

Klaus Reiner Schenk-Hoppé

CURRICULUM VITAE

Personal Data

September 1, 2010

Born August 18, 1966
Citizen of the Federal Republic of Germany
Country of residence: United Kingdom
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Professional Experience

Education

1996 Dr. rer. nat. (PhD) in Mathematics, University of Bremen, Germany
1993 Diplom (MSc) in Mathematics, University of Bremen, Germany

Employment

2005/01 – Centenary Chair in Financial Mathematics, Professor, Leeds University Business School and School of Mathematics, University of Leeds, United Kingdom
2002/08 – 2004/12 Associate Professor, Institute of Economics, University of Copenhagen, Denmark

- 2002/04 – Associated Member, National Centre of Competence in Research “Financial Valuation and Risk Management” (Project Behavioural and Evolutionary Finance), Switzerland
- 1999/10 – 2002/08 Assistant Professor (“Oberassistent”), Institute for Empirical Research in Economics, Department of Economics, University of Zurich, Switzerland
- 1999/03 – 1999/09 Assistant Professor (“wissenschaftlicher Assistent”), Department of Economics, University of Bielefeld, Germany
- 1996/07 – 1999/02 Research Fellow (“wissenschaftlicher Angestellter”), Department of Economics, University of Bielefeld, Germany
- 1993/07 – 1996/06 Research Fellow (“wissenschaftlicher Angestellter”), Department of Mathematics, Institute for Dynamical Systems, University of Bremen, Germany
- 1990 – 1993 Research Assistant (“studentische Hilfskraft”), Department of Mathematics, Institute for Dynamical Systems, University of Bremen, Germany
- 1988 – 1990 Teaching Assistant (“Tutor”), Department of Mathematics, University of Bremen, Germany

Recent Grants

- 2008/06 – 2010/06 NOTUR - The Norwegian Metacenter for Computational Science (with Terje Lensberg, NHH), 120,000 hours processor time (approx. £12,000)
- 2008/05 – 2010/09 Stability of Financial Markets: An Evolutionary Approach (with Terje Lensberg, NHH), NOK 1.341 million (approx. £128,000), Finance Market Fund, Norway
- 2007/11 – 2009/10 Knowledge Transfer Partnership with Yorkshire Bank/National Australia Bank Group (with Barbara Summers), £134,989, EPSRC and Yorkshire Bank
- 2006/10 – 2008/10 University of Leeds Fund for International Research Collaborations, £13,635, University of Leeds

Research visits

- 2010 NCCR FinRisk and Swiss Banking Institute, University of Zurich, Switzerland (August)
Norwegian Business School, Bergen, Norway (June and July)
- 2009 Norwegian Business School, Bergen, Norway (June and August)
- 2008 Norwegian Business School, Bergen, Norway (June/July and November)
NCCR FinRisk (PhD seminar Dynamics of Financial Markets) and Swiss Banking Institute, University of Zurich, Switzerland (March/April)
- 2007 Trento Summer School, PhD course Agent-Based Finance (invited lecturer), Italy (July)
NCCR FinRisk (PhD course Evolutionary Finance) and Swiss Banking Institute, University of Zurich, Switzerland (April/May)
Norwegian Business School, Bergen, Norway (February and June/July)

Previous longer-term visits: Stanford University, Department of Economics (Visiting Scholar, sponsored by Mordecai Kurz, £20,000 grant awarded by Ecoscientia Stiftung, October 2001 to March 2002); University of Applied Sciences Merseburg, Department of Computer Science (September 2001); Università Cattolica del Sacro Cuore, Department of Economics (March 2001); Pennsylvania State University, Department of Economics (September 2000); University of Virginia at Charlottesville, Department of Economics (March and October 2000); Universidad de Alicante, Facultad de Ciencias Económicas (Guest lecturer, Erasmus grant of the European Union (September 1999); Hong Kong University of Science and Technology, Department of Mathematics (December 1998); Università di Pisa, Dipartimento Matematica Applicata, Italy (March 1998); University of Vienna, Department of Economics (March 1998); Universidad de Alicante, Facultad de Ciencias Económicas (Training and Mobility of Researchers grant of the European Union (September 1997); University of Illinois at Urbana-Champaign, Department of Aeronautical and Astronautical Engineering (October/November 1994, May 1997 and February 2000)

Recent Professional Activities

Programme director, BSc in Actuarial Mathematics at the School of Mathematics (joint with Leeds University Business School), 2010 (foundation year)–

Programme director, BSc in Mathematics with Finance at the School of Mathematics (joint with Leeds University Business School), 2010–

Programme director, MSc in Financial Mathematics at Leeds University Business School (joint with the School of Mathematics), 2005 (foundation year)–

Co-Director, CASIF–Centre for Advanced Studies in Finance, Leeds University Business School, 2005–

External examiner, Centre for Computational Finance and Economic Agents, School of Computer Science and Electronic Engineering, University of Essex, 2008–

External advisor, MSc Financial Economics, Faculty of Social Sciences, University of Manchester, 2009

Principal investigator, Knowledge Transfer Partnership with Yorkshire Bank/National Australia Bank Group, November 2007–October 2009

Co-organizer of the “Manchester-Leeds Conference on Mathematical Economics and Finance,” Manchester, UK, May 2008

Organizer of the workshop “Dynamic Interaction in Markets,” University of Leeds, UK, October 2006

Doctoral courses and seminars on topics in Evolutionary Finance, NCCR FinRisk “Financial Valuation and Risk Management,” University of Zurich, Switzerland, 2006–2008. Invited speaker Trento Summer School, PhD course Agent-Based Finance, July 2007

Member of appointment committees (Professorships in Economics and Finance), University of Copenhagen 2006 and 2007

Reviewer for the “Programme of Excellence at University of Copenhagen,” 2007

Editor of the Special Issue on Evolutionary Finance of the *Journal of Mathematical Economics*, Volume 41, Number 1-2, 2005 (with Thorsten Hens)

Referee for (*Economics/Finance*) *Annals of Finance*, *Annals of Operations Research*, *B.E. Journal of Theoretical Economics*, *Econometrica*, *Economic Theory*, *European Economic Review*, *Games and Economic Behavior*, *International Economic Review*, *International Journal of Theoretical and Applied Finance*, *International Journal of Game Theory*, *Journal of Economic Behavior and Organization*, *Journal of Economic Dynamics and Control*, *Journal of Economic Theory*, *Journal of Evolutionary Economics*, *Journal of Mathematical Economics*, *Journal of Macroeconomics*, *Macroeconomics Dynamics*, *Mathematical Social Sciences*, *Quantitative Finance*, *Research in Economics*, *Review of International Economics*, *Revue Finance*, *Scandinavian Journal of Economics* and (*Mathematics/other*) *Stochastic Processes and their Applications*, *Stochastics and Dynamics*, *Advances in Complex Systems*, *Discrete Dynamics in Nature and Society*, *Dynamics and Stability of Systems*, *Dynamical Systems*, *Electronic Journal of Evolutionary Modeling and Economic Dynamics*, *Fluctuation and Noise Letters*, *Intelligent Systems in Accounting, Finance and Management*, *International Journal of Solids and Structures*, *Journal of Applied Mathematics and Stochastic Analysis*, *Journal of Computational and Applied Mathematics*, *Physics Letters A*.

Member of the European Science Foundation project “Behavioural Models in Economics and Finance,” 2001-4

Member of the “Dynamic Economic Theory” project, Copenhagen, 2002-5

Co-organizer of the Dynamic Economic Theory workshop “Economic Growth and Institutions,” Copenhagen, Denmark, June 2005

Ph.D. supervision

Zhidi Du (Optimal Investment under Liquidity Costs, expected completion 2012) with Jan Palczewski, School of Mathematics, University of Leeds

Martin Anastasov (Investment Fund Management and Payment Guarantees, expected completion 2011) with Jan Palczewski, School of Mathematics, University of Leeds

Huamao Wang (Optimal Portfolio Choice under Transaction Costs and Partial Information, expected completion 2010) with Jan Palczewski, School of Mathematics, University of Leeds

Dan Ladley (Essays on Computational Finance, completed Summer 2008) with Netta Cohen, School of Computing, University of Leeds

Alena Audzeyeva (The Determinants of Yield Spreads on Sovereign Eurobonds: An Empirical Study, completed Spring 2008) with Nick Wilson, Credit Management Research Centre, University of Leeds

Yiling Xing (Banking Credit Risk in the Peoples Republic of China, completed Autumn 2006) with Nick Wilson, Credit Management Research Centre, University of Leeds

Teaching Experience

Financial Mathematics, Financial Economics, Economic Theory

Research

Research Interests

Finance (in particular mathematical and evolutionary finance), dynamic economic theory and random dynamical systems

Books

1. *Handbook of Financial Markets: Dynamics and Evolution*, editor (with Thorsten Hens), volume in the Handbooks in Finance series (edited by William T. Ziemba), North-Holland, 2009 (608 pages).

Publications

1. Consumption Paths under Prospect Utility in an Optimal Growth Model (with Reto Foellmi and Rina Rosenblatt-Wisch). *Journal of Economic Dynamics and Control*, forthcoming.
2. Linearization and Local Stability of Random Dynamical Systems (with Igor V. Evstigneev and Sergey A. Pirogov). *Proceedings of the American Mathematical Society*, forthcoming.
3. The Role of Country, Regional and Global Market Risks in the Dynamics of Latin American Yield Spreads (with Alena Audzeyeva). *Journal of International Financial Markets, Institutions & Money*, forthcoming.
4. An Evolutionary Explanation of the Value Premium Puzzle (with Thorsten Hens, Terje Lensberg and Peter Woehrmann). *Journal of Evolutionary Economics*, forthcoming.
5. Survival and Evolutionary Stability of the Kelly Rule (with Igor V. Evstigneev and Thorsten Hens). In *The Kelly Capital Growth Investment Criterion: Theory and Practice*, (Leonard C. MacLean, Edward O. Thorp and William T. Ziemba, eds.), World Scientific, 2011.
6. Growing Wealth with Fixed-mix Strategies (with Michael A. H. Dempster and Igor V. Evstigneev). In *The Kelly Capital Growth Investment Criterion: Theory and Practice*, (Leonard C. MacLean, Edward O. Thorp and William T. Ziemba, eds.), World Scientific, 2011.
7. From Discrete to Continuous Time Evolutionary Finance (with Jan Palczewski). *Journal of Economic Dynamics and Control*, Vol. 34, p. 913-931, 2010.
8. Market Selection of Constant Proportions Investment Strategies in Continuous Time (with Jan Palczewski). *Journal of Mathematical Economics*, Vol. 46, p. 248-266, 2010.
9. Risk Minimization in Stochastic Volatility Models: Model Risk and Empirical Performance (with Rolf Poulsen and C-O. Ewald). *Quantitative Finance*, Vol. 9, p. 693-704, 2009.
10. Do Stylised Facts of Order Book Markets Need Strategic Behaviour? (with Dan Ladley). *Journal of Economic Dynamics and Control*, Vol. 33, p. 817-831, 2009.
11. (Un)anticipated Technological Change in an Endogenous Growth Model (with Bruce A. Conway and Rina Rosenblatt-Wisch). *Studies in Nonlinear Dynamics & Econometrics*, Vol. 13: No. 1, Article 3, 2009.
12. Evolutionary Finance (with Igor V. Evstigneev and Thorsten Hens) Chapter 9 in *Handbook of Financial Markets: Dynamics and Evolution* (Thorsten Hens and Klaus R. Schenk-Hoppé, eds.), pp. 507–566, North-Holland, 2009.
13. Globally Evolutionarily Stable Portfolio Rules (with Igor V. Evstigneev and Thorsten Hens). *Journal of Economic Theory*, Vol. 140, p. 197-228, 2008.
14. Stochastic Equilibria in von Neumann-Gale Dynamical Systems (with Igor V. Evstigneev). *Transactions of the American Mathematical Society*, Vol. 360, p. 3345–3364, 2008.

15. Financial Markets. The Joy of Volatility (with Michael A. H. Dempster and Igor V. Evstigneev). *Quantitative Finance*, Vol. 8, p. 1–3, 2008.
16. Pure and Randomized Equilibria in the Stochastic von Neumann–Gale Model (with Igor V. Evstigneev). *Journal of Mathematical Economics*, Vol. 43, p. 871–887, 2007.
17. The Great Capitol Hill Baby Sitting Co-op: Anecdote or Evidence for the Optimum Quantity of Money? (with Thorsten Hens and Bodo Vogt). *Journal of Money, Credit and Banking*, Vol. 39, p. 1305–1333, 2007.
18. Volatility-induced Financial Growth (with Michael A. H. Dempster and Igor V. Evstigneev). *Quantitative Finance*, Vol. 7, p. 151–160, 2007.
Reprinted in: Introduction to Quantitative Fund Management (M.A.H. Dempster, G. Mitra and G. Pflug, eds.), Chapter 4, pp. 67–84, Chapman & Hall/CRC Financial Mathematics Series, Taylor and Francis, 2008.
19. On the Evolution of Investment Strategies and the Kelly Rule – A Darwinian Approach (with Terje Lensberg). *Review of Finance*, Vol. 11, p. 25–50, 2007.
20. The von Neumann-Gale Model and its Stochastic Generalizations (with Igor V. Evstigneev). In *Handbook on Optimal Growth 1. Discrete Time* (Rose-Anne Dana, Cuong Le Van, Tapan Mitra and Kazuo Nishimura, eds.), Chapter 12, pp. 337–379, Springer, 2006.
21. Evolutionary Stable Stock Markets (with Igor V. Evstigneev and Thorsten Hens). *Economic Theory*, Vol. 27, p. 449–468, 2006.
22. Markets Do Not Select For a Liquidity Preference as Behavior Towards Risk (with Thorsten Hens). *Journal of Economic Dynamics and Control*, Vol. 30, p. 279–292, 2006.
23. Poverty Traps and Business Cycles in a Stochastic Overlapping Generations Economy with S-shaped Law of Motion. *Journal of Macroeconomics*, Vol. 27, p. 275–288, 2005.
24. Market Selection and Survival of Investment Strategies (with Rabah Amir, Igor V. Evstigneev and Thorsten Hens). *Journal of Mathematical Economics*, Vol. 41, p. 105–122, 2005.
25. Evolutionary Stability of Portfolio Rules in Incomplete Markets (with Thorsten Hens). *Journal of Mathematical Economics*, Vol. 41, p. 43–66, 2005.
26. Evolutionary Finance: Introduction to the Special Issue (with Thorsten Hens). *Journal of Mathematical Economics*, Vol. 41, p. 1–5, 2005.
27. Resuscitating the Cobweb Cycle. *Journal of Forecasting*, Vol. 23, p. 621–624, 2004.
28. Survival of the Fittest on Wall Street (with Thorsten Hens). In *Institutioneller Wandel, Marktprozesse und dynamische Wirtschaftspolitik (Proceedings of the VI. Buchenbach Workshop)* (M. Lehmann-Waffenschmidt, A. Ebner and D. Fornahl, eds.), Metropolis-Verlag, Marburg, pages 339–367, 2004.
29. Financial Markets and Stochastic Growth (with Leonard J. Mirman). *Review of International Economics*, Vol. 11, p. 219–236, 2003.
30. Exponential Growth of Fixed-Mix Strategies in Stationary Asset Markets (with Michael A. H. Dempster and Igor V. Evstigneev). *Finance and Stochastics*, Vol. 7, p. 263–276, 2003.
31. An Application of Evolutionary Finance to Firms Listed in the Swiss Market Index (with Thorsten Hens and Martin Stalder). *Swiss Journal of Economics and Statistics*, Vol. 138, p. 465–487, 2002.

32. Sample-Path Stability of Non-Stationary Dynamic Economic Systems. *Annals of Operations Research*, Vol. 114, p. 263–280, 2002.
33. From Rags to Riches: On Constant Proportions Investment Strategies (with Igor V. Evstigneev). *International Journal of Theoretical and Applied Finance* Vol. 5, p. 563–574, 2002.
34. Market Selection of Financial Trading Strategies: Global Stability (with Igor V. Evstigneev and Thorsten Hens). *Mathematical Finance*, Vol. 12, p. 329–339, 2002.
35. Is There a Golden Rule for the Stochastic Solow Growth Model? *Macroeconomic Dynamics*, Vol. 6, p. 457–475, 2002.
36. Economic Growth and Business Cycles: A Critical Comment on Detrending Time Series. *Studies in Nonlinear Dynamics and Econometrics*, Vol. 5, p. 75–86, 2001.
37. Random Fixed Points in a Stochastic Solow Growth Model (with Björn Schmalfuss). *Journal of Mathematical Economics*, Vol. 36, p. 19–30, 2001.
38. Random Dynamical Systems in Economics. *Stochastics and Dynamics*, Vol. 1, p. 63–83, 2001.
39. An Evolutionary Model of Bertrand Oligopoly (with Carlos Alós-Ferrer and Ana B. Ania). *Games and Economic Behavior*, Vol. 33, p. 1–19, 2000.
40. The Evolution of Walrasian Behavior in Oligopolies. *Journal of Mathematical Economics*, Vol. 33, p. 35–55, 2000.
41. Bounds on Sample Paths of Stochastic Nonlinear Systems – A Lyapunov Function Approach. In *IUTAM Symposium on Nonlinearity and Stochastic Structural Dynamics (Chennai 1999)* (S. Narayanan and R. N. Iyengar, eds.), p. 249–260, Kluwer Academic Publishers, Dordrecht, 2001.
42. Random Attractors – A Brief Introduction and Some Applications. *ZAMM - Journal of Applied Mathematics and Mechanics*, Vol. 79 Suppl. 3, p. S831–S834, 1999.
43. The Stochastic Brusselator: Parametric Noise Destroys Hopf Bifurcation (with Ludwig Arnold and Gabriele Bleckert). In *Stochastic Dynamics* (H. Crauel and V. M. Gundlach, eds.), Chap. 4, p. 71–92, Springer, New York, 1999.
44. Random Attractors – General Properties, Existence and Applications to Stochastic Bifurcation Theory. *Discrete and Continuous Dynamical Systems*, Vol. 4, p. 99–130, 1998.
45. Toward an Understanding of Stochastic Hopf Bifurcation: A Case Study (with Ludwig Arnold and N. Sri Namachchivaya). *International Journal of Bifurcation and Chaos*, Vol. 6, p. 1947–1975, 1996.
46. Stochastic Bifurcation: Concept and Examples (with V. M. Gundlach). Proceedings of the International Conference on Nonlinearity, Bifurcation, and Chaos: The Doors to the Future (J. Awrejcewicz and C.-H. Lamarque, eds.), p. 28–33, 1996.
47. Deterministic and Stochastic Duffing–van der Pol Oscillators are Non-explosive. *ZAMP - Journal of Applied Mathematics and Physics*, Vol. 47, p. 740–759, 1996.
48. Stochastic Hopf Bifurcation: An Example. *International Journal of Non-linear Mechanics*, Vol. 31, p. 685–692, 1996.
49. Bifurcation Scenarios of the Noisy Duffing–van der Pol Oscillator. *Nonlinear Dynamics*, Vol. 11, p. 255–274, 1996.

Other publications

50. ‘Managing Demand’ for Peer Reviews. (Last update: April 1, 2009.) Downloadable at ssrn.com/abstract=1372133.
51. Parking: Unwanted Insights from Economics. (Last update: January 1, 2008.) Downloadable at ssrn.com/abstract=1130220.
52. The Evolutionary Virtue of Diversification. *Finance Letters*, Vol. 2 (6), 2004.
53. The New “Finance Guy.” *Polit’en*, Vol. 4, p. 4–5, 2002.

Submitted Papers

54. Financial Regulation of Limit Order Markets (with Dan Ladley and Terje Lensberg). Working paper. Revision ongoing (completion by September 2010).
55. A Simple Model of the Firm Life Cycle (with Urs Schweri). Working Paper No. 659. National Centre of Competence in Research “Financial Valuation and Risk Management,” Switzerland, August 2010.
56. An Evolutionary Financial Market Model With a Risk-free Asset (with Igor V. Evstigneev and Thorsten Hens). Working Paper No. 656. National Centre of Competence in Research “Financial Valuation and Risk Management,” Switzerland, August 2010.
57. Asset Market Games of Survival: A Synthesis of Evolutionary and Dynamic Games (with Rabah Amir and Igor V. Evstigneev). Revised version of Working Paper No. 505. National Centre of Competence in Research “Financial Valuation and Risk Management,” Switzerland, August 2010.
58. Forecasting Customer Behaviour in a Multi-service Financial Organisation: A Profitability Perspective (with Alena Audzeyeva and Barbara Summers). Working Paper, December 2009. Revised version August 2010.
59. Sovereign Rating Transitions and the Price of Default Risk in Emerging Markets (with Alena Audzeyeva). Working Paper No. 382. National Centre of Competence in Research “Financial Valuation and Risk Management,” Switzerland, May 2007.

Unpublished Papers

60. Stochastic Tastes and Money in a Neo-Keynesian Economy. Working Paper No. 88, Institute for Empirical Research in Economics, University of Zurich, August 2001.
61. Business Cycle Phenomena in Overlapping Generations Economies with Stochastic Production (with Jens-Ulrich Peter). Working Paper No. 30, Institute for Empirical Research in Economics, University of Zurich, December 1999.
62. MACRODYN - A User’s Guide (with Volker Böhm). Handbook for the dynamical systems visualization software MACRODYN. Discussion Paper No. 400, Department of Economics, University of Bielefeld, 1998.
63. Bifurcations of the Randomly Perturbed Logistic Map. Discussion Paper No. 353, Department of Economics, University of Bielefeld, 1997.
64. Evolutionary Stability of Walrasian Equilibria. Discussion Paper No. 352, Department of Economics, University of Bielefeld, 1997. Revised version October 2001.

Qualification Work

65. The stochastic Duffing–van der Pol equation. PhD thesis, Institute of Dynamical Systems, Department of Mathematics, University of Bremen, Germany, 1996.
66. Bifurkations-Szenarien des stochastischen Duffing–van der Pol Oszillators (in German). Diplomarbeit (MSc thesis), Department of Mathematics, University of Bremen, Germany, 1993.