Post-Offering Performance of New Issues in the High-Technology Sector of the 1980's and 1990's"
- Michael Poe, "Applying the Economics of Information: A Business Plan for the New Economy"
- Michael Rishty, "Currency Hedging by Multinational Companies and its Effect on Shareholder Returns"
- Adam Saunders, "Calixa.com: Enhancing the Efficiency of Canadian Labor Markets"

- David Silverman, "A Real Options Valuation Model for Multi-State Venture Investing"
- Arjun Venkatraman, "Cisco Systems' Acquisition Strategy and its Effect on Shareholder Value"
- Emily Yee, "Financial Contracting Theory Applied to Angel Investing" (awarded the prize for best finance thesis in 2001)

David Blair

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 (more than 80 undergraduates sought advice in the academic year), 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.

Undergraduate students advised:

- Gilbert Klemann, "An Analysis of Inter-Industry Leverage Differences As Evidence of an Optimal Capital Structure at the Industry and Firm Levels"
- David Kreter, "Margin Trading: The Role It Has Played in the Stock Market's Most Volatile Periods"

Alan S. Blinder

Alan Blinder is the Gordon S. Rentschler Memorial Professor of Economics. He is also a Co-Director of the Center for Economic Policy Studies at Princeton University. He is former Vice Chairman of the Board of Governors of the Federal Reserve System (June 1994 until January 1996) and also a former member of President Clinton's original Council

of Economic Advisers (January 1993 until June 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 the G7 Group, a Governor of the American Stock Exchange, 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 more than a dozen books and has written many 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: The National Economy
- WWS593a: The Political Economy of Central Banking

Graduate students advised:

- Shou Wang, "Capital Structure, Taxes, and Inflation"

Representative Publications

- *Asking About Prices: A New Approach to Understanding Price Stickiness*, Russell Sage Foundation, 1998 (with E. Canetti, D. Lebow, and J. Rudd).
- *Central Banking in Theory and Practice,* MIT Press, 1998.
- "Eight Steps to a New Financial Order," *Foreign Affairs*, September/October 1999, pp. 50-63.
- "Central Bank Credibility: Why Do We Care? How Do We Build It?", *American Economic Review*, December 2000.
- *The Fabulous Decade: Macroeconomic Lessons from the 1990s*, The Century Fund, 2001 (with Janet Yellen).

Patrick Bolton

Patrick Bolton is the John H. Scully '66 Professor of Finance and Economics at Princeton University. Professor Bolton has both a Ph.D. in Economics and a M.Sc. in Mathematical Economics and Econometrics from the London School of Economics. He is a Fellow of the Econometric Society, a Fellow of CEPR and NEBR, and a member of the Council of the European Economic Association. He is Co-organizer of the European Summer Symposium in Economic Theory at the Studienzentrum, Gerzensee, Switzerland. He is a member of the Editorial Board of the

Review of Economic Studies and a previous member of the Editorial Boards of *Econometrica*, *Annales d'Economie et de Statistique* and *Economic Policy*. He is a former Managing Editor of the *Review of Economic Studies*. Professor Bolton's main research interests are in Contact Theory, Corporate Finance, Political Economy and Industrial Organization.

Courses taught:

- ECO 502: Graduate Microeconomics
- ECO 541: Industrial Organization
- ECO 585: Graduate Contract Theory
- ECO 318: Corporate Finance

Undergraduate students advised:

- Jesica Feldt, "A Study of Executive Compensation in Start-ups: The Limitations of Agency Theory"
- Anne Maglione, "Is Insider Trading Efficient? An Analysis of the Effects of Regulation FD"

Graduate students advised:

- Ken Ayotte
- Mariagiovanna Baccara
- Claudia Choi, "Essays in Financial Economics and Industrial Organizataion"
- Christopher Hennessy
- Tanjim Hossain
- Gilat Levy, Essays on Strategic Information Transmission"
- Galina Schwartz, "Two Game-Theoretic Essays on Contract Incompleteness, Contractual Enforcement and Investment Incentives"
- Joel Shapiro, Inequality and Public Policy: theoretical Investigations"
- David Skeie
- Eric Wang, "Capital Structure, Taxes, and Inflation"
- Xiaodong Wu, "Three Essays on Multinational Firms"
- Jeongson Yun

Representative Publications

- Predatory Pricing: Strategic Theory and Legal Policy," *The Georgetown Law Journal*, 88, 8, pp. 2239-2330, August 2000 (with Joseph Brodley and Michael Riordan).

- "Blocks, Liquidity, and Corporate Control," *Journal of Finance,* February 1998 (with Ernst-Ludwig von Thadden).
- "Corporate Finance, the Theory of the Firm, and Organization," *Journal of Economic Perspectives,* Winter 1998 (with David Scharfstein).
- "Strategic Experimentation," *Econometrica*, March 1999 (with Christopher Harris).
- "Equity Bonds and Bank Debt: Capital Structure and Financial Market Equilibrium under Asymmetric Information", *Journal of Political Economy,* April 2000 (with Xavier Freixas).

Markus Brunnermeier

Markus Brunnermeier was affiliated with the Financial Markets Group at the London School of Economics (LSE) prior to joining Princeton as an Assistant Professor. He was awarded his Ph.D. by LSE in 1999. His research focuses on the informational aspects of price processes and market microstructure issues. His paper "Buy on Rumors, Sell on News - A Manipulative Trading Strategy" won him a spot on the 1999 *Review of Economic Studies* Lecture Tour. His book *Asset Pricing Under Asymmetric Information* surveys the literature on technical analysis, crashes, bubbles, and herding. This research was supported by grants from the European Union, Economic & Social Research Council, and Economica. His current research incorporates behavioral elements to examine bubbles and other stock market anomalies.

Courses taught:

- ECO 525: Financial Economics I
- ECO 412: Financial Markets, Institutions and Regulations

Undergraduate students advised:

- David Isaacson, "The Economics of United States Insider-Trading Law"
- Greg Dominik, "A Study of Exchange-Traded Funds"
- Jiro Kondo, "Overoptimism & Opportunism in the Theory of Contracts: An Application to the Employment Relationship"
- Silvia Shiliashka, "The Performance of IPOs After the Bubble Burst"

Representative Publications

- *Asset Pricing under Asymmetric Information: Bubbles, Crashes, Technical Analysis, and Herding,* Oxford University Press, January 2001.
- "Disclosure Requirements and Stock Exchange Listing in an International Context," *Journal of Accounting and Economics*, 1999, 1-3, pp. 237-269.
- "Buy on Rumors—Sell on News: A Manipulative Trading Strategy," FMG Discussion Paper, No. 309.
- "Contrasting Different Forms of Price Stickiness: An Analysis of Exchange Rate Overshooting and the Beggar Thy Neighbour Policy," FMG Discussion Paper, No. 329 (with Clemens Grafe).
- "Bubbles and Crashes," FMG Discussion Paper (with Dilip Abreu).

René Carmona

René Carmona is a Professor in the Department of Operations Research and Financial Engineering since 1995. He received the "C.A.P.E.S." and "Agregation" of Mathematics (federal degree) in Paris in June 1969. He holds a "These d'Etat" in Probability from the University of Marseille, June 1977. He is a fellow and member of the Institute of Mathematical Statistics, a member of the American Mathematical Society, Society for Industrial and Applied Mathematics and the Institute of Electrical and Electronics Engineers. His research interests center on stochastic partial differential equations, statistical signal and image analysis, statistical analysis of financial data, pricing in incomplete markets, and weather derivatives.

Courses taught:

- ORF 405: Regression and Time Series
- ORF 515: Stochastic Calculus & Financial Applications
- ORF 557: Malliavin Calculus and Applications to Finance

Undergraduate students advised:

- Romana Abdullah, "Recovery Rates from Defaulted Corporate Debt"

- Conrad Liang, "The Application of Constrained Optimization Towards Improved Statistical Analysis of MRI Images"
- Sadi Ozgur, "The Impact of Russia on European Markets"
- Donald Pecano, Jr., "Yield Trends in the Asset-Backed Securities Market 1985-1999
- Charles Silio, "Modeling and Valuation of Degree-Day Derivative Securities"

Graduate students advised:

- Pavel Diko, "Stochastic Models for Weather Derivatives"
- Valdo Durrleman, "Implied Correlations"
- S. Grishin, "The Random Anderson Parabolic Model"
- Julia Morrisson, "Extreme Value Distributions for Financial Applications"
- Anastasia Papavasiliou, "Particle Methods for Nonlinear Filtering and Financial Applications"
- Manuel Sales, "Credit Indexes and Calibration of Interest Rate Models"
- Michael Tehranchi, "Infinite Dimensional Analysis and Fixed Income Securities"
- Leihai You, "Particle Filtering Applications in Image Analysis"
- Lixin Wang, "Imaging through a Random Surface"

Representative Publications

- *Practical Time Frequency Analysis with an Implementation in S,* Academic Press, 1998 (with W. L. Kwang and B. Torresani).
- *Stochastic Partial Differential Equations: Six Perspectives,* Providence, RI: American Mathematical Society, 1999.
- *Stochastic Analysis for Financial Engineering Applications* (under review), 500 pp.
- *Statistical Analysis of Financial Data in Splus* (under review), 400 pp.
- *Interest Rate Models: From Parametric Statistics to Infinite Dimensional Stochastic Analysis* (Lecture Notes, 150 pp.).

Gregory Chow

Gregory Chow is Professor of Economics and Class of 1913 Professor of Political Economy 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. 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: 1) econometrics, including the often used "Chow test" for parameter stability, the estimation of simultaneous stochastic equations and criteria for model section; 2) dynamic economics, including spectral methods and optimal control methods for the analysis of econometric models and dynamic optimization under uncertainty as a constrained maximization problem to be solved by the method of Lagrange multipliers (replacing the method of dynamic programming); and 3) the Chinese economy in a theoretical quantitative approach to its study. He received his Ph.D. from the University of Chicago.

Course taught:

- ECO 340: The Chinese Economy

Undergraduate students advised:

- Adrienne Gill, "The Macroeconomic Implications of the U.S. Treasury Debt Buyback"
- Michael Koike, "The Real Value of Seasoned Equity Offerings: Comparing the Stock Price Performance of Companies that Complete SEOs & Non-Issuing Firms"
- Miriam Platten, "Forecasting Computer Demand in China"
- Chia Shen, "Effect of Degree of Non-State Activity and Capital Growth on China's Economic Growth"

Representative Publications

- "Shanghai Stock Prices as Determined by the Present Value Model," *Journal of Comparative Economics,* September 1999, pp.553-561.
- "Duplicating Contingent Claims by the Lagrange Method," *Pacific Economic Review,* October 1999, pp. 277-284.

- "Teaching Modern Economics in China," *Comparative Economic Studies*, vol. XLII, no. 2, pp. 51-60, Summer 2000.
- "China's Economic Reform and Policies at the Beginning of the 21st Century," *China Economic Review*, vol. 11, no. 4, 2000.
- "Econometrics and Economic Policy," *Statistica Sinica*, vol. 11, no. 3, July 2001.

Erhan Çinlar

Erhan Çinlar first came to Princeton University as a Visiting Professor of Statistics in 1979-80. He is currently a Professor and Chair of Operations Research and Financial Engineering and also holds the Norman J. Sollenberger Professor of Engineering chair. He is a Fellow of the Institute of Mathematical Statistics, a member of the International Statistical Institute and is the recipient of the Science Prize of TUBITAK, Turkish Council for Scientific and Technological Research, awarded in 1992. His research interests center on renewals, martingales, Markov processes, and stochastic differential equations, dynamic point processes, mass transport by stochastic flows, applications to mathematics of insurance and finance, reliability of complex systems, and modeling and estimation of natural hazards.

Courses taught:

- ORF 309: Proabability and Stochastic Systems
- ORF 512: Stochastic Modeling
- ORF 551/APC 521: Probability Theory
- ORF 557: Stochastic Analysis Seminar

Undergraduate students advised:

- Adam Buchwald," "Option Valuation Under Stochastic Stock Price Volatility: The Constant Elasticity of Variance Model"
- Richard Koshgerian, "Forecasting Professional Football Scores and Optimizing a Portfolio of Wagers on NFL Games"
- Benjamin Taylor, "Card Counting: A Case Study Under the Current Atlantic City Rules"

Graduate students advised:

- Muammer Cakir, "Stochastic Tornado Modeling"

- Husnu Kipçak

Representative Publications

- "Dispersion of Particle Systems in Brownian Flows," *Advances in Applied Probability*, 28, 53-74, 1996 (with C.L. 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. L. Zirbel).
- "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).

Kian Esteghamat

Kian Esteghamat is an Assistant Professor in the Department of Operations Research and Financial Engineering. He received his Ph. D. in Engineering-Economic Systems & Operations Research from Stanford University in 1999. His research interests center on the application of probabilistic methods to the valuation and management of financial transactions. These cover several related areas including the pricing and design of contracts, assets, and derivative securities; financial risk measurement and management; as well as planning and management of investment portfolios. The development of models for the valuation of fixed-income opportunities and credit risk in financial obligations is a current area of investigation. A second area of interest concerns determining the value and optimal investment strategies for real assets, especially those related to international capital investments exposed to sovereign risks.

Courses taught:

- ORF 245: Fundamentals of Engineering Statistics
- ORF 435: Financial Risk Management

Undergraduate students advised:

- Kenton Leon, "Forecasting the Hong Kong and Singapore Markets Using the Arbitrage Pricing Theory"
- Jennifer Mechlowe, "Risk Management: An e-Business Perspective"
- Ari Schottenstein, "An Analysis of Spin-Off Value Creation: An Agency Theoretic Approach"
- Daniel Sugar, "A Practical Approach to Corporate Default Probability"
- Jeffrey Vogel, "Stock Options and Long-Term Incentive Issues for Executive Compensation"
- Peter Yang, "Applications of Stochastic Dominance and Exponentially Weighted Moving Averages on the Pharmaceutical and Biotechnology Industries"

Graduate students advised:

- Jiten Parekh
- Koray Simsek

Representative Publications

- *A Credit-State Approach to Valuation of Contractual Claims*, Ph.D. Thesis, Stanford University, 1999.
- "Performance and Structure of the Chemical Industry Under Regulation," in A. Arora, R. Landau, and N. Rosenberg, editors, *Chemicals and Long-Term Economic Growth: Insights from the Chemical Industry* (John Wiley & Sons: New York, 1998).

Daniel Kahneman

Daniel Kahneman is the Eugene Higgins Professor of Psychology and Professor of Public Affairs in the Woodrow Wilson School since 1993. 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
- WWS 312/PSY 321: The Psychology of Decision Making and Judgment
- PSY528/WWS 519: Negotiation, Persuasion, and Social Influence: Theory and Practice
- WWS515/PSY 529: Conceptions of the Human Agent: Implications for Policy
- WWS 502: Psychology for Policy Analysis and Implementation

Representative Publications

- *Choices, Values and Frames,* New York: Cambridge University Press and the Russell Sage Foundation, summer 2000 (with A. Tversky).
- "Economic Preferences or Attitude Expressions? An Analysis of Dollar Responses to Public Issues," *Journal of Risk and Uncertainty,* 1999, 19, 220-242.
- *Well-Being: Foundations of Hedonic Psychology*, Russell Sage Foundation Press: New York, 1999 (ed. with E. Diener and N. Schwarz).
- "Does Living in California Make People Happy? A Focusing Illusion in Judgments of Life Satisfaction," *Psychological Science,* 9, 1998, pp. 340-346 (with D. Schkade).
- "Aspects of Investor Psychology," *The Journal of Portfolio Management,* 24, 1998, pp. 52-65 (with M. Riepe).

Robert Kimmel

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 333: The Development and Use of Accounting Data
- ECO 415: Portfolio Theory and Asset Management

Undergraduate students advised:

- Mark Boey, "An Assessment of Technical Trading Rules in the Hong Kong Stock Market"
- Jack Halliday, "Online Trading and Stock Market Volatility"
- Bryan Johnson, "The Perfect Storm 2000: Crisis Caused by the Convergence of Failures in California's Wholesale Electricity Market"
- Cameron Jones, "Napstered! The Digital Music Revolution and the Future of the Record Industry"
- Christopher Nam, "An ISP Pricing Game with Switching Costs"
- Donald Park, "International Transmission of Stock Market Corrections: A Study of Market Integration in Times of Financial Crisis"
- Craig Sarembock, "Baseball Economics: Causes of and Remedies for Competitive Imbalance in Major League Baseball"

Paul Krugman

Paul Krugman is the author or editor of dozens of books and several hundred articles, primarily about international trade and international finance. Krugman 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. Krugman received his Ph.D. from Massachusetts Institute of Technology. He holds a joint appointment with the Economics Department and the Woodrow Wilson School of Public and International Affairs.

Courses taught:

- WWS524: Advanced Macroeconomics: Domestic Policy Issues

Representative Publications:

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

Burton Malkiel

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.

Courses taught:

- Freshman Seminar (FRS 144): The Stock Market
- ECO 317: Financial Markets
- ECO 318: Corporate Finance

Undergraduate students advised:

- Kerin Maganzini, "The Landscape of Mutual Fund Investing During the Decade of the 1990's"
- Andrew Ferris, "Financial Analysts' Earnings Forecasts: Bias, Accuracy and Their Value to Investors"

Graduate students advised:

- Sasha Radisich, "A Closer Look at Empirical Questions in Modern Finance"
- Shou (Eric) Wang, "A Re-examination of the Tax-Tradeoff Theory of Capital Structure and Implications for Empirical Analysis"
- Yexiao Xu, "Essays in the Pricing of Financial Assets"

Representative Publications

- "Returns from Investing in Equity Mutual Funds 1971-1991, *Journal of Finance*, Vol. L, No. 2, June 1995, pp. 549-572.
- *Global Bargain Hunting: The Investor's Guide to Profits in Emerging Markets,* New York: Simon & Schuster, January 1998 (with J. P. Mei).
- *A Random Walk Down Wall Street,* W. W. Norton & Co., New York, 1999; 7th edition paperback, June 2000.
- "Have Individual Stocks Become More Volatile?" *Journal of Finance,* February 2001 (with John Campbell, Martin Lettau and Yexiao Xu).
- "The Growth of Index Funds and the Pricing of Equity Securities," *Journal of Portfolio Management*, vol. 27, no. 2, Winter 2001 (with Aleksander Radisich).

John Mulvey

John Mulvey is Professor of Operations Research and Financial Engineering. He is also the Director of Graduate Studies for that department. His research interests center on designing integrated financial planning systems for institutions (e.g. insurance companies, pensions plans) and individual investors; implementing asset-liability management systems for large organizations; combining financial optimization and stochastic models; stochastic optimization algorithms and customizing securities via ALM systems. 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 307: Optimization
- ORF 311: Optimization Under Uncertainty
- WWS 514: Financial Planning Models

Undergraduate students advised:

- Pat Smith, "The Merits of Adding Government Bonds as an Asset Class to a Specific Pension Plan"
- Avik Mukhopadhyay, "Sovereign Asset Liability Management: The Case of Kuwait"

- Jason Aughenbaugh, "Sizing Research and Development Portfolios in the Pharmaceutical Industry"
- Brian Foran, "Incorporating Uncertainty in Nonprofit Budgeting"
- Jeffrey Gaffney, "Parity in the National Football League: The Change in Competitive Balance as a Result of the 1993 Collective Bargaining Agreement"
- Richard O'Gorman, "Spanish 21: An Investigation of Optimal Playing Strategies"
- Kevin Roche, "Experiments in Electronic Publishing: Pricing Serial Novels?"

Graduate students advised:

- Husnu Kipcak
- Aurore Lecanon
- Nan Lu
- Arun Sen
- Koray Simsek

Representative Publications

- "Capital Adequacy and Allocation using Dynamic Financial Analysis," *Casualty Actuarial Society Forum*, Summer 2000 (with D. Mango).
- "Stratified Filtered Sampling in Stochastic Optimization," *Journal of Applied Mathematics and Decision Sciences*, 4, 1, June 2000, 17-38 (with R. Rush, J. Mitchell and T. Willemain).
- "Multi-Period Stochastic Optimization Models for Long-term Investors," *Quantitative Analysis in Financial Markets* (vol. 3) (M. Avellaneda, ed.), 2000, World Scientific Publishing Co., Singapore.
- "Parameter Estimation in Stochastic Scenario Generation Systems," *European Journal of Operations Research*, 118, 563-577, 1999 (with B. Shetty and D. Rosenbaum).
- "A Tabu Search Procedure for Target-Matching in Financial Scenario Generation," *Journal of Heuristics*, 1999 (with A. Berger, J. Mitchell, and R. Rush).

John Reed

John Reed is the former Chairman and CEO of Citibank, Citicorp, and then Citigroup, the largest financial services company in the world. He joined the firm in 1965 and ran its Technology and Operations and its Consumer Business divisions before becoming CEO and Chairman in 1984. He retired in April 2000 and is now a Senior Visiting Fellow at the Bendheim Center for Finance.

Uwe Reinhardt

Uwe Reinhardt is the James Madison Professor of Political Economy and Professor of Economics and Public Affairs in the Woodrow Wilson School. He is recognized as one of the nation's leading authorities on health care economics. Reinhardt has been a member of the Institute of Medicine of the National Academy of Sciences since 1978. He was a member of the National Leadership Commission on Health Care, a private-sector initiative established to develop options for health care reform, and is a past president of the Association of Health Services Research, on whose board he still serves. From 1986 to 1995 he served as a commissioner on the Physician Payment Review Committee, established in 1986 by Congress to advise it on issues related to the payment of physicians. Reinhardt is or was a member of numerous editorial boards, among them the *Journal of Health Economics*, the *Milbank Memorial Quarterly*, *Health Affairs*, the *New England Journal of Medicine*, and the *Journal of the American Medical Association*. He received his Ph.D. from Yale University.

Courses taught:

- ECO 333: The Development and Use of Accounting Data
- WWS 505: Financial Management in the Corporate and Public Sectors
- WWS 506: Accounting for Commercial, Nonprofit, and Governmental Entities

Undergraduate students advised:

- Kevin Bhatts, "Aging and Health Expenditures: Support for a Moderate View"

Representative Publications

- "Is the Target Income Hypothesis an Economic Heresy?" *Medicare Care Research and Review*, September, 1996, pp. 274-87.
- "Abstracting from Distributional Effects, This Policy is Efficient," M. L. Barer et al., *Health Care and Health Economics*, New York: Wiley, 1998, pp. 1-52.
- "Managed Competition in Health Care: Are Private Employers up to the Task? *Employee Health Benefits*, May/June, 1999, pp. 109.
- "The Rise and Fall of the Physician Practice Management Industry," *Health Affairs*, January/February, 2000, pp. 42-55.
- "The Economics of For-Profit and Not-for-Profit Hospitals," *Health Affairs*, November/December, 2000, pp. 178-86.

Ailsa Roell

Ailsa Roell has been a Senior Research Economist in the Department of Economics at Princeton University since 1997. She did her graduate studies at Johns Hopkins University in the Department of Political Economy. She was a postdoctoral associate at MIT, a lecturer in economics at the London School of Economics, a chercheur FNRS and charge de cours at Universite Libre de Bruxelles, and a professor of finance at Tilburg University. She was awarded the BACOB prize for European research in finance (joint with Marco Pagano) in 1997. Her current research interests are the competition among exchanges in attracting listings and liquidity, and corporate governance issues.

Courses taught:

- ECO 412: Financial Markets: Markets: Structure, Institutions and Regulation
- ECO 416: Topics in Corporate Finance, Corporate Governance and Banking

Undergraduate students advised:

- Mario Abularach, "Stock Markets and Economic Growth: A Model for Developing Countries"
- Andrew Caspersen, "The Future of the NYSE Specialist"
- John Goldie, "The Problem of Export Instability in Developing Countries"
- Jason Koonin, "Analysis of the Effects of the Curt Flood Act of 1998 on Major League Baseball"

- Mike Viola, "Bursting the Internet Bubble: Why and How this Sector Will Fall"
- Moeed Yousaf, "A Converging Act: Mergers and Acquisitions in the Telecommunications Industry"

Representative Publications

- "Stabilization," *European Economic Review* 41, 1997, 279-293 (with Oren Sussman).
- "Competition among European Exchanges: Recent Developments," in Guido Ferrarini (ed.), *European Securities Markets: The Investment Services Directive and Beyond*, Kluwer Law International, 1998, 213-224.
- "The Choice of Stock Ownership Structure: Agency Costs, Monitoring and Liquidity," *Quarterly Journal of Economics*, 1998 (with Marco Pagano).
- "Blockholdings in Europe: An International Comparison,' co-author Marco Becht, *European Economic Review* (1999).
- "Ownership and Control in the Netherlands," co-authors A. de Jong, R. Kabir and T. Marra, forthcoming in F. Barca and M. Becht (eds.), *Ownership and Control: A European Perspective*.

José Scheinkman

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. Scheinkman is a fellow of the American Academy of Arts and Sciences, and a "docteur honoris-causa" from the University of Paris IX. 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 Scheinkman was Vice President, Financial Strategies Group, Goldman, Sachs & Co. He has held visiting positions at Princeton University, University of Paris-Dauphine, Instituto de Matemática Pura e Aplicada and E.P.G.E. (Brazil). His current research interests are the study of competition among financial markets, developing tools for empirical studies of asset markets, and the economics of social interactions.

Courses taught:

- ECO 526: Finance Theory II

Undergraduate students advised:

- Whitney Birdwell, "Risky Business: The 'Hot Issue' Market of the Late 1990's"
- Christopher Burnham, "The Economic Transmission of Inequality"
- Lauren Cabral, "An Empirical Analysis of the Long Run Performance of Initial Public Offerings & Seasoned Equity Offerings"
- Ian Heavers, "Geographic Proximity to Investment: A Study of U.S. Venture Funds"
- Scott Phillips, "An Analysis of Market Efficiency for Nasdaq Stocks in the 1990's: Do Investors Rationally Incorporate New Information into Securities Valuations?"

Representative Publications

- "Spectral Methods for Identifying Scalar Diffusions," *Journal of Econometrics* 86, 1998, 1-32 (with Lars Hansen and Nizar Touzi).
- "Optimal Environmental Management in the Presence of Irreversibilities," *Journal of Economic Theory*, January 2001 (with Thaleia Zariphopoulou).
- Financial Intermediation without Exclusivity," *American Economic Review*, May 2001 (with Tano Santos).
- "Measuring Social Interactions," in *Social Dynamics*, S. Durlauf and P. Young, (eds.), MIT Press, Cambridge, forthcoming (with Edward Glaeser).
- "Competition among Exchanges," *Quarterly Journal of Economics,* forthcoming (with Tano Santos).

O. Griffith Sexton

Griff 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 has been involved in a broad range of the firm's financing and advisory services business ever since. He led the Morgan Stanley teams responsible for the execution of some of the most challenging and difficult advisory assignments undertaken by the firm in the period 1985-1995, including the restructuring/sale of Dome Petroleum, the recapitalization and sale of Polysar, the Texaco/Saudi "Star Enterprises" petroleum refining and marketing joint venture, the sale of the Rockefeller Trusts interest in Rockefeller Center, the acquisition of Saab-Scania by Investor in Sweden, and a long list of other large, complex transactions. In May 1995 Mr. Sexton became an active Advisory Director of Morgan Stanley. He has, however, remained actively involved with a select number of clients of the firm. For example, Mr. Sexton led the merger with BP in 1998 and has recently been involved in several large merger transactions in Sweden. In September 1995, Mr. Sexton became engaged as an Adjunct Professor at Columbia University, Graduate School of Business, teaching two courses in the subject of Corporate Finance to second year business students. And in the spring of 2000, he also became an Adjunct Professor at Princeton University, teaching an undergraduate course in Corporate Finance.

Courses taught:

- ECO 419: Corporate Restructuring

Ken Steiglitz

Ken 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 Millenium Medal in 2000. His research interests are in agent-based modeling of markets and auctions, and in computing using soliton collisions.

Courses taught:

- COS 598c: Nonstandard Computation
- COS 323: Computing for the Physical and Social Sciences
- COS/Music 325: Computer Music
- COS 598a: Artificial Economic Agents

- COS 444: WWW.Auction-Course.com

Undergraduate students advised:

- Peter Mario Mei, "Spectra from the Fringe of the Model"
- Eric Lasceles, "Commodities vs. Collectibles on eBay"

Graduate students advised:

- M. J. Jakubowski, "Computing with Solitons in Bulk Media"

Representative Publications

- "Simulating the Madness of Crowds: Price Bubbles in an Auction-Mediated Robot Market," *Computational Economics*, vol. 12, pp. 35-59, 1998 (with D. Shapiro).
- "State Transformations of Colliding Optical Solitons and Possible Application to Computation in Bulk Media," *Phys. Rev. E*, vol. 58, pp. 6752-8, Nov. 1998 (with M. H. Jakubowski and R. K. Squier).
- "Energy Switching Interactions between Colliding Vector Solitons," *Phys. Rev. Lett.*, vol. 83, no. 12, pp. 2332-2335, Sept. 20, 1999 (with C. Anastassiou, M. Segev, J. A. Giordmaine, M. Mitchell, M. Shih, S. Lan, and J. Martin).
- "Computing with Solitons: A Review and Prospectus," *Multiple-Valued Logic*, Special Issue on Collision-Based Computing, to appear early 2000 (invited) (with M. H. Jakubowski, and R. K. Squier).
- "Effects of Price Signal Choices on Market Stability," *Journal of Economic Behavior and Organization*, forthcoming (with H. Mizuta and E. Lirov).

Erik VanMarcke

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 the Director of the Civil Engineering Systems Methodology Group. He held visiting appointments at Harvard University and the University of Louvain (Belgium), his undergraduate alma mater, and was the Shimizu Corporation Visiting Professor at Stanford University. His principal expertise is in engineering 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:

- Geoffrey P. Adamson, "Catastrophic Risk of Florida Landfalling Hurricanes: The Effect of El Nino on Financial Engineering Applications"
- Harris H. Syed, "The Pakistan Stock Market: Efficiency, Return and Beyond"
- Evan W. Schwimmer, "Earthquake Impact Assessment for Essential Facilities in New York City"
- Allison L. Smitten, Cost-Effectiveness Models and Decision Analysis in Health and Medicine"

Graduate students advised:

- Ricardo Palma, "Risk Analysis for Maintenance of Degrading Infrastructure"

Representative Publications

- "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*, Eds. R. Roth & H. Kunreuther, Joseph Henry Press (N.A.S.), pp. 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; see www.princeton.edu/evm/.
- *Quantum Origins of Cosmic Structure,* A.A. Balkema Publishers, Rotterdam, The Netherlands & Brookfield VT, 1997.

Mark Watson

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 1982-2001 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.

Course taught:

- WWS 507B, Quantitative Analysis

Representative Publications

- "Forecasting Inflation," *Journal of Monetary Economics,* 1999 (with James H. Stock).
- "Explaining the Increased Variability in Long Term Interest Rates," *Reserve Bank of Richmond Quarterly Review,* Spring 2000.
- "A Comparison of Linear and Nonlinear Univariate Models for Forecasting Macroeconomic Time Series," in *Cointegration, Causality and Forecasting,* R.F.Engle and H. White (eds), Oxford University Press, 1999 (with James Stock).

Michael Woodford

Michael Woodford is the Harold H. Helm '20 Professor of Economics and Banking. He received a J.D. from Yale Law School in 1980 and his Ph.D. in Economics from the Massachusetts Institute of Technology in 1983. He taught at Columbia University and the University of Chicago before joining the Princeton faculty in 1995, and is also a Fellow of the Econometric Society and Research Associate of the National Bureau of Economic Research. He was awarded a John Simon Guggenheim Fellowship in 1998-99. He has written extensively in the areas of intertemporal general equilibrium theory, business cycle theory, and monetary economics. His current research deals primarily with the theory of monetary policy.

Courses taught:

- ECO 420: Introduction to Economic Dynamics
- ECO 504: Macroeconomic Theory II
- ECO 553: International Monetary Theory and Policy II

Undergraduate students advised:

- Jeegar Kakkad, "Optimal Monetary Policy in Common Currency Areas: A Theoretical Analysis of England's Entry Decision into the EMU"
- Rebecca Karpay, "Speculative Attacks under Uncertainty and Forward-Looking Governments"
- Emi Nakamura, "An Economy with Monetary Business Cycles"

Graduate students advised:

- Kosuke Aoki, "Essays on Optimal Monetary Policy"
- Pierpaolo Benigno, "Optimal Monetary Policy for Open Economies"
- Gauti Eggertsson
- Marc Giannoni, "Model Uncertainty and Optimal Monetary Policy"
- Hong Li

Representative Publications

- *Handbook of Macroeconomics,* Amsterdam: North-Holland, 3 volumes, 1999 (Editor, with J. B. Taylor).
- "Pitfalls of Forward-Looking Monetary Policy," *American Economic Review*, May 2000, 100-104.
- Monetary Policy in a World without Money," *International Finance* 3: pp. 229-260, 2000.
- "The Taylor Rule and Optimal Monetary Policy," *American Economic Review*, May 2001.
- "Fiscal Requirements for Price Stability," *Journal of Money, Credit and Banking*, August 2001.

Wei Xiong

Wei Xiong received his Ph.D. from the Fuqua School of Business, Duke University, in spring 2001. He also holds an M.A. in Physics from Columbia University and a B.S. in Physics from the University of Science and Technology of China. His research interests are on issues related to financial market crisis, liquidity, volatility dynamics and behavioral finance. He has been invited by a top economic journal, *Review of Economic Studies*, to present his research on its annual European tour in 2000.

Undergraduate students advised:

- Courtney Biesecker, "The Performance of High Yield Bond Funds: Are High Yield Bonds Fairly Priced?"
- Luis Garcia, "An Overview of Tracking Stocks"
- Takashi Kanno, "The Japanese Big Bang"
- James Lee, "Predictable Market Behavior: An Analysis of the Small-Firm-in-January Effect"
- Aleem Remtula, "Anti-takeover Amendments: the Impact on CEO Compensation and Incentives"
- Poranee Wattanawanakul, "A Battle of the Sexes? An Investigation of Gender Differences in Mutual Fund Management"
- Janet Wiener, "An Empirical Analysis of Dotcom Versus Traditional Company Investing Behavior"
- Peter Sanchez, "Rationalizing the Endorsement of a Proposed Exchange Microstructure by Examining its Beneficial Characteristics Within the Context of a Comparison to the Core Liquidity and Price Discovery Objectives of Traditional Financial"

Representative Publications:

- "Convergence Trading with Wealth Effects," *Journal of Financial Economics*, 2001.
- "Contagion as a Wealth Effect," *Journal of Finance*, 2001 (with Albert S. Kyle).

Visiting Faculty

During the academic year 2000-01, the BCF welcomed the following visiting faculty:

- **Christopher Harris**, from Cambridge University (England)
- **Per Mykland**, from the University of Chicago

The Center also welcomed the following postdoctoral fellows during the year:

- **Jaya Bishwal**, from Sambalpur University (India)
- **Damir Filipovic**, from ETH Zurich (Switzerland)
- **Ulrich Horst**, from Humbolt University in Berlin (Germany)

Advisory Council

The Advisory Council for the Bendheim Center is comprised of a group of distinguished leaders in the financial industry.

Mr. Gerhard R. Andlinger
Chairman of the Board
Andlinger & Company, Inc.

Mr. John L. Cecil
Advisor
Lehman Brothers

Mr. E. Robert Cotter, III
Global Head of Mergers and Acquisitions
Deutsche Bank Alex.Brown

Mr. R. Kelly Doherty
Partner
Cayman Advisors

Mr. J. Michael Evans
Managing Director
Goldman Sachs & Co.

Mr. Richard B. Fisher
Chairman of Executive Committee
Morgan Stanley, Dean Witter, Discover & Co.

Mr. David A. Gardner
President
Gardner Capital Corporation

Mr. Benjamin Griswold
Senior Chairman
BT Alex Brown, Inc.

Mr. William R. Hambrecht
Chairman
W. R. Hambrecht & Co., LLC

Mr. John K. Hepburn
Vice Chairman
Morgan Stanley Group (Europe), P.L.C.

Mr. Bruce R. Lauritzen

President and Treasurer
First National Bank of Omaha

Mr. John A. Mayer, Jr.
Chief Financial Officer
J.P. Morgan & Company

Mr. Michael McCaffery
President and Chief Executive Officer
Stanford Management Company

Ms. Heidi G. Miller
Vice Chairman
Marsh USA Inc.

Mr. Jeffrey M. Peek
Executive Vice President & President, Asset Management
Merrill Lynch & Co., Inc.

Mr. John L. Weinberg
Senior Chairman
Goldman Sachs & Co.

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

Finance Seminars

Financial Research Seminars: Spring 1999

February 3	David Modest Long-Term Capital Management	"LTCM: A Look Back"
February 10	Rene Carmona Princeton University	"Calibration of Derivative Prices by Relative Entropy"
February 17	Meté Soner Princeton University	"Option Pricing with Constraints"
February 24	Elyes Jouini ENSAE and New York University	"Equilibrium Pricing of Nonredundant Assets in a Complete Market"
March 3	Marianne Bertrand Princeton University	"Are CEOs Rewarded for Being Lucky?"
March 24	Martin Cherkes Princeton University	"A Corporate Finance Approach to the Closed-End Funds' Puzzle"
March 31	Robert Gertner University of Chicago	"Coordination, Dispute Resolution, and the Scope of the Firm"
April 7	Richard Kihlstrom Wharton School, University of Pennsylvania	"Monopoly Power in a Dynamic Securities Market"
April 14	Darrell Duffie Stanford University	"The Term Structure of Credit Spreads with Incomplete Accounting Information"

Otto A. Hack '03 Finance Seminar Fall 1999

September 22	Terrance Odean University of California, Davis	"Online Investors: Do the Slow Die First?"
September 29	Ivo Welch University of California, Los Angeles	"Dividends"
October 6	Suresh Sundaresan Columbia University	"Asset Pricing and Default-free Term Structure in an Economy with Default Risk"
October 13	Shou Wang Princeton University	"A Re-examination of the Tax-Tradeoff Theory of Capital Structures and Implications for Empirical Analysis"
October 20	Douglas Diamond University of Chicago	"Liquidity Risk, Liquidity Creation and Financial Fragility: A Theory of Banking"
October 27	Jesus Santos University of Chicago	"Prospect Theory and Asset Prices"
November 10	David Hsieh Duke University	"Hedge Fund Convergent Strategies & Catastrophe Insurance"
November 17	Pietro Veronesi University of Chicago	"Option Prices with Uncertain Fundamentals: Theory and Evidence on the Dynamics of Implied Volatilities"
December 1	S. Viswanathan Duke University	"Why Is Inter-Dealer Trading So Pervasive in Financial Markets?"
December 8	Robert Hall Stanford University	"The Stock Market and Capital Accumulation"
December 15	Maureen O'Hara Cornell University	"Information and Asset Pricing"

Otto A. Hack '03 Finance Seminar Spring 2000

February 28	Gregory Chow Princeton University	"Equity Premium and Consumption Sensitivity when the Consumer-Investor Allows for Unfavorable Circumstances"
March 8	George Constantinides University of Chicago	"Asset Pricing with Heterogeneous Consumers and Limited Participation: Empirical Evidence"
March 22	Steven Kaplan University of Chicago	"Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts"
March 29	Marianne Bertrand Princeton University	"Enjoying the Quiet Life? Managerial Behavior Following Anti-Takeover Legislation"
April 5	Greg Willard Massachusetts Institute of Technology	"Convergence Trades and Liquidity: A Rational Theory of Hedge Funds"
April 12	Ken Singleton Stanford University	"Modeling Sovereign Yield Spreads: A Case Study of Russian Debt"
April 19	Jean-Charles Rochet Université de Toulouse	"Systemic Risk, Interbank Relations and Liquidity Provision by the Central Bank"
April 26	Marco Pagano Univesita degli Studi di Salerno and CEPR	"The Political Economy of Corporate Governance"

September 20	Milton Harris University of Chicago	"Organization Design"
September 27	Harrison Hong Stanford University	"Breadth of Ownership and Stock Returns"
October 4	Ernst Schaumburg Princeton University	"Maximum Likelihood Estimation for Discontinuous Asset Price Processes"
October 11	Chris Hennessy Princeton University	"Tobin's Q, Debt Overhang, and Investment"
October 18	Marek Musiela University of New South Wales and BNP-Paribas	ATM-Volatility and Volatility Related Expectation Hypotheses"
October 25	Peter DeMarzo Stanford University	"Optimal Long-Term Financial Contracting with Privately Observed Cash Flows"
November 8`	Holger Mueller University of Mannheim	"Project Bundling, Liquidity Spillovers and Capital Market Discipline"
November 15	Dimitri Vayanos MIT Sloan School of Management	"Equilibrium and Welfare in Markets with Financially Constrained Arbitrageurs"
November 29	Franklin Allen The Wharton School, University of Pennsylvania	"Banking and Markets"
December 6	Andrei Shleifer Harvard University	"Style Investing"

Otto A. Hack '03 Finance Seminar Spring 2001

March 13	Eric Ghysels UNC Chapel Hill	"Estimating Diffusions with a Continuum of Moment Conditions"
March 14	Daniel Kahneman Princeton University	"A Psychologist's List"
March 28	Hua He Yale University	"Modeling Term Structures of Swap Spreads"
April 4	Damir Filipovic ETH Zurich	"Consistency Problems for HJM Interest Rate Models"
April 11	Fernando Zapatero University of Southern California	"Executive Stock Options with Effort Disutility and Choice of Volatility"
April 18	Rick Green Carnegie-Mellon University	"The Personal-Tax Advantages of Equity"
April 25	Philip Protter Cornell University	"Complete Markets with Arbitrage"
May 2	Eric Renault Université de Montréal	"Iterative and Recursive Estimation in Structural Non-Adaptive Models"

Conferences

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

John Reed's Lectures on Banking

The Bendheim Center for Finance presented two lectures on banking by John S. Reed:

- Monday February 12, 2001: A Retrospective on the Banking Industry, 1965-2000
- Monday February 19, 2001: Technology and Finance

The lectures were open to the public and attracted over 100 attendees.

Energy Risk Management in Deregulated Energy Markets

The Bendheim Center for Finance co-sponsored with the Department of Operations Research a conference on energy risk management on April 5-6, 2001. The conference was organized by Professor René Carmona and brought together academics and practitioners working in this emerging field.

Risk exposure in energy has been made obvious in recent years by the volatility of power prices and the worldwide deregulation of the supply chain. Both have fueled a booming market in financial derivatives designed to hedge that risk. This vastly changed environment encourages energy suppliers, facing substantial opportunities and risks from deregulated markets, to apply innovative risk management tools to their businesses.

The conference presentations included:

- "New Risk Profiles in Deregulated Electricity Markets"
  Robert Green, President & Chief Operating Officer, UntilCorp United

- "Regulation and Risk Allocation"

Richard O'Neill, Chief Economic Advisor, Office of Markets, Tariffs and Rates, Federal Energy Regulatory Commission

- "Deregulation: The South American Experience"
  Joe Kischkill, Co-President, ENRON, South America

BCF-CEPS Symposium on The Stock Market and the New Economy

This symposium, co-organized by the BCF and the Center for Economic Policy Studies (CEPS), took place on May 11-12, 2001. On Friday, Nobel Laureate Myron Scholes delivered the keynote address. The next day, panelists discussed the economic outlook, the revolution in personal finance, investing in the age of the Internet, and the Fed and the stock market.

Speakers at the conference included: Terry Odean of the University of California at Davis, Eduardo Schwartz of the University of California at Los Angeles, John Lipsky of Chase Manhattan Bank, and Ben Bernanke, Alan Blinker and Burton Malkiel of Princeton.

This event was by invitation only.

The Princeton Lectures in Finance

The BCF organizes each year a series of public lectures, The Princeton Lectures in Finance, given 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 first lecturer and author was Professor Stephen Stephen A. Ross, the Franco Modigliani Professor of Financial Economics at M.I.T. Professor Ross is widely considered to be a leader in the field and one of the few contenders for a Nobel Prize in Economics for his contributions to finance. He delivered his lectures at the BCF on the theme of Arbitrage and Finance:

- Lecture 1: Monday, May 21, 2001
  No Arbitrage: The Fundamental Theorem of Finance

- Lecture 2: Tuesday, May 22, 2001
  Efficient Markets

- Lecture 3: Wednesday, May 23, 2001
  Arbitrage and Behavioral Finance: A Case Study

Handbook of Financial Econometrics Conference

This conference will bring together to the Bendheim Center for Finance on September 21, 22 and 23, 2001 some of the leading academics in the field to present their contributions to the forthcoming *Handbook of Financial Econometrics*, edited by Yacine Ait-Sahalia and Lars Peter Hansen.

Statistical Methods for Option Pricing

- René Garcia (Université de Montreal), Eric Ghysels (UNC Chapel Hill) and Eric Renault (Université de Montreal): Option pricing models
  Discussant: David Bates (University of Iowa)

- Per Mykland (University of Chicago): Option pricing bounds and statistical uncertainty
  Discussant: Marco Avellaneda (Courant Institute, NYU)

- Laurent Nguyen-Ngoc and Marc Yor (Université de Paris VI): Lévy processes and their application to option pricing
  Discussant: Ernst Schaumburg (Northwestern University)

- Monika Piazzesi (UCLA): Affine term structure models
  Discussant: Robert Kimmel (Princeton University)

The Econometrics of Market Microstructure

- Robert Engle (NYU) and Jeffrey Russell (University of Chicago): High-frequency and transaction data
  Discussant: Torben Andersen (Northwestern University)

- Andrew Lo (MIT) and Jiang Wang (MIT): Trading volume
  Discussant: Larry Glosten (Columbia University)

Inference for Continuous-Time Models in Finance

- Yacine Aït-Sahalia (Princeton University), Lars Peter Hansen (University of Chicago) and José Scheinkman (Princeton University): Discretely-sampled diffusions
  Discussant: Michael Sørensen (University of Copenhagen)

- Torben Andersen (Northwestern University), Tim Bollerslev (Duke University) and Frank Diebold (University of Pennsylvania): Parametric and nonparametric measurements of volatility
  Discussant: Nour Meddahi (Université de Montreal)

- Federico Bandi (University of Chicago) and Peter C.B. Phillips (Yale University): Nonstationary continuous-time models
  Discussant: Mark Watson (Princeton University)

- Bo Martin Bibby, Martin Jacobsen and Michael Sørensen (University of Copenhagen): Estimating functions for diffusions
  Discussant: Per Mykland (University of Chicago)

- Ron Gallant (UNC Chapel Hill) and George Tauchen (Duke University): Simulated score methods and indirect inference for continuous-time models
  Discussant: Christian Gouriéroux (CREST)

- Jean Jacod (Université de Paris VI): Inference for stochastic processes
  Discussant: Eric Renault (Université de Montreal)

- Michael Johannes (Columbia University) and Nick Polson (University of Chicago): Numerical Bayesian methods for estimating continuous-time models
  Discussant: Christopher Sims (Princeton University)

The Econometrics of Investment and Risk

- Michael Brandt (University of Pennsylvania): Portfolio choice problems
  Discussant: Luis Viceira (Harvard University)

- John Heaton (University of Chicago) and Debbie Lucas (Northwestern University): Microeconomic evidence on portfolio holdings and heterogeneity
  Discussant: Jonathan Parker (Princeton University)

- Christian Gouriéroux (CREST): Value at risk and extremal events

Discussant: René Carmona (Princeton University)

- Ravi Jagannathan (Northwestern University), Georgios Skoulakis (Northwestern University) and Zhenyu Wang (Columbia University): The Analysis of large cross-sections of security returns
  Discussant: Jay Shanken (University of Rochester)

- Martin Lettau (Federal Reserve Bank of NY) and Sydney Ludvigson (New York University): Measuring and modeling the evolution of risk-return tradeoffs
  Discussant: John Campbell (Harvard University)

Undergraduate Certificate in Finance

Class of '00

Total number of certificates awarded	59
By major:	
Computer science	2
Economics	40
Mathematics	1
Operations research & financial engineering	15
Woodrow Wilson School	1

Class of '01

Total number of certificates awarded	82
By major:	
Archaeology	1
Computer science	4
Economics	41
Electrical engineering	3
Mechanical and aerospace engineering	2
Mathematics	3
Operations research & financial engineering	22
Politics	2
Psychology	1
Woodrow Wilson School	3

Class of '02

Total number of certificates to be awarded	86
By major:	
Chemistry	1
Computer science	9
Economics	30
Electrical engineering	4
English	1
History	1
Mathematics	1
Operations research & financial engineering	31
Philosophy	1
Physics	1
Politics	1
Psychology	1
Woodrow Wilson School	4

Elective Courses Selected Class of '01

This table shows the department offering the electives selected by the Undergraduate Certificate in Finance majoring in the departments of Economics, ORFE and Computer Science.

Major (# of students)	# of courses:	Outside electives (# of students)	Of which: ECO	Of which: ORFE	Of which: COS
ECO	0	2	-	-	-
(41)	1	20	-	9	6
	2	16	-	16	12
	3	2	-	3	1
	4	1		1	3
ORFE	0	0	-	-	-
(22)	1	4	3	-	0
	2	8	10	-	3
	3	5	9	-	5
	4	5	16		1
COS, ELE	0	2	2-	-	-
(7)	1	1	1	1	0
	2	1	1	2	0
	3	2	2	4	2
	4	1	1	1	3

Senior Theses of Class of '01

This table shows the titles of the senior theses of all Economics majors awarded the Undergraduate Certificate.

Name	Thesis Title
Whitney Birdwell	Risky Business: The "Hot Issue" Market of the Late 1990s
Alan Boswell	The Economic Effects of Capital Tax Shocks: A Vector Autoregression Model
Connor Browne	Potential Underwriting Relationships and the Accuracy of Research Analysts' Earnings Estimates
Lauren Cabral	An Empirical Analysis of the Long Run Performance of Initial Public Offerings and Seasoned Equity Offerings
Tarlan Ellis	Friend or Foe: How Potential Acquisitions are Affected by Takeover Defenses and Changing Court Decisions
Andrew Farris	Financial Analysts' Earnings Forecasts: Bias, Accuracy and Their Value to Investors
Jesica Feldt	A Study of Executive Compensation in Start-ups: The Limitations of Agency Theory
Jeffrey Frasco	How the Thai Government Effected the Collapse of Its Financial Markets
Bryce Gama	The Private Side of Equity: A Case Study
Lu8is Garcia	An Overview of Tracking Stocks
Geoffrey Gentile	Ballgames, Bettor & Biases: An Investigation into the Efficiency of Sports Betting Markets
Jack Halliday	Online Trading and Stock Market Volatility
Ian Heavers	Geographic Proximity of Investment: A Study of US Venture Funds
Edward Hubner	Innovations in Risk Management: A Discrete Time Model of the Credit Default Swap
David Isaacson	The Economics of United States Insider-trading Law
Sujay Jaswa	Postulating the Role of Venture Capital in the Formation and Deterioration of High Technology Initial Public Offering Market Bubbles

Takashi Kanno	The Japanese Big Bang
Gene Kim	Irrational Players in a Rational Game: An Empirical Event Study on Stock Market Reaction to Earnings Preannouncements and Analyst Recommendation Changes
Gilbert Kleman	An Analysis of Inter-Industry Leverage Differences as Evidence of an Optimal Capital Structure at the Industry & Firm levels
Michael Koike	The Real Value of Seasoned Equity Offerings
Jiro Kondo	Over Optimism & Opportunism in the Theory of Contracts: An Application to the Employment
Douglas Lambert	Risky Business: The Absence of Treasury Debt in Secondary Fixed Income Markets
James Lee	Predictable Market Behavior: An Analysis of the Small-Firm-in-January-Effect
Robert Longden	Money for Nothing: An Analysis of Pay Versus Performance in Major League Baseball
Alexandra Lynn	Fad and Folly: The Post-Offering Performance of New Issues in the High-Technology Sector of the 1980's and 1990's
Anne Maglione	Is Insider Trading Efficient? An Analysis of the Effects of Regulation FD
Christopher Nam	An ISP Pricing Game with Switching Costs
Dina Nayeri	Student Sensitivity to Cost and Other Financial Factors in the College Application and Enrollment Processes
Jonathan Norelli	Transition Density Approximation: Application to the Analysis of the Interest Rate Risk-neutral Diffusion Process
Elena Pappas	The Equity Home Bias Puzzle: An Information Cost Approach
Thomas Peff	Healthy, Wealthy, and Diversified; The Effects of Health Status on Portfolio Composition
Michael Poe	Applying the Economics of Information: A Business Plan for the New Economy
Aleem Remtula	Anti-takeover Amendments: The Impact on CEO Compensation and Incentives
Sujohn Sarkar	Performance and Risk Analysis of Hedge Funds
Adam Saunders	Calixa.com: Enhancing the Efficiency of Canadian Labor Markets
Matthew Scherrer	The Existence of the Momentum Life Cycle Within the Nasdaq 100 Index
Stephen Smith	Medical Malpractice Reforms in Illinois: Why the Illinois Department of Insurance Incorrectly Refused Access to Important Closed Claims Data

Aarjun Venkatraman	Cisco Systems' Acquisition Strategy and its Effect on Shareholder Value
Poranee Wattanawanakul	A Battle of the Sexes? An Investigation of Gender Differences in Mutual Fund Management

Master in Finance

The BCF offers a Master in Finance. 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 will 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.

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. The BCF provides career assistance to students, including help with internships and job placement, through its own staff. The program does not offer tuition grants or scholarships. However, eligible students may apply for federal and private student loans through existing programs for Princeton graduate students.

The curriculum is designed to be completed in four semesters. However, students with a high degree of preparation can complete the curriculum in two or three semesters. This flexible format allows exceptionally well-prepared students to complete the program in as little as one academic year. The program will additionally accept very qualified and motivated part-time students, who will be allowed up to eight semesters to complete the program requirements, subject to annual review of the student's progress.

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, along a number of coherent "tracks".

Admission Requirements

The Master in Finance program is designed both for students with a 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.

Applicants must take either the GRE general test or the GMAT. Applicants whose native language is not English must take the TOEFL.

Program Requirements

The program requirements consist of 6 core courses and 10 elective courses (see list below), with the following provisions:

- At least 5 of the elective courses must be at the level 500 or higher.
- At least 5 of the elective courses must be taken from List 1 below.
- Students can waive courses on the basis of courses previously completed at Princeton or another institution. Admission letters will discuss the student's plans and specify the courses which are waived.
- In all cases a minimum of 8 courses (with at least 3 from List 1) will have to be completed after entering the Master's program.
- Students must maintain an overall grade average of B or better as well as earn a passing grade in all core and elective courses.

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 provide students with analytical fundamentals of modern finance, both theoretical and empirical.

Financial Economics

- **ECO 305**: Microeconomic Theory: A Mathematical Approach [Fall]
- **FIN 501**: Asset Pricing Theory and Applications [Fall]

Accounting

- **FIN 502**: Financial Accounting [Spring]

Mathematics

- **FIN 585/ORF 515**: Stochastic Calculus for Engineering and Finance [Spring]

Econometrics

- **ECO 306**: Econometrics: A Mathematical Approach [Fall], or
- **FIN 405/ORF 405**: Regression and Applied Time Series [Fall]
- **FIN 504**: Financial Econometrics [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

- ECO 320: Topics in Financial Derivatives and Arbitrage, or
- MAT 392: Topics in Financial Mathematics, or
- FIN 335/ORF 335: Introduction to Financial Engineering
- ECO 420: Introduction to Economic Dynamics
- FIN 512: Financial Markets: Structure, Institutions and Regulation
- FIN 515: Portfolio Theory and Asset Management
- FIN 516: Topics in Corporate Finance, Corporate Governance and Banking
- FIN 517: Fixed Income: Models and Applications
- FIN 518: International Financial Markets
- FIN 519: Corporate Restructuring, Mergers and Acquisitions
- FIN 523: Applied Time Series: Macroeconomic and Financial Forecasting
- FIN 595/ECO 525: Financial Economics I
- FIN 596/ECO 526: Financial Economics II

- FIN 435/ORF 435: Financial Risk Management
- FIN 534/ORF 534: Financial Engineering
- FIN 574/ORF574: Special Topics in Investment Science: Alternative Investments
- FIN 560: Master's Project I
- FIN 561: Master's Project II

List 2: General Methodology for Finance

- APC 350: Partial Differential Equations
- APC 503: Analytical Techniques in Differential Equations
- CEE 548: Risk Assessment and Management
- 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 436: Human-Computer Interface Technology
- COS 461: Distributed Computing
- COS 496: Special Topics in Computer Science: Information Security
- ECO 304: Macroeconomics: A Mathematical Approach
- ECO 323: International Monetary Economics
- ECO 327: The Economics of Uncertainty
- ECO 503: Macroeconomic Theory I
- ECO 504: Macroeconomic Theory II
- ECO 517: Econometric Theory I
- ECO 518: Econometric Theory II
- ECO 513: Time Series Analysis
- ECO 521: Monetary Economics I
- ECO 522: Monetary Economics II
- ECO 552: International Monetary Theory and Policy
- ELE 382: Optimization Techniques
- ELE 491: High-Tech Entrepreneurship
- MAT 304: Introduction to Partial Differential Equations
- MAT 305: Mathematical Programming
- MAT 331: Numerical Analysis
- MAT 553/APC 553: Partial Differential Equations
- MAT584/APC584: Wavelets: An Introduction
- ORF 307: Optimization
- ORF 311: Optimization under Uncertainty
- ORF 475: Electronic Commerce
- ORF 475: Stochastic Numerics and Simulations
- ORF 517: Extreme Value Theory and Risk Management

- ORF 522: Linear Optimization
- ORF 523: Nonlinear Optimization
- ORF 547: Dynamic Programming
- ORF 549: Stochastic Programming
- ORF 551: Probability Theory
- ORF 553: Stochastic Differential Equations
- ORF 554: Markov Processes

Tracks

Elective courses can be selected either according to 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.

Financial Engineering and Risk Management Track
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 probability, optimization under uncertainty, stochastic calculus, dynamic programming, and financial economics. 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 Track
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 "attribute" screening, analysis of earnings revisions, 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, the major commercial banks, life insurance companies, securities firms, asset managers, 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 macro models.

Corporate Finance
Students in this track study issues such as the choice and financing of investment projects, firms' determination of dividend policy, optimal capital structure, financial reorganization, mergers and acquisitions, and the management and regulation of banks and other financial institutions. Specific emphasis is placed on start-up financing, deal structure, incentive design, valuation of high risk projects, initial public offerings and the financial management of rapidly growing firms. The finance function of firms, venture capital, and corporate restructuring increasingly require an in-depth understanding of modern finance and economics beyond the technical aspects of financing: for instance, the design of optimal contracts between managers and shareholders, the compensation of shareholders, the financial and organizational challenges typical of start-up companies use techniques from economics, strategy and organization theory.

Financial Technologies
Computer-based technologies are becoming increasingly important in finance, such as efficient trading systems, algorithms, multimedia and web interfaces, large databases, parallel processing and the security of computer networks. The emergence 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 will be 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 personal computers, workstations, and financial data feeds) has been set up to facilitate such projects. The program will provide a standardized computing environment based on Mathematica, Matlab, S-Plus and Microsoft Office. Computational skills will be taught in a series of workshops.

Course Descriptions

FIN 335/ORF335: 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. The treatment is largely self-contained except that it requires microeconomics at the level of ECO 102. The course does not require ECO 320 and it may be taken concurrently with or as a follow on to ECO 320. It can be used to satisfy the technical requirements of the Engineering and Management Systems Program.

FIN 405/ORF 405: Regression and Applied Time Series
The goal of this course is to acquaint the student with the language, the mathematics, the applications and the practice of regression and time series analysis. Simple and multiple regressions will be introduced in the framework of statistical linear models. Robust and nonparametric procedures will be analyzed and implemented in the context of time series forecasting. The classical models of time series (AR, MA, ARMA, ARIMA, ...) will be presented and recast in the class of state space models for which Kalman filtering theory will be developed. The results will be compared to the more traditional approaches based on model identification and/or spectral estimation. Financial time series examples will be introduced to motivate the analysis of ARCH and GARCH models. The examples and data sets will be chosen from the financial arena. The computations / homework / simulations will use the Splus computer environment.

FIN 435/ORF 435: Financial Risk Management
This course is about measuring and managing risks for individuals and financial organizations. 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 non-market risks, and portfolio effects.

FIN 501: Asset Pricing Theory and Applications
This course deals with the modern theory of asset pricing in a discrete time setting. Topics include: (i) no-arbitrage and Arrow-Debreu prices; (ii) complete markets; (iii) Pareto optimality; (iv) "betas" and CAPM; (v) no-arbitrage and equivalent martingale measures; (vi) valuation of redundant securities; (vii) valuation of American securities; (viii) infinite horizon models and the CCAPM; (ix) Evaluation of asset pricing models. Course format: two lectures, one precept. Grades are based on problem

sets (20%), a midterm exam (30%) and a final exam (50%). Prerequisites: none. This course will be offered every year. Sample Text: Duffie, D. *Dynamic Asset Pricing Theory*, Chapters 1-4.

FIN 502: Financial Accounting

The course is devoted to the basic 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, bond and other liabilities, stockholders equity, and the statement of changes in financial position. The course provides students the skills necessary to become informed users of financial statements. Problem sets will emphasize an ability to interpret and analyze financial statement disclosures. Course format: two lectures, one precept. Grades are based on problem sets (20%), a midterm exam (30%) and a final exam (50%). Prerequisites: none. This course will be offered every year. Sample Text: Stickney and Weil, *Financial Accounting: An Introduction to Concepts, Methods and Uses*, 9th ed.

FIN 504: Financial Econometrics

This course covers the econometric methods as applied to finance. Topics include: (i) measurement issues in finance; (ii) the predictability of asset returns; (iii) estimation of multifactor asset pricing models and portfolio problems; (iv) econometric methods for option pricing and models for implied volatilities and risk-neutral densities; (v) estimation methods for continuous-time models; (vi) maximum-likelihood methods in finance; (vii): nonlinearities in financial data and nonparametric methods. Course format: two lectures, one precept. Grades are based on problem sets (20%), a midterm exam (30%) and a final exam (50%). Prerequisites: ECO 306 or ORF 405. This course will be offered every year. Sample Text: Campbell, J.Y., Lo, A.W. and MacKinlay, A.C., *The Econometrics of Financial Markets*, Princeton University Press.

FIN 512: Financial Markets: Structure, Institutions and Regulation

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 studies the asset allocation decisions and overall management of the risk and return characteristics of portfolios. It focuses on quantitative approaches to portfolio optimization, including dynamic strategies to control risks and to achieve investment goals; empirical

studies of asset returns; and the money management industry. Course format: two lectures, one precept. Grades are based on problem sets (20%), a midterm exam (30%) and a final exam (50%). Prerequisites: FIN 501. Sample Texts: Bodie, Z., Kane, A., and A.L. Marcus, *Investments*. Ingersoll, J.E., *Theory of Financial Decision Making*, Rowman and Littlefield, 1987.

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 517: 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 modelling: Black model, Heath-Jarrow-Morton; (iv) applications of arbitrage free models to pricing of interest rate contracts, (v) credit risk; (vi) mortgage-backed securities. Course format: two lectures, one precept. Grades are based on problem sets (20%), a midterm exam (30%) and a final exam (50%). Prerequisites: FIN 501. This course will be offered every other year. Sample Texts: Jarrow, R. and Turnbull, S., *Derivative Securities*: Chapters 13-18 and, Hull, J., *Options, Futures, and Other Derivatives*: Chapters 16,17 and 20.

FIN 518: International Financial Markets

The worldwide division of labor and economic integration require vast and efficient International Financial Markets. Presence of two or more national currencies is the main difference between a National vs. an International Financial Market. As a result the International Financial Markets' instruments are priced using at least one exchange rate. The course will focus on the Markets and on the financial instruments traded across these Markets. On the Markets' side we shall study the market-making institutions, the market conventions and market practices.

FIN 519: Corporate Restructuring, Mergers and Acquisitions

This course will examine 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 523: Forecasting and Time Series Analysis
Many types of measurements naturally occur over time. Most macroeconomic data, such as gross national product, stock market returns, or short-term interest rates, are collected sequentially. This sequential behavior characterizes time series data and leads to a collection of models that can accommodate repeated measurements. This course develops a range of models, including macroeconomic models, appropriate for the description and prediction of time series data. A by-product of this exposure is a greater appreciation of the assumptions implicit in regression analysis and econometrics. The primary focus is upon developing, applying, and critically evaluating statistical models that are appropriate in varying conditions. Each class of models is motivated by considering a particular well-known data series. The use of these models is facilitated through interactive, graphical computer software using a powerful graphical environment supported on economics department workstations. Course format: two lectures, one precept. Grades are based on problem sets (20%), a midterm exam (30%) and a final exam (50%). Prerequisites: FIN 504. This course will be offered every other year. Sample Text: Brockwell and Davis, *Time Series: Theory and Methods*.

FIN 534/ORF 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.

FIN 585/ORF 515: Stochastic Calculus for Engineering and Finance
The goal of this course is to acquaint the student with the language, the mathematics and the financial applications of stochastic calculus. Martingale theory, Brownian motion, stochastic integrals, and Ito's stochastic calculus will be introduced and applied to the classical models of financial markets. The latter will be introduced in the discrete time setting and analyzed in detail in the continuous time setting of the Black-Scholes-Merton theory. The applications considered in the course relate to derivative pricing with special attention being given to incomplete market models. Stochastic models for fixed income securities and credit risk will also be discussed.

FIN 595/ECO 525: 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.

FIN 596/ECO 526: 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.

FIN 560/561: Master's Project I & II
Under the direction of a Bendheim affiliated faculty member, students carry out a master's project, write a report, and present the results in the form of a poster or an oral presentation in front of an examining committee.

Career Assistance for Master in Finance Students

The candidates for the Master in Finance degree will get support and assistance with their post-graduate career planning from a coordinated program of resources.

1. The central resource will be Princeton's Office of Career Services (OCS) which maintains relationships with all of the major financial services firms and scores of other firms which may be in the market for highly trained finance graduates. OCS is the link to the on-campus recruiting by employers and uses a very effective online system, eRecruiting, to manage the submission of resumes, the scheduling of interviews and presentations and the posting of opportunities. OCS will create a special category for the Master in Finance program in the eRecruiting system into which the participant will upload their resumes. This will be the primary interface for candidates and employers to interact. Together with the BCF, OCS will schedule orientation and help sessions for the Master candidates to familiarize them with the timing and other requirements of the recruiting process. In addition to the online resource, OCS and BCF will produce and circulate a hard copy resume book to Corporate Affiliates of BCF and to other potential employers which have evidenced interest in the Master in Finance program.
2. A second source of career support will come from David H. Blair who is the BCF's Director of Corporate Relations. He has worked on Wall Street for more than 30 years and has developed a program to prepare for the recruiting process. Several sessions will be offered to Master in Finance candidates beginning in October. In addition, he is available during office hours to consult on career issues. Through his networking with BCF Corporate Affiliates and recruiters at the undergraduate level, he has multiple sources of current information about financial service industry jobs and will be working to assure widespread employer familiarity with the high level of skills and training represented by graduates of the Master in Finance.
3. A third, and critically important, source of career help is the BCF faculty. Comprised of some of the most distinguished names in finance, the faculty has senior relationships with most of the leading firms in the financial services field. In view of the relatively small size of the Master in Finance program, it is anticipated that close relationships will develop between the candidates and members of the faculty. Ultimately, it is this type of personal contact which

enables the most meaningful type of reference to a potential employer.

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.

2000-01 Partners

- Merrill Lynch
- Morgan Stanley Dean Witter

2000-01 Associate Partners

- Credit Suisse First Boston
- Lehman Brothers
- Salomon Smith Barney

Levels and Specific Benefits

Associate Partner

- Annual Report of the BCF
- Opportunity to advertise internships and employment opportunities to both Undergraduate Certificate in Finance (163 in 2000-2001, 168 in 2001-2002) and Master in Finance students (26 in 2001-2002)
- 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 web site which both list corporate affiliates and provide a hyperlink to each member's website

Partner

- All of the previous benefits, plus:
- 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
- Invitation and two reserved seats for all Center for Economic Policy Studies symposia and special events. The day-long symposia bring on campus key leaders from business, and government and academia: The spring 2001 symposium, on The Stock Market and the New Economy took place on May 11-12, 2001. Other recent events include:
    - Special dinner with Paul Krugman on December 1, 2000.
    - Tax Reform, October 13-14, 2000. Martin Feldstein of Harvard University delivered the keynote address. The next day, panelists discussed current tax proposals, the estate tax, and the politics of tax reform. Speakers at the conference included: Robert Dederick of RGD Economics, Hank Gutman of KPGM Peat Marwick, William Gale and Thomas Mann of The Brookings Institution, R. Glenn Hubbard of Columbia Business School, Kevin Hassett of the American Enterprise Institute, Ronald Pearlman of the Georgetown University Law Center, and David Bradford and Harvey Rosen of Princeton.
    - Lecture on May 27, 2000, by James A. Baker, III, now a partner in the law firm of Baker & Botts. Baker spoke on Third World Debt Relief: No Easy Answers; No Simple Solutions.

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.

Physical Space

Renovation of Dial Lodge	*$4,500,000**
Library Lounge	*250,000**
Terrace	*250,000*
Classroom	*150,000**
Computer Cluster	*100,000**
Director's Office	*100,000*
Graduate Student Suite	*100,000*
Conference Room	*50,000**

Academic Personnel

Senior Professorships (5 committed, 3 additional needed)	*3,500,000*
Senior Research Associate (1 committed, 1 additional needed)	*2,000,000*
Senior Visiting Professorship (1 needed)	*1,500,000*
Postdoctoral Fellows (3 needed)	*1,500,000*
Junior Fellow (1 committed, 1 additional needed)	*1,000,000*

Support of Financial Research and Teaching

Research and Course Development Funds	*2,500,000*
Weekly Finance Seminar	*500,000*

** indicates that funds have been committed as of July 2001.*

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