

# KARL SCHMEDDERS

## ADDRESS

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## ACADEMIC POSITIONS

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- 2005 – present Associate Professor of Managerial Economics and Decision Sciences with tenure, Kellogg School of Management, Northwestern University
- 2001 – 2005 Associate Professor of Managerial Economics and Decision Sciences, Kellogg School of Management, Northwestern University
- 1998 – 2001 Assistant Professor of Managerial Economics and Decision Sciences, Kellogg School of Management, Northwestern University
- 1996 – 1998 Visiting Fellow, Hoover Institution, Stanford
- 1995 – 1996 Acting Instructor and Teaching Affiliate, Dept. of Operations Research, Stanford University

## EDUCATION

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- 1996 Ph.D., Operations Research, Stanford University
- 1992 M.S. (GPA 4.0), Operations Research, Stanford University
- 1990 Vordiplom [German bachelor's degree equivalent] with highest honors (ranked first in class of 350), Wirtschaftsingenieurwesen [Business Engineering], Universität Karlsruhe, Germany

## PUBLISHED ARTICLES

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1. “Numerical Optimization Methods in Economics,” forthcoming in *The New Palgrave: A Dictionary of Economics, 2<sup>nd</sup> Edition*.
2. “On Price Caps Under Uncertainty,” with Robert L. Earle and Tymon Tatur, *Review of Economic Studies*, 74 (2007) 93 – 111.

3. “Reply to: Asset-Trading Volume with Dynamically Complete Markets and Heterogeneous Agents: Comment,” with Kenneth L. Judd and Felix Kubler, *Finance Research Letters*, 3 (2006) 102 – 105.
4. “Computing Equilibria in Finance Economies with Incomplete Markets and Transaction Costs,” with P. Jean-Jacques Herings, *Economic Theory*, 27 (2006) 493 – 512. [lead article]
5. “Approximate versus Exact Equilibria in Dynamic Economies,” with Felix Kubler, *Econometrica*, 73 (2005) 1205 – 1235.
6. “Excess Price Volatility and Financial Innovation,” with Alessandro Citanna, *Economic Theory*, 26 (2005) 559 – 587.
7. “Effects of Asset Market Structure on Welfare and Trading Volume,” with Kenneth L. Judd and Felix Kubler, in *Assets, Beliefs, and Equilibria in Economic Dynamics*, Essays in Honor of Mordecai Kurz, ed. by C. D. Aliprantis, K. J. Arrow, P. Hammond, F. Kubler, H.-M. Wu, and N. C. Yannelis, New York: Springer-Verlag, 2004.
8. “Stationary Equilibria in Asset-Pricing Models with Incomplete Markets and Collateral,” with Felix Kubler, *Econometrica*, 71 (2003) 1767 – 1793.
9. “Computational Methods for Dynamic Equilibria with Heterogeneous Agents,” with Kenneth L. Judd and Felix Kubler, in *Advances in Economic Theory and Econometrics* Volume III, ed. by M. Dewatripoint, L. P. Hansen, and S. J. Turnovsky, New York: Econometric Society, 2003.
10. “Asset-Trading Volume with Dynamically Complete Markets and Heterogeneous Agents,” with Kenneth L. Judd and Felix Kubler, *The Journal of Finance*, 58 (2003) 2203 – 2217. [This paper received a nomination for the 2003 Smith-Breeden Prize.]
11. “Generic Inefficiency of Equilibria in the General Equilibrium Model with Incomplete Asset Markets and Infinite Time,” with Felix Kubler, *Economic Theory*, 22 (2003) 1 – 15. [lead article]
12. “The Fibonacci Sequence: Relationship to the Human Hand,” with Andrew Park, John Fernandez and Mark Cohen, *The Journal of Hand Surgery*, 28 (2003) 157 – 160.
13. “Recursive Equilibria in Economies with Incomplete Markets,” with Felix Kubler, *Macroeconomic Dynamics*, 6 (2002) 284 – 306.
14. “Incomplete Markets, Transitory Shocks, and Welfare,” with Felix Kubler, *Review of Economic Dynamics*, 4 (2001) 747 – 766.
15. “Monopolistic Security Design in Finance Economies,” *Economic Theory*, 18 (2001) 37 – 72.
16. “Computing Equilibria in Stochastic Finance Economies,” with Felix Kubler, *Computational Economics*, 15 (2000) 145 – 172.
17. “Computing Equilibria in Infinite Horizon Finance Economies: The Case of One Asset,” with Kenneth L. Judd and Felix Kubler, *Journal of Economic Dynamics and Control*, 24 (2000) 1047 – 1078.

18. “A Homotopy Algorithm and an Index Theorem for the General Equilibrium Model with Incomplete Asset Markets,” *Journal of Mathematical Economics*, 32 (1999) 225 – 241.
19. “General Equilibrium Models and Homotopy Methods,” with B. Curtis Eaves, *Journal of Economic Dynamics and Control*, 23 (1999) 1249 – 1279.
20. “The Impact of Portfolio Constraints in Infinite-Horizon Incomplete-Markets Models,” with Kenneth L. Judd and Felix Kubler, in: *The Theory of Markets*, ed. by P.J.J. Herings, G. van der Laan, and A. Talman, North-Holland, 1999.
21. “On Multiplicity of Competitive Equilibria when Financial Markets are Incomplete,” with Thorsten Hens and Beate Voss, in: *The Theory of Markets*, ed. by P.J.J. Herings, G. van der Laan, and A. Talman, North-Holland, 1999.
22. “A Cellation of the Grassmann Manifold,” with B. Curtis Eaves, *Mathematical Programming* 83 (1998) 253 – 262.
23. “Computing Equilibria in the General Equilibrium Model with Incomplete Asset Markets,” *Journal of Economic Dynamics and Control* 22 (1998) 1375 – 1401.

#### **WORKING PAPERS**

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24. “Competitive Equilibria in Semi-Algebraic Economies,” with Felix Kubler, PIER working paper 07 – 013.
25. “Bond Portfolios and Two-Fund Separation in the Lucas Asset-Pricing Model,” with Kenneth L. Judd and Felix Kubler, CMS-EMS discussion paper #1427, Northwestern University.
26. “Two-Fund Separation in Dynamic General Equilibrium,” CMS-EMS discussion paper #1398, Northwestern University.
27. “Optimal Rules for Patent Races,” with Kenneth L. Judd and Şevin Yeltekin, CMS-EMS discussion paper #1343, Northwestern University.
28. “A Computational Approach to Proving Uniqueness in Dynamic Games,” with Ken Judd.
29. “Homotopy Path-Following with EasyHomotopy: Solving Nonlinear Equations for Economic Models.”
30. “A Solution Method for Incomplete Asset Markets with Heterogeneous Agents,” with Kenneth L. Judd and Felix Kubler.

#### **OTHER PUBLICATION**

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31. Book Review of “Applied Computational Economics and Finance” by Mario J. Miranda and Paul L. Fackler, *The Economic Journal* 113 (2003) F661 – F663.

## FELLOWSHIPS AND HONORS

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- 2006 Honorary Medal (Ehrenmedaille) of WHU, Otto Beisheim School of Management
- 2004 Nomination of a paper for the 2003 Smith-Breeden Prize, The Journal of Finance
- 1993 – 1995 Doctoral Fellowship, Cusanuswerk Foundation
- 1992 Academic Excellence Award, Dept. of Operations Research, Stanford University
- 1990/91 Fellowship, Dept. of Operations Research, Stanford University
- 1990 National *Jubiläums-Staatsstiftung* Award for Business *Vordiplom* score among best in Germany in 1989
- 1989 – 1993 Fellowship, Cusanuswerk Foundation

## RESEARCH GRANTS

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- 2006 – 09 Co – Principal Investigator, research grant from the National Science Foundation
- 2003, '05 Research Grants from The Searle Fund
- 2003 Research Project with U.S. Navy
- 1997 – 1998 Post-Doctoral Research Grant from *Deutsche Forschungsgemeinschaft* [National Science Foundation of Germany]

## TEACHING AWARDS

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- 2000,'02,'04 ,'06 Chairs' Core Course Teaching Award, Kellogg School of Management
- 2002, '03, '04 WHU Best Teacher Award (in Winter Semester), WHU Koblenz, Germany
- 2002 L.G. Lavengood Professor of the Year, Kellogg School of Management
- 1996 Walter J. Gores Award, Stanford University's most prestigious teaching award
- 1996 Best Engineering Professor of the Year Award, Stanford Society of Women Engineers
- 1993 Best Teaching Assistant of the Year Award, Dept. of Operations Research, Stanford University

## TEACHING EXPERIENCE

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- 2005, '06 "Mathematical and Statistical Methods for Management Decisions," ADA Kellogg Executive Management Program for Dentists

- 2004, '05 "Managerial Statistics," Kellogg/WHU Executive M.B.A. program
- 1998 – present "Statistical Methods for Managerial Decisions," Kellogg M.B.A. program
- 2000, '01 "Dynamic Programming," Kellogg Ph.D. program
- 2000, '05, '06 "Statistical Methods for Managerial Decisions," Kellogg/Sasin M.B.A. program and Executive M.B.A. program
- 2000 – 2004, '06 "Case Studies in Management Science," WHU Koblenz  
1995, '97, '98
- 1995 – 1996 Undergraduate and graduate courses in Operations Research, Stanford University

### **CASE DEVELOPMENT**

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1. "Spiegel Online Part (A) and Part (B)," with Armin Rott.
2. "Orangia Highways Part (A) and Part (B)," with Peter Eso and Peter Klibanoff, Kellogg Cases 5–106–007(A) and 5–106–007(B).
3. "Where Art Meets Science: Predicting Movie Grosses," with Peter Eso and Peter Klibanoff.
4. "Characteristics and Performance of Mutual Fund Managers," with Peter Eso and Peter Klibanoff.
5. A collection of 20 case studies in Management Science, with Molly Stephens, appeared in:
  - *Introduction to Operations Research*, Frederick S. Hillier, and Gerald J. Lieberman, McGraw-Hill, Seventh Edition, 2001, Eighth Edition, 2005.
  - *Introduction to Management Science: A Modeling and Case Studies Approach With Spreadsheets*, Frederick S. Hillier and Mark S. Hillier, Irwin/McGraw-Hill, Second Edition, 2002.
  - *Introduction to Management Science: A Modeling and Case Studies Approach With Spreadsheets*, Frederick S. Hillier, Mark S. Hillier, and Gerald J. Lieberman, Irwin/McGraw-Hill, First Edition, 2000.

### **RECENT PRESENTATIONS**

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- 2005 – present University of Pennsylvania PhD course, Chicago-Argonne D<sup>3</sup> seminar, 2006 Chicago-Argonne Summer Workshop on Computational Economics, University of Zürich, Second Christmas Meeting of German Economists Abroad in Berlin, Ninth World Congress of the Econometric Society in London, Fourth International Conference on Complementarity Problems at Stanford (ICCP 2005), 2005 Chicago-Argonne Summer Workshop on Computational Economics, Society for the Advancement of Economic Theory Conference in Baiona/Spain, Society for Economic Dynamics 2005 Annual Meeting in Budapest, Stanford University, Hoover Institution at Stanford

- 2003 – 2004 Bielefeld University, University of Frankfurt, 2004 Frontiers in Economics and Computation Conference at the University of Chicago, SITE 2004 Summer Workshop at Stanford University, NBER 2004 Workshop in General Equilibrium at the University of California at Davis, State University of New York at Stony Brook, SITE 2003 Summer Workshop at Stanford University, Society for the Advancement of Economic Theory Conference in Rhodes/Greece
- 2001 – 2002 IESE Barcelona, Bielefeld University, Washington University at St. Louis, First Brazilian Workshop of the Game Theory Society in Sao Paulo, 2002 Latin American Meeting of the Econometric Society at Sao Paulo, Workshop in Mathematical Economics at IMPA Rio de Janeiro, Society of Computational Economics 2002 conference in Aix-en-Provence, University of Rochester, Northwestern University, University of Maastricht, Groupe HEC in Paris, Society for the Advancement of Economic Theory Conference in Ischia/Italy

### **PROFESSIONAL ACTIVITIES**

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- 2006 – present Co – Editor of the *Handbook of Computational Economics*, Vol. III and IV
- 2000 – present Associate Editor of the *Journal of Economic Dynamics and Control*
- 2006 Co-organizer of the third “Christmas Meeting of German Economists Abroad” in Munich
- 1997, 2003, '04 Co-organizer of a one-week summer workshop of the Stanford Institute for Theoretical Economics (SITE)
- 2003 Member of the Scientific Conference Committee, 12<sup>th</sup> European Workshop on General Equilibrium Theory, Bielefeld University

Referee for: *Journal of Economic Dynamics and Control*, *Economic Theory*, *Journal of Mathematical Economics*, *Journal of Economic Theory*, *Econometrica*, *Journal of Institutional and Theoretical Economics*, *Journal of Economic Behavior and Organization*, *European Economic Review*, *Berkeley Electronic Journals*, *European Journal of Operations Research*, *Mathematical Programming*, *Mathematics of Operations Research* and numerous other journals

Member of: American Economic Association, Econometric Society, Society for Computational Economics, Society for the Advancement of Economic Theory, Society for Economic Theory, Mathematical Programming Society, INFORMS, American Statistical Association