

Curriculum Vitae  
**Sanjay Srivastava**  
March 2004

**Personal Information**

Date of Birth: October 5, 1957.  
Citizenship: US.  
Married, 2 children.

**Address:** Graduate School of Industrial Administration  
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**Education:** B.A. Warwick University (1977)  
Ph.D. Massachusetts Institute of Technology (1982)

**Employment**

Associate Dean, Graduate School of Industrial Administration, Carnegie Mellon University, 2002-  
Co-Head of Economics, Carnegie Mellon University, Sept 2003-  
Visiting Professor, Department of Risk Management and Insurance, Georgia State University, 2002-  
Alumni Chair Professor of Economics and Finance, Carnegie Mellon, 1994-  
Director, Center for Financial Analysis and Security Trading (FAST), 1992-2000  
Computational Finance Steering Committee, 1994-  
Head, Master's Program in Computational Finance March 1998-August 1999  
Director, Master's Program in Computational Finance Dec 1993-March 1998  
Visitor, Aoyama Gakuin University (Tokyo), Fall 1992, Spring 1993  
Visiting Lecturer ITESM (Monterrey Institute of Technology) Fall 1991, Spring 1992  
Visiting Professor California Institute of Technology, Winter 1989  
Professor of Economics and Finance Carnegie Mellon University, September 1988 -  
Head, Department of Economics Carnegie Mellon University, 1986-1988.  
Associate Professor of Economics Carnegie-Mellon University, September 1986-1988  
Assistant Professor of Economics Carnegie-Mellon University, September 1982-1986.

**Consulting and Professional Activity**

- Partner, OS Financial Trading System.
- Consultant, Institute for Defense Analysis, 2003-
- Consultant, Morgan Stanley Dean Witter, 1997-2000, 2002
- Consultant, JP Morgan Advisors, 2000-2001
- Scientific Advisory Board, ITG Inc, September 1997-July 2000
- Scientific Advisory Board, FAME (Geneva, Switzerland), October 1998-Nov 2002
- NASDAQ Technology Advisory Committee, 2000-2003
- Hawkins Institute, University of Iowa, 1998-2000

**Publications : Books**

1. "Investments: A Visual Approach: Modern Portfolio Theory," (with John O'Brien), SouthWestern College Publishing, 1995.

2. "Investments: A Visual Approach: Option Valuation," (with John O'Brien), SouthWestern College Publishing, 1996.
3. "Investments: A Visual Approach: Bond Valuation," (with John O'Brien), SouthWestern College Publishing, 1996.
4. "Bayesian Implementation," (with Thomas Palfrey), Fundamentals of Pure and Applied Economics, Harwood Press, 1993.

#### **Publications: Teaching Materials**

1. Financial Trading System ( with John O'Brien), revised August 2003.
  - Financial Trading System Software.
  - Financial Trading System Cases
  - Financial Trading System Instructor's Guide
  - Financial Trading System Users Guide
2. CAPM Tutor software and online textbook (2001)
3. Option Tutor software and online textbook (2001)
4. Bond Tutor and online text (2001)

#### **Publications: Articles**

1. "Default without Disruption: Simulation of a Sovereign Debt Restructuring," (with Adam Lerrick), June 2002, *forthcoming*, inaugural issue of the Journal of Restructuring Finance.
2. "FAST," in Technology Enhanced Learning, Paul Goodman (Ed.), Lawrence Erlbaum Associates Publishers, New Jersey 2001.
3. "A Perspective on Credit Risk," INQUIRE Europe, Proceedings of the INQUIRE Europe Seminar, March 2000. (Winner of the INQUIRE First Prize).
4. "Value at Risk Analysis of a Leveraged Swap." Journal of Risk, 1999. Reprinted in "Value at Risk and Beyond," M. Dempster, ed.) Proceedings of the Isaac Newton Workshop on Risk Management, Cambridge University Press, 2001.
5. "Computational Finance: An Emerging Educational Frontier," Proceedings of the Japan Financial Engineering Society Conference, Tokyo, July 1997.
6. "Implementing Social Choice Functions: A New Look at Some Impossibility Results," (with Matthew Jackson), Review of Economic Studies, 1996.
7. "Sophisticated Voting Rules: The Case of Two Tournaments," (with Michael Trick), Social Choice and Welfare, 1996.
8. "Mechanism Design with Incomplete Information," in Economics of the Common Man, (Proceedings of the Tenth World Congress of the International Economic Association Meetings, Moscow), Beth Allen, Ed., McMillan 1996.
9. "Notes on Private Information and the Organization of Security Markets," (with Chester Spatt), Proceedings of the Conference on Market Microstructure, New York University, 1995.
10. "A Characterization of Nash Equilibria in Two-Person Games," (with Matthew Jackson), Economic Letters, 1995.
11. "Undominated Nash Implementation in Bounded Mechanisms," (with Matthew Jackson and Thomas Palfrey), Games and Economic Behavior, 1994.
12. "On Two-Person Nash Implementable Social Choice Functions," (with Matthew Jackson), Social Choice and Welfare, 1994.
13. "Experimental Asset Markets," The New Palgrave Dictionary of Finance, 1993.
14. "Liquidity and Persistence of Arbitrage in Experimental Option Markets," (with John O'Brien), The Double Auction Market (Proceedings of the Santa Fe Institute Conference on Price Dynamics in Auction Markets), D. Friedman and J. Rust (Eds.), Addison Wesley, 1993.
15. "Implementation via Backward Induction," (with Maria Herrero), Journal of Economic Theory 56 (February 1992), pp. 70-88.
16. "Pre-Play Communication, Efficiency, and Initial Public Offerings," (with Chester Spatt), Review of Financial Studies 4 (December 1991), pp. 709-726.

17. "Dynamic Stock Markets with Multiple Assets: An Experimental Analysis," (with John O'Brien), *Journal of Finance*, December 1991.
18. "Efficient Trading Mechanisms with Pre-Play Communication", (with Thomas Palfrey), *Journal of Economic Theory* 55 (October 1991), pp. 17-40.
19. "Nash Implementation Using Undominated Strategies", (with Thomas Palfrey), *Econometrica* 59 (March 1991), 479-501.
20. "Informational Requirements and Strategic Complexity in Repeated Games", (with Barton Lipman), *Games and Economic Behavior* 3 (September 1990), pp. 273-290.
21. "Computation as a Correlation Device", (with Barton Lipman), *Games and Economic Behavior* 2 (June 1990), pp. 154-172.
22. "Indeterminacy of Stationary Equilibrium in Stochastic Overlapping Generations Models," with Stephen Spear and Michael Woodford), *Journal of Economic Theory* 50 (April 1990).
23. "Mechanism Design with Incomplete Information: A Solution to the Implementation Problem", (with Thomas Palfrey), *Journal of Political Economy* 97 (June 1989), pp. 668-691.
24. "Implementation with Incomplete Information in Exchange Economies", (with Thomas Palfrey), *Econometrica* 57 (1989), pp. 115-134.
25. "Equilibrium in Economies with Infinitely Many Consumers and Infinitely Many Commodities", (with Scott Richard), *Journal of Mathematical Economics* 17 (1988), pp.9-21.
26. "On Repeated Moral Hazard with Discounting", (with Stephen Spear), *Review of Economic Studies* LIV (1987), pp.599-617.
27. "On Bayesian Implementable Allocations", (with Thomas Palfrey), *Review of Economic Studies* LIV (1987), pp. 193-208.
28. "Foreign Currency Futures", (with Robert Hodrick), *Journal of International Economics*, April 1987, pp.1-24.
29. "Private Information in Large Economies", (with Thomas Palfrey), *Journal of Economic Theory*, June 1986, pp. 34-58.
30. "Expected Utility Maximization and Demand Behavior", (with Richard Green), *Journal of Economic Theory*, April 1986, pp. 313-324.
31. "Markov Rational Expectations Equilibria in an Overlapping Generations Model", (with Stephen Spear), *Journal of Economic Theory*, February 1986, pp. 35-62. Reprinted in J.M. Grandmont (ed.), *Temporary Equilibrium: Selected Readings*, Academic Press New York 1988.
32. "The Covariation of Risk Premiums and Expected Future Spot Exchange Rates", (with Robert Hodrick), *Journal of International Money and Finance*, April 1986, pp. 5-21.
33. "Pure Strategy Nash Equilibria with Continuous Objectives", *Journal of Economic Theory*, June 1985, pp. 26-35.
34. "Risk Aversion and Arbitrage", (with Richard Green), *Journal of Finance*, March 1985, pp. 257-268.
35. "An Investigation of Risk and Return in Forward Foreign Exchange", (with Robert Hodrick), *Journal of International Money and Finance*, April 1984, pp. 5-29. Reprinted in Kevin D. Hoover, ed., *The Economic Legacy of Robert Lucas, Jr.*, Edward Elgar, 1999.
36. "A Limit Theorem on the Core with Differential Information", *Economic Letters*, January 1984, pp. 111-116.
37. "Observations on Risk and Return in the Market for Foreign Currency", (with Robert Hodrick), *IEA Papers and Proceedings*, March 1984.

### **Working Papers**

1. "No Arbitrage and Portfolio Selection with Taxes," (with Michael Gallmeyer), September 2002.
2. "Portfolio Delegation with Limited Liability," (with Uday Rajan), revised June 2002.
3. "Strategic Bidding and Option Pricing," Revised June 1997.
4. "Arbitrage and Informational Efficiency," (with John O'Brien), August 1995)
5. "Estimation Theory for a Class of Strategic Economic Models," (with Fallaw Sowell), March 1992.
6. "Optimal Two-Period Contracts with Imperfect Information", November 1983.
7. "Empirical Estimates of Unanticipated Money: Issues in Identification and Stability", (with David Germany), June 1979.

### **University Courses Taught**

- Financial Engineering (MBA and Computational Finance)
- Financial Risk Management (MBA and Computational Finance)
- Fixed Income Portfolio Management (MBA and Computational Finance)
- Financial Economics (Computational Finance)
- Optimization (MBA and Computational Finance)
- Financial Analysis and Securities Trading 1 (MBA and Computational Finance)
- Financial Analysis and Securities Trading 2 (MBA, undergraduate)
- Financial Analysis and Securities Trading 3 (MBA and Computational Finance)
- Financial Analysis and Securities Trading 4 (MBA and Computational Finance)
- Swaps and Futures (MBA and Computational Finance)
- Price Theory (Computational Finance)
- Finance 1 (undergraduate)
- Simulab (MBA)
- Intermediate Microeconomics (undergraduate)
- Mathematics for Economists (PhD)
- General Equilibrium Theory (PhD)
- Social Choice Theory (PhD)
- Mechanism Design Theory (PhD)

### **Executive Courses Taught**

(in New York, Chicago, London, Cambridge, Geneva, Sydney)

- Swaps and Structured Products
- FAST Bond module
- FAST Equity module
- FAST Option module
- Investments
- Risk Management
- Applied Equity Portfolio Management
- Applied Fixed Income Portfolio Management
- Applied Value at Risk
- Portfolio Credit Risk
- Interest Rate Models

### **Presentations**

- "On the Existence of Rational Expectations Equilibrium", Federal Reserve Bank of Minneapolis, October 1982; Carnegie-Mellon University, November 1982.
- "Preference Restrictions, Asset Returns, and Consumption", (with Richard Green), Carnegie-Mellon University, October 1983; Northwestern University, November 1983; Western Finance Association Meetings, Vancouver, June 1984.
- "An Investigation of Risk and Return in Forward Foreign Exchange", (with Robert Hodrick), Winter Meetings of the Econometric Society, San Francisco, December 1983; Carnegie-Mellon University, November 1983.
- "Expected Utility Maximization and Observable Demand Behavior", (with Richard Green), Spring Meetings of the Midwest Mathematical Economics Society, University of Illinois, March 1984.
- "Equilibrium Dynamics in a Stochastic Overlapping Generations Model", (with Stephen Spear), Spring Meetings of the Midwest Mathematical Economics Society, University of Illinois, March 1984; Carnegie-Mellon University, May 1984; Summer Meetings of the Econometric Society, Stanford, June 1984.

- "Private Information in Large Economies", (with Thomas Palfrey), Conference on Strategic Competition, Northwestern University, Evanston, August 1984.
- "The Covariation of Risk Premiums and Expected Future Spot Exchange Rates", (with Robert Hodrick), Winter Meetings of the Econometric Society, Dallas, December 1984; Goldwater Conference on the Implications of International Financial Risk, Arizona State University, Phoenix, March 1985.
- "Implementation with Incomplete Information", (with Thomas Palfrey), NBER/NSF/CEME Conference on General Equilibrium Theory, Cambridge, May 1985; World Congress of the Econometric Society, Cambridge, August 1985.
- "Markov Rational Expectations in an Overlapping Generations Model", (with Stephen Spear), University of Pennsylvania, Philadelphia, May 1985.
- "Foreign Currency Futures", (with Robert Hodrick), Western Economics Association, Anaheim, June 1985; American Finance Association, New York, December 1985.
- "On Bayesian Implementable Allocations", (with Thomas Palfrey), Conference on Strategic Competition, Northwestern University, July 1985; McMaster University, October 1985; Summer Meetings of the Econometric Society, June 1986.
- "On Repeated Moral Hazard with Discounting", (with Stephen Spear), World Congress of the Econometric Society, Cambridge, August 1985.
- "The Structure of Equilibrium in Stochastic Overlapping Generations Models", (with Stephen Spear and Michael Woodford), Mathematical Sciences Research Institute, University of California, Berkeley, March 1986; Winter Meetings of the Econometric Society, New Orleans, December 1986.
- "Implementation in Exchange Economies Using Refinements of Nash Equilibrium", (with Thomas Palfrey), University of Pennsylvania, September 1986; Princeton University, October 1986; Carnegie-Mellon University, October 1986.
- "Nash Implementation Using Undominated Strategies", Stanford University, October 1986; SUNY Buffalo, December 1986; University of Southern California, December 1986; California Institute of Technology, January 1987; University of Chicago, February 1987; Summer Meetings of the Econometric Society, Berkeley, June 1987.
- "Mechanism Design with Incomplete Information: A Solution to the Implementation Problem", (with Thomas Palfrey), Stanford University, February 1987; University of Chicago, March 1987; University of Michigan, September 1987; Virginia Polytechnic Institute and State University, May 1988; Federal Reserve Bank of Minneapolis, May 1988.
- "Informational Requirements and Strategic Complexity in Repeated Games", (with Barton Lipman), Fall Meetings of the Midwestern Mathematical Economics Society, University of Michigan, October 1987; Conference on Economic Theory and Advanced Computing, Cornell University, May 1989.
- "Efficient Trading Mechanisms with Pre-Play Communication", (with Thomas Palfrey), California Institute of Technology, February 1989; Conference on Games and Markets, University of Western Ontario, May 1989; NBER Conference on Decentralization, California Institute of Technology, May 1989.
- "Dynamic Stock Markets with Multiple Assets: An Experimental Analysis", (with John O'Brien), Carnegie Mellon University, October 1989; Washington University, October 1989; Duke University, September 1990; MIT, October 1990.
- "Implementation via Backward Induction", (with Maria Herrero), Winter Meetings of the Econometric Society, Atlanta December 1989; Queens University, March 1990; Carnegie Mellon University, March 1990; Edwin Smart Symposium on Games and Economic Behavior, Columbus Ohio, July 1990; World Congress of the Econometric Society, Barcelona, August 1990.
- "Undominated Nash Implementation in Bounded Mechanisms," (with Matthew Jackson and Thomas Palfrey), Harvard University, October 1990; University of Toronto, November 1990; NBER/CEME Conference on Decentralization, Cornell University, April 1991.
- "Efficiency in Experimental Option Markets," (with John O'Brien), Winter Meetings of the American Economic Association, Washington DC, December 1990; Conference on Financial Markets, Johns Hopkins University, April 1991; Monterey Institute of Technology, Monterey, October 1991;
- "Arbitrage and Informational Efficiency", Aoyama Gakuin University, Tokyo, May 1992; National University of Singapore, Singapore, May 1992; Bilkent University, Ankara, May 1992; London

Business School, June 1992; University of Michigan, March 1993; Columbia University, March 1993; Duke University, December 1993.

- "Sophisticated Voting Schemes," (with Michael Trick), Society for Social Choice and Welfare Conference, Caen France June 1992; ORSA/TIMS Conference, San Francisco, November 1992.
- "A New Look at Some Impossibility Results in Social Choice," (with Matthew Jackson), Society for Social Choice and Welfare Conference, Caen France June 1992.
- "Persistence of Arbitrage in Experimental Options Markets," (with John O'Brien), Conference on Price Dynamics in Double Auction Markets, Santa Fe Institute, Santa Fe, New Mexico, June 1991; Northwestern University, May 1992
- "Mechanism Design with Incomplete Information," Invited Address to the World Congress of the International Economic Association, Moscow, August 1992; Aoyama Gakuin University, March 1993.
- "Initial Public Offerings," Aoyama Gakuin University, November 1992; Conference on Market Microstructure, New York University, 1993.
- "Information Aggregation with Options," ORSA/TIMS Meeting, Fall 1994.
- "The Basics of Today's Risk Management Alternatives," Conference on Geo-Political and Market Forces Influencing Financial Risk Management, Boca Raton, April 1995.
- "Interest Rate Swaps: Valuation and Risk Management", Australian Graduate School of Management, Sydney, Australia, July 1995; International Center for Money and Banking, Geneva, Switzerland September 1995.
- "Educational Challenges Produced by Today's Financial Markets," ESST Conference, Lausanne, Switzerland, November 1995
- "Strategic Bidding and Option Pricing," City University of Hong Kong, January 1996; Hong Kong University of Science and Technology, January 1996; Carnegie Mellon University, March 1996; The Norwegian School of Management, May 1996; The Stockholm School of Economics, May 1996; The Winter Meetings of the American Finance Association, New Orleans, January 1997; INFORMS Conference, Boston, July 1997; University of Pittsburgh, March 1999.
- "Computational Finance," The National University of Singapore, November 1995; Nanyang Technological University, Singapore, November 1995; The University of Texas at Austin, October 1996; Aoyama Gakuin University, November 1996 (joint presentation to Korea University, Korea); National Taiwan University, March 1997
- "Risk Management," Conference on Computational Finance, The National University of Singapore, September 1996.
- "Computational Finance: An Emerging Educational Frontier," Japan Financial Engineering Society Conference, Tokyo, July 1997.
- Global Classroom Conference presentation, Aoyama Gakuin University, Tokyo, July 1997.
- "Risk Management," Monash University, Australia, February 1998.
- "Value at Risk Analysis of a Leveraged Swap," University of Amsterdam, Amsterdam, March 1998; University of Lausanne, Lausanne, March 1998; Massachusetts Institute of Technology, April 1998; Northwestern University, April 1998; Judge Institute of Management Studies, Cambridge University, England, June 1998; Isaac Newton Institute Workshop on Risk Management, Cambridge University, October 1998.
- "Informational Technology in the Financial Industry," Northwestern University, April 1998.
- "Global Market Overview," Morgan Stanley, August 1998.
- "Case Studies in Risk Management," Dresdner Bank, London, February 1999
- Global Classroom Conference presentation, Aoyama Gakuin University, Tokyo, June 1999
- "Risk Management," Dresdner Bank, March 1999.
- "Interest Rate Modeling," Morgan Stanley Dean Witter, New York, March 1999.
- "A Perspective on Credit Risk," FAME Conference, Geneva, April 1999; Inquire-Europe Conference, October 1999; Comenius University, Bratislava, Slovakia, November 1999.
- "Portfolio Delegation and Limited Liability," Investment Technology Group, November 1999; Western Finance Association, Tucson, June 2001; Emory University, November 2001.
- "Return Distributions and Risk Measurement" Computational Finance Conference, Carnegie Mellon University, July 2000

- “Educational Trading Rooms,” Eastern Finance Association, Charleston, March 2001.
- “Portfolio Selection with Taxes,” FAME lecture, Geneva, Switzerland, March 2002.

### **FAST Related Activities**

- Created the FAST Program at GSIA (with John O’Brien), through equipment grants from NeXT, HP, Sequent, Sun, IBM; software Grants from LMT, Reuters, Lotus, NeuralWare; Industry Support from JP Morgan, Mellon Bank, Morgan Stanley; and the Financial Trading System software; and data from the major US exchanges.
- FAST program established in 20 countries and 50 universities
- Created FAST course sequence (FAST 1 - 4) for MBA level courses, and year-long FAST sequence for undergraduates.
- Developed and conducted FAST executive program on interest rate risk.
- Developed and conducted FAST executive program on interest rate and currency swaps.
- Developed and conducted FAST executive modules on Bonds, Options, and Equities.
- Presentations on the FAST Program at numerous universities and financial institutions.

### **Computational Finance Activities**

- Created the Master's Program in Computational Finance, 1994. Served as Director for the first 5 years of the program
- Established CMU Classroom in New York City with continuous two-way video link to GSIA, in conjunction with Reuters PLC and Hewlett Packard.
- Created part-time computational finance program in New York City, 1995
- Presentations on the Computational Finance Program at numerous universities and financial institutions
- Established Computational Finance program at Dresdner-Kleinwort-Benson in London, 1998
- Helped establish Computational Finance program at Nanyang Technological University in Singapore, 1999

### **Professional Activities**

- Referee for *Econometrica*, *Journal of Economic Theory*, *Review of Economic Studies*, *Journal of Mathematical Economics*, *Journal of Political Economy*, *Games and Economic Behavior*, *Management Science*, *Operations Research*, *Quarterly Journal of Economics*, *Journal of Finance*, *Review of Financial Studies*, *Journal of Monetary Economics*, *Journal of International Money and Finance*, *Journal of International Economics*, *Journal of Money Credit and Banking*, *National Science Foundation*, *Journal of Economics and Philosophy*, *Economic Design*
- Member of the Financial Engineering Association; Econometric Society, Society for the Promotion of Economic Theory, Society for Social Choice and Welfare, Economic Science Association.
- Associate Editor, *Econometrica*, 1993-1996
- Advisory Board, *Economic Letters*, 1992-2000
- Associate Editor, *Economic Design*, 1994-1997
- Associate Editor, *Review of Economic Design*, 1997-1998
- National Science Foundation, Economics Advisory Panel, 1990-1992.
- Associate Editor, *Quantitative Finance*, Editor, 2000-
- Organizing Committee, Econometric Society Meetings, Summer 1993.
- Program Committee, Western Finance Association, Summer 1994.
- Session Organizer and Session Chair at a variety of conferences, including Western Finance Association, the Econometric Society, and ORSA/TIMS

### **Academic Grants**

- National Science Foundation, 1984-85
- Columbia Center for the Study of Futures Markets, 1984.
- National Science Foundation, 1986-87
- National Science Foundation, 1988-90
- National Science Foundation, 1991-93

### **Awards**

- Smithsonian Award to the FAST Program for “pioneering and innovative use of information technology”; inclusion in the permanent research collection of the Museum of American History.
- Inquire-Europe First Prize, 1999, for paper “A Perspective on Credit Risk.”