Til Schuermann

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Education

1988 - 1993 **University of Pennsylvania**
Ph.D. Economics, August 1993
M.A. Economics, May 1991

1983 - 1986 **University of California at Berkeley**
B.A. (Honors) Economics

Research Interest

Financial institutions; risk measurement and management; capital markets; financial econometrics

Current Employment

5/01 - present **Federal Reserve Bank of New York**
10/07 – present: Head of Financial Intermediation
1/08 – present: *Vice President*, Research and Statistics Group, Financial Intermediation
1/07 – 12/07: *Assistant Vice President*, Research and Statistics Group, Financial Intermediation
7/05 – 12/06: *Research Officer*, Research and Statistics Group, Banking Studies
5/01 – 6/05: *Senior Economist*, Research and Statistics Group, Banking Studies

9/03 – present **Columbia University, New York, NY**
Adjunct Associate Professor, Department of Economics. Senior Seminar: “Financial Econometrics”

Past Employment

7/96 – 5/01 **Oliver, Wyman & Company LLC Management Consultants, New York, NY**
Positions held:
Director (January 2000 to March 2001)
Head of Research (August 1997 to March 2001)
Consultant (July 1996 to December 1999)

8/93 – 6/96 **Bell Laboratories, Murray Hill, NJ**
Member of Technical Staff, Market and Decision Analysis Group

10/94 – 12/95 **New School for Social Research, New York, NY**
Adjunct Professor, Graduate School of Management and Urban Policy

Selected Professional Activities

2008 – present: Associate Editor, *Journal of Financial Services Research*
2008 – present: Associate Editor, Academic Research, *GARP Risk Review*
2006 – present: Associate Editor, *Journal of Risk*
2006 – present: Member, Editorial Board, *Journal of Risk Management in Financial Institutions*
2005 – present: External Associate, CIMF (Centre for International Macroeconomics and Finance), University of Cambridge, UK
2001 – present: Sloan Fellow, Wharton Financial Institutions Center, Wharton School, University of Pennsylvania
2004 – present: Wharton Executive Education Program: instructor for “Risk Management in Financial Institutions”
2006 - present: Member, Expert Panel on Systemic Risk, Bank of England

April 2007: Visitor, OeNB (Austrian National Bank)
May 2006: Visitor, Riksbank, Stockholm, Sweden
November 2003: Visitor, Federal Reserve Bank of San Francisco

Books

Roberto S. Mariano, Til Schuermann, Melvyn J. Weeks, eds., *Simulation-Based Inference in Econometrics: Methods and Applications*, Cambridge University Press, 2000.

Working Papers

“Visible and Hidden Risk Factors for Banks,” May 2006. Federal Reserve Bank of New York Staff Report 252. Also Wharton Financial Institutions Center Working Paper #06-10. With Kevin J. Stiroh.

“The Puzzle of U.S. Credit Card Charge-offs,” Oliver Wyman Research Working Paper, 1998. With B. Johnston.

“Simulation-Based Estimation in Qualitative Response Models: A Question of Choice,” Discussion Papers in Economics No. 94/18, University of York (UK), 1994. With Melvyn J. Weeks.

Journal Publications

1. “Forecasting Economic and Financial Variables with Global VARs,” June 2008. Forthcoming, with discussion, in *International Journal of Forecasting*. Pre-publication version available as Federal Reserve Bank of New York Staff Report #317, and Wharton Financial Institutions Center Working Paper #08-05. With M. Hashem Pesaran and Vanessa Smith.

2. “Understanding the Securitization of Subprime Mortgage Credit,” March 2008. *Foundations and Trends in Finance* 2:3, 191-309. Pre-publication version available as Federal Reserve Bank of New York Staff Report #318, and Wharton Financial Institutions Center Working Paper #07-43. With Adam Ashcraft.

3. “Firm Heterogeneity and Credit Risk Diversification,” September 2008. *Journal of Empirical Finance* 15:4, 583-612 (lead article). Pre-publication version available as Federal Reserve Bank of New York Staff Report #317, and Wharton Financial Institutions Center Working Paper #05-05. With Samuel G. Hanson and M. Hashem Pesaran.

4. "Credit Rating Dynamics and Markov Mixture Models," June 2008. *Journal of Banking & Finance* 32:6, 1062-1075. Pre-publication version available as Wharton Financial Institutions Center Working Paper #04-15. With Halina Frydman.

5. "Hedge Funds, Financial Intermediation, and Systemic Risk," December 2007. *Economic Policy Review*, Federal Reserve Bank of New York, 13:3, 1-18 (lead article). Pre-publication version available as Wharton Financial Institutions Center Working Paper #07-17. With John Kambhu and Kevin J. Stiroh.

6. "Managing Bank Liquidity Risk: How Deposit-Loan Synergies Vary with Market Conditions," October 2006. Forthcoming in *Review of Financial Studies*. An earlier (May 2006) version is available as NBER Working Paper w12234. With Evan Gatev and Philip E. Strahan.

7. "Confidence Intervals for Probabilities of Default," August 2006, *Journal of Banking & Finance* 30:8, 2281-2301. With Samuel G. Hanson.

8. "Macroeconomic Dynamics and Credit Risk: A Global Perspective," August 2006, *Journal of Money, Credit and Banking* 38:5, 1211-1261. With M. Hashem Pesaran, Björn-Jakob Treutler and Scott M. Weiner.

9. "A General Approach to Integrated Risk Management with Skewed, Fat-tailed Risks," March 2006, *Journal of Financial Economics* 79:3, 569-614. With Joshua V. Rosenberg.

10. "Deposit Insurance and Risk Management of the U.S. Banking System: What is the Loss Distribution Faced by the FDIC?" June 2005 (lead article), *Journal of Financial Services Research* 27:3, 217-243. With Andrew Kuritzkes and Scott M. Weiner.

11. "Measurement, Estimation and Comparison of Credit Migration Matrices," November 2004, *Journal of Banking & Finance* 28:11, 2603-2639. With Yusuf Jafry.

12. "Modeling Regional Interdependencies Using a Global Vector Error-Correcting Macroeconometric Model," April 2004, (lead article, with discussions and a rejoinder), *Journal of Business & Economic Statistics* 22:2, 129-162 and 175-181. With M. Hashem Pesaran and Scott M. Weiner.

13. "Why Were Banks Better Off in the 2001 Recession?" January 2004, *Current Issues in Economics and Finance* 10:1, Federal Reserve Bank of New York.

14. "Credit Risk and Macroeconomic Dynamics," March 2003, *Medium Econometrische Toepassingen* 11:1 (Jan Tinbergen edition), 27-32. With M. Hashem Pesaran.

15. "Risk Measurement, Risk Management and Capital Adequacy of Financial Conglomerates," in Richard Herring and Robert Litan (eds.), *Brookings-Wharton Papers in Financial Services 2003*, 141-194. With Andrew Kuritzkes and Scott M. Weiner.

16. "Ratings Migration and the Business Cycle, With Applications to Credit Portfolio Stress Testing," March 2002, *Journal of Banking & Finance* 26:2/3, 235-264. With Anil Bangia, Francis X. Diebold, André Kronimus and Christian Schagen.

17. "The Efficiency-Equity Tradeoff of Schooling Outcomes: Public Education Expenditures and Welfare in Mexico," 2001, *Economics of Education Review* 20, 27-40. With Alec I. Gershberg.

18. "Modeling Liquidity Risk with Implications for Traditional Market Risk Measurement and Management." in Stephen Figlewski and Richard Levich (eds.), *Risk Management: The State of the Art*.

Amsterdam: Kluwer Academic Publishers, 2001; Published in abridged form as "Liquidity on the Outside", *Risk* 12, June 1999, 68-73. With Anil Bangia, Francis X. Diebold, and John Stroughair.

19. "Changing Regulatory Capital to Include Liquidity and Management Intervention," Summer 2000, *Journal of Risk Finance* 1:4, 47-54. With Chris Marrison and John Stroughair.

20. "Die Zukunft des Kreditgeschäftes" (The Future of the Credit Business), *Zeitschrift für das gesamte Kreditwesen,* 1999, Vol. 11 (Journal of Credit). With Anja Guthoff and Andreas Pfingsten.

21. "Converting 1-day Volatility to *h*-day Volatility: Scaling by Root-*h* is Worse than You Think", 1997, Wharton Financial Institutions Working Paper 97-34. Published in abridged form as "Scale Models," *Risk* 11, 1998, 104-107. Reprinted in Mark Broadie and Paul Glasserman (eds.) *Hedging with Trees,* London, UK: Risk Books, 1998. Reprinted in B. Warwick (ed.), *The Handbook of Risk*, 2003. New York: John Wiley and Sons. With Francis X. Diebold, Andrew Hickman and Atsushi Inoue.

22. "Risk Management in the Financial Services Industry: Through a Statistical Lens", in *AI Approaches to Fraud Detection & Risk Management*, Technical Report WS-97-07, AAAI Press, 1997.

23. "Fraud/Uncollectible Debt Detection Using a Bayesian Network Based Learning System: A Rare Binary Outcome with Mixed Data Structures," in *Proceedings of the Eleventh Conference on Uncertainty in Artificial Intelligence*, Morgan Kaufman: Palo Alto, 1995. With Kazuo J. Ezawa.

24. "Pricing to Market and Exchange Rate Pass-Through: Evidence from Business Survey Data," in *CIRET Studien, 43: Contributed Papers submitted for the 20th CIRET Conference 1991 in Budapest*; Ifo Institut: Munich, 1992. With Doug Willson.

Invited Papers

25. "Risk, Capital and Value Measurement in Financial Institutions: Part II, The Shareholder's Perspective," *The Journal of Lending & Credit Risk Management*, November 1998; Reprinted in *Tecnologia de Crédito* (Credit Technology), Sao Paolo, Brazil: SERASA, January 2000. With P.K. Nakada and J. Drzik.

26. "Horizon Problems and Extreme Events in Financial Risk Management," *Economic Policy Review*, Federal Reserve Bank of New York, October 1998, 109-118; Reprinted in B. Warwick (ed.), *The Handbook of Risk,* 2003. New York: John Wiley and Sons. With P. Christoffersen and F.X. Diebold.

27. "Risk, Capital and Value Measurement in Financial Institutions: Part I, The Debtholder's Perspective," *The Journal of Lending & Credit Risk Management*, September 1998. With P.K. Nakada and J. Drzik.

Book Chapters

28. "Credit Migration Matrices," December 2006, forthcoming in Ed Melnick and Brian Everitt (eds.), *Encyclopedia of Quantitative Risk Assessment*, John Wiley & Sons.

29. "What We Know, Don't Know and Can't Know about Bank Risk: A View from the Trenches," February 2006, forthcoming in Francis X. Diebold, Neil Doherty and Richard J. Herring (eds.), *The Known, The Unknown and The Unknowable in Financial Risk Management*, Princeton University Press. Available as Wharton Financial Institutions Center Working Paper #06-05. With Andrew Kuritzkes.

30. "How Do Banks Manage Liquidity Risk? Evidence from the Equity and Deposit Markets in the Fall of 1998," 2006, ch. 3 in Mark Carey and René Stulz (eds.), *Risks of Financial Institutions*, Chicago, IL: University of Chicago Press, 105-127. An earlier version is available as NBER Working Paper w10982. With Evan Gatev and Philip E. Strahan.

31. "Global Business Cycles and Credit Risk," 2006, ch. 9 in Mark Carey and René Stulz (eds.), *Risks of Financial Institutions*, Chicago, IL: University of Chicago Press, 419-469. An earlier version is available as NBER Working Paper w11493. With M. Hashem Pesaran and Björn-Jakob Treutler.

32. "Capital Regulation for Position Risk in Banks, Securities Firms and Insurance Companies," 2005, ch. 1 in Hal Scott (ed.) *Capital Adequacy Beyond Basel: Banking, Securities, and Insurance*, Oxford, UK: Oxford University Press. An earlier version is available as Wharton Financial Institutions Center Working Paper #04-11. With Richard Herring.

33. "What Do We Know About Loss Given Default?" March 2004, ch. 9 in David Shimko (ed.) *Credit Risk: Models and Management*, 2nd Edition, London, UK: Risk Books, 2004. An updated version is reprinted as ch. 1 in Edward I. Altman, Andrea Resti and Andrea Sironi (eds.) *Recovery Risk: The Next Challenge in Credit Risk Management*, London, UK: Risk Books, 2005.

34. "The New Basel Accord and Questions for Research," 2004, ch. 7 in Benton Gup (ed.) *The New Basel Capital Accord*, SouthWestern/Thomson. With Marc Saidenberg.

35. "Pitfalls and Opportunities in the Use of Extreme Value Theory in Risk Management," 1998, ch. 1 in A.-P. N. Refenes, A.N. Burgess and J.D. Moody (eds.), *Advances in Computational Finance*. Amsterdam: Kluwer Academic Publishers. Reprinted in *The Journal of Risk Finance*, Winter 2000, (1: 2), 30-36. Reprinted in *Extremes and Integrated Risk Management*, London, UK: Risk Books, 2000. With Francis X. Diebold and John Stroughair.

36. "A Bayesian Network Based Learning System: Architecture and Performance Comparison with Other Methods," 1995, in C. Froideveaux, J. Kohlas (Eds.), *Symbolic and Quantitative Approaches to Reasoning and Uncertainty*, Lecture Notes in Artificial Intelligence 946, 197-206, Berlin, Germany: Springer Verlag. With Kazuo J. Ezawa.

37. "Exact Maximum Likelihood Estimation of Observation-Driven Econometric Models," in Roberto S. Mariano, Melvyn J. Weeks and Til Schuermann (eds.), *Simulation-Based Inference in Econometrics: Methods and Applications*, Cambridge, UK: Cambridge University Press, 2000. With Francis X. Diebold.

38. "Expectations: Are They Rational, Adaptive or Naive? An Essay in Simulation-Based Inference," in Maddala, G.S., Peter C.B. Phillips and T.N. Srinivasan (eds.) *Advances in Econometrics and Quantitative Economics*, in honor of C.R. Rao. Cambridge, MA: Basil Blackwell Publishers, 1995. With Marc Nerlove.

Book Reviews

"A Review of Recent Books on Credit Risk," February 2005, *Journal of Applied Econometrics* 20, 123-130. A review covering three books: Darrell Duffy and Kenneth J. Singleton, *Credit Risk: Pricing, Measurement and Management*, Princeton, NJ: Princeton University Press, 2003; David Lando, *Credit Risk Modeling: Theory and Applications*, Princeton, NJ: Princeton University Press, 2004; Philipp J. Schönbucher, *Credit Derivatives Pricing Models: Models, Pricing and Implementation*, New York, NY: John Wiley & Sons, 2003.

"Extremities and Limitations," *Risk*, 12, Vol. 3, 63, 1999. A book review of *Modelling Extremal Events for Insurance and Finance* by Paul Embrechts, Claudia Klüppelberg and Thomas Mikosch, New York, NY: Springer Verlag, 1997. With Francis X. Diebold.

Research Funding

National Science Foundation and Cornell Supercomputer Center, 1991-1992, "GARCH Models: Exact Maximum Likelihood Estimation and Temporal Aggregation." With Francis X. Diebold.

Referee Work

Journals

Economic Journal
Financial Review
IMF Staff Papers
International Economic Review
Journal of Applied Econometrics
Journal of Banking & Finance
Journal of Business & Economic Statistics
Journal of Credit Risk
Journal of Econometrics
Journal of Empirical Finance
Journal of Finance
Journal of Financial Econometrics
Journal of Financial Markets
Journal of Financial Intermediation
Journal of Financial Services Research
Journal of Financial Stability
Journal of Monetary Economics
Journal of Money, Credit and Banking
Journal of Risk
Management Science
Multinational Finance Journal
Quantitative Finance
Risk Magazine
Statistica Sinica

Federal Reserve Bank of New York: *Current Issues in Economics and Finance, Economic Policy Review*

Other

Academic Press; Financial Management Association; Handbooks in Finance (Asset & Liability Management); National Science Foundation; SGF Conference (Swiss Society for Financial Market Research); Swiss National Bank Working Papers

Conferences & Presentations

Conferences Organized

University of Pennsylvania Wharton Financial Institutions Center: Financial Engineering Roundtable (joint with the Oliver Wyman Institute), Philadelphia, PA

- April 2001: Conglomeration, Consolidation and Convergence in the Financial Services Industry
- May 2000: The Quantification and Trading of Credit Risk
- April 1999: Measurement and Management of Global Financial Risk: Crashes, Crises and Contagion
- February 1998: Market Risk Measurement and Management: VaR and Beyond

University of Münster IFK (joint with the Oliver Wyman Institute), Frankfurt, Germany

- March 1998: Credit Risk Symposium: A New Market Equilibrium for the Credit Business

Conference Presentations

- Goethe University of Frankfurt, Time Series and Panel Modeling Conference, Frankfurt, Germany (June 2008)
- NYU Stern School of Business, Moody's NYU 5th Annual Credit Conference, New York (invited, May 2008)

- Columbia Univ., Workshop on Market Liquidity, New York (invited, April 2008)
- PRMIA New York Credit Forum (keynote, February 2008)
- S&P Credit Summit 2007, New York (invited; November 2007)
- Workshop on Integrated Risk Management; Oslo, Norway (invited; August 2007)
- Risk Quant Congress 2007; New York, NY (invited, July 2007)
- RMA Risk Analysis Conference; New York, NY (invited, June 2007)
- Fitch/Algorithmics Credit and Capital Forum; New York, NY (keynote, Feb. 2007)
- RISK USA Risk Management Conference; New York, NY (invited, Nov. 2006)
- BIS Financial Stability Institute Risk Management Conference; Basel, CH (invited, Nov. 2006)
- FDIC-JFSR Bank Research Conference; Arlington, VA (Sept. 2006)
- NBER Summer Institute, Risk of Financial Institutions; Cambridge, MA (discussant, July 2006)
- BIS-JFI-CEPR Conference on Risk Management and Regulation in Banking; Basel, CH (June 2006)
- CIRANO-CIREQ Conference on Financial Econometrics; Montreal, Canada (May 2006)
- George Washington Univ. Conference on Modeling and Managing Sovereign and Systemic Risk; Washington DC (discussant, April 2006)
- McGill Risk Management Conference; Mt. Tremblant, Canada (discussant, March 2006)
- IAFE Liquidity Risk Symposium; New York, NY (discussant, Dec. 2005)
- NBER Conference on Risk of Financial Institutions; Cambridge, MA (Nov. 2005)
- 13th Annual Conference on Pacific Basin Finance, Economics, and Accounting; Rutgers University, New Jersey (June 2005)
- Changing Structures in International and Financial Markets and the Effects on Financial Decision Making; University of Venice, Journal of Applied Econometrics; Venice, Italy (June 2005)
- Georgia Tech QCF Quantitative Finance Day; Atlanta, GA (invited, April 2005)
- Global Association of Risk Processionals (GARP) 6th Annual Risk Management Convention; New York, NY (invited, February 2005)
- ICBI Risk 2004; Geneva, Switzerland (invited, Dec. 2004)
- S&P Conference on Global Banking; New York, NY (invited, Nov. 2004)
- NBER Conference on Risk of Financial Institutions; Woodstock, VT (Oct. 2004)
- World Bank Advanced Risk Management Workshop; Washington D.C. (invited, May 2004)
- International Credit Risk Conference; HEC University of Montreal, Montreal, Canada (April 2004)
- NBER Workshop on Risk Management in Financial Institutions; Cambridge, MA (Feb. 2004)
- World Bank Conference on Risk Management; Cartagena, Colombia (invited, Feb. 2004)
- PRMIA Conference: Credit Risk and Basel II; New York (invited speaker, Dec. 2003)
- Bocconi University, PIER-IGIER: Econometric Methods in Macroeconomics and Finance; Milan, Italy (October 2003)
- University of Venice: Dependence Modeling for Credit Portfolios; Venice, Italy (Sept. 2003)
- Joint Statistical Meetings: JBES Invited Paper; San Francisco, CA (Aug. 2003)
- Harvard Law School: Risk-Based Capital – Tension between Regulatory and Market Standards; Cambridge, MA (June 2003)
- BIS, Financial Stability Institute: Credit Risk Diversification and Transfer; Basel, Switzerland (invited, May 2003)
- Global Association of Risk Processionals (GARP) 4th Annual Risk Management Convention; New York, NY (invited, Feb. 2003)
- Southern Finance Association, Key West, FL (invited, special session, Nov. 2002)
- Brookings-Wharton Conference on Financial Services: Financial Conglomerates; Washington DC (Oct. 2002)
- FDIC/JFSR Conference on Pricing the Risk of Deposit Insurance; Washington DC (Sept. 2002)
- NBER Summer Institute: Forecasting & Empirical Methods in Macroeconomics & Finance; Cambridge, MA (July 2002)

- Harvard Law School: Regulation of Capital Adequacy in Financial Institutions; Cambridge, MA (June 2002)
- NBER Conference on Risk Management for Financial Institutions; Cambridge, MA (discussant, Nov. 2001)
- FGV - SERASA International Forum on Credit; Sao Paolo, Brazil (invited; Nov. 2001)
- FGV - SERASA International Forum on Credit; Sao Paolo, Brazil (invited; Nov. 2000)
- Credit Risk Summit 2000; New York, NY (invited speaker; September 2000)
- Federal Reserve Bank of Chicago, Conference on Risk Management in the Global Economy, Chicago, IL (September, 2000)
- Wharton Financial Institutions Center Financial Engineering Roundtable; Philadelphia, PA (April 1999)
- Uncertainty in Artificial Intelligence Workshop in Fraud Detection & Risk Management; Providence, RI (July 1997)
- Conference on Simulation-Based Inference in Econometrics; Minneapolis, MN (Nov. 1995)
- American Statistical Association Meetings; Orlando, FL (Aug. 1995), Co-organized and chaired an invited session on Simulation-Based Econometrics
- European Conference of Symbolic and Quantitative Approaches to Reasoning and Uncertainty; Fribourg, Switzerland (July 1995)
- Eastern Economic Association Meetings; New York, NY (March 1995)
- Conference on Ordinal Data Analysis, Classification Society of North America, UMass, Amherst (Oct. 1993)
- Econometric Society Winter Meetings; Anaheim, CA (Jan. 1993)
- Latin American Econometric Society Meetings; Mexico City, Mexico (Sept. 1992)
- Conference on Econometric Inference Using Simulation Techniques at Erasmus University; Rotterdam, The Netherlands (June 1992)

Seminar/Workshop Presentations

University of Pennsylvania, Illinois State University, University of South Florida, Bell Laboratories, Rutgers University, NYU, Princeton University, Federal Reserve Banks of New York and San Francisco, Baruch College (CUNY), New School University, UMass Amherst, IMF, Riksbank (Sweden), University of Montreal, OeNB (Austrian Central Bank), ECB (European Central Bank)