KAY GIESECKE

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ACADEMIC APPOINTMENTS

Assistant Professor, 2005–present
Department of Management Science and Engineering, Stanford University

Visiting Assistant Professor, Fall Quarter 2009
Anderson School of Management, University of California, Los Angeles

Visiting Scholar, September 2009
Monetary and Capital Markets Department, International Monetary Fund, Washington

Visiting Assistant Professor, 2003–2005
School of Operations Research and Industrial Engineering, Cornell University

Post-Doctoral Research Fellow, 2001–2003
School of Operations Research and Industrial Engineering, Cornell University
National Research Center, Humboldt Universität zu Berlin, Germany

EDUCATION

Dr. rer. pol. (Ph.D. Economics), 2001
Humboldt Universität zu Berlin, Germany

Diplom-Wirtschaftsingenieur (M.Sc. Electrical Engineering & Economics), 1998
Technische Universität Ilmenau, Germany

RESEARCH ARTICLES

1. Filtered Likelihood for Point Processes (with G. Schwenkler)
   The Annals of Statistics, accepted subject to minor revisions
2. Large Portfolio Asymptotics for Loss From Default (with K. Spiliopoulos, R. Sowers, J. Sirignano)
   Mathematical Finance, accepted subject to minor revisions
3. Exact Sampling of Jump-Diffusions (with D. Smelov)
   Operations Research, accepted subject to minor revisions
4. Fixed-Income Portfolio Selection (with J. Kim)
   Management Science, accepted subject to minor revisions
5. Default Clustering in Large Portfolios: Typical Events (with K. Spiliopoulos and R. Sowers)
   The Annals of Applied Probability, forthcoming
6. Transform Analysis for Point Processes and Applications in Credit Risk (with S. Zhu)
   Mathematical Finance, forthcoming
7. Sequential Importance Sampling And Resampling For Dynamic Portfolio Credit Risk (with S. Deng, T.L. Lai)
   Operations Research, **60**(1), 78–91, 2012
8. Monte Carlo Algorithms For Default Timing Problems (with B. Kim, S. Zhu)
   Management Science, **57**(12), 2115–2129, 2011
9. Exact Simulation of Point Processes With Stochastic Intensities (with H. Kakavand, M. Mousavi)
   Operations Research, **59**(5), 1233–1245, 2011

10. Corporate Bond Default Risk: A 150-Year Perspective (with F. Longstaff, S. Schaefer, I. Strebulaev)
    Journal of Financial Economics, **102**(2), 233–250, 2011
11. Systemic Risk: What Defaults Are Telling Us (with B. Kim)
    Management Science, **57**(8), 1387–1405, 2011
12. A Top-Down Approach to Multi-Name Credit (with X. Ding and L. Goldberg)
    Operations Research, **59**(2), 283–300, 2011
13. Premia for Correlated Default Risk (with S. Azizpour, B. Kim)
    Journal of Economic Dynamics and Control, **35**(8), 1340–1357, 2011
14. Risk Analysis of Collateralized Debt Obligations (with B. Kim)
    Operations Research, **59**(1), 32–49, 2011
15. Exact and Efficient Simulation of Correlated Defaults (with H. Kakavand, M. Mousavi, H. Takada)
    SIAM Journal on Financial Mathematics, **1**, 868–896, 2010
16. Affine Point Processes and Portfolio Credit Risk (with E. Errais, L. Goldberg)
    SIAM Journal on Financial Mathematics, **1**, 642–665, 2010
17. Time-Changed Birth Processes and Multi-Name Credit Derivatives (with X. Ding and P. Tomecek)
    Operations Research, **57**(4), 990–2005, 2009
18. Default and Information
    Journal of Economic Dynamics and Control **30**(11), 2281–2303, 2006
19. Credit Contagion and Aggregate Losses (with S. Weber)
    Journal of Economic Dynamics and Control **30**(5), 741–767, 2006
20. Cyclical Correlations, Credit Contagion, and Portfolio Losses (with S. Weber)
    Journal of Banking and Finance **28**(12), 3009-3036, 2004
21. Sequential Defaults and Incomplete Information (with L. Goldberg)
    Journal of Risk **7**(1), 1–26, 2004
22. Correlated Default with Incomplete Information
    Journal of Banking and Finance **28**(7), 1521-1545, 2004
23. Forecasting Default in the Face of Uncertainty (with L. Goldberg)
    Journal of Derivatives **12**(1), 11–25, 2004

CONFERENCE PUBLICATIONS

1. Importance Sampling For Indicator Markov Chains (with A. Shkolnik)
   Proceedings of the 2010 Winter Simulation Conference, IEEE Press, 2742–2750, 2010
2. Rare-Event Simulation For a Generalized Hawkes Process (with J. Blanchet, P. Glynn, X. Zhang)
   Proceedings of the 2009 Winter Simulation Conference, IEEE Press, 1291–1298, 2009
3. Simulating Point Processes by Intensity Projection (with H. Kakavand and M. Mousavi)
   Proceedings of the 2008 Winter Simulation Conference, IEEE Press, 560–568, 2008
4. Estimating Tranche Spreads by Loss Process Simulation (with B. Kim)
   Proceedings of the 2007 Winter Simulation Conference, IEEE Press, 967–975, 2007

SURVEY, INTRODUCTORY, AND POLICY PAPERS

1. Assessing the Systemic Implications of Financial Linkages (with J. Chan-Lau, M. Espinosa-Vega, J. Sole)
   In *Global Financial Stability Report, International Monetary Fund*, 73–110, 2009
2. An Overview of Credit Derivatives
   Jahresbericht der Deutschen Mathematiker-Vereinigung, **111**(2), 57–83, 2009

3. Measuring the Risk of Large Losses (with T. Schmidt and S. Weber)
   Journal of Investment Management **6**(4), 1–15, 2008
4. Portfolio Credit Risk: Top Down vs. Bottom Up Approaches
   In *Frontiers in Quantitative Finance: Credit Risk and Volatility Modeling*, R. Cont (Ed.), Wiley, 2008
5. Credit Risk Modeling and Valuation: An Introduction
   In *Credit Risk: Models and Management, Vol. 2*, D. Shimko (Ed.), 487–525, Risk Books, 2004
6. Forecasting Extreme Financial Risk, (with L. Goldberg)
   In *Risk Management: A Modern Perspective*, M. Ong (Ed.), 537–555, Elsevier, 2005
7. Credit Risk Modeling, (with L. Goldberg and T. Backshall)
   In *Handbook of Fixed Income Securities*, F. Fabozzi (Ed.), 779–798, Wiley, 2004
8. In Search of a Modigliani-Miller Economy (with L. Goldberg)
   Journal of Investment Management **2**(3), 1–6, 2004
9. A Simple Exponential Model for Dependent Defaults
   Journal of Fixed Income **13**(3), 74–83, 2003

Working Papers

1. Macroeconomic Effects of Corporate Default Crises: A Long-Term Perspective (with F. Longstaff, S. Schaefer, I. Strebulaev)
2. Analytical Approximations for Loan and Credit Derivatives Portfolios (with J. Kim, H. Takada)
3. Importance Sampling for Event Timing Models (with A. Shkolnik)
4. Exploring the Sources of Default Clustering (with S. Azizpour, G. Schwenkler)
5. Dynamic Portfolio Execution (with G. Tsoukalas, J. Wang)
6. The Market Price of Credit Risk: The Impact of Asymmetric Information (with L. Goldberg), 2007
7. Dependent Events and Changes of Time (with P. Tomecek), 2005

Patent

Method and Apparatus for an Incomplete Information Model of Credit Risk
US Patent 7536329, Co-inventor with Lisa Goldberg, Foundation of BarraCredit, a commercial software suite of credit asset analytics tools for the financial industry, co-developed with MSCI

Selected Honors and Awards

Meritorious Service Award, *Operations Research*, 2009, 2010

Graduate Teaching Award, Stanford University, 2007

David Morgenthaler II Faculty Scholar, Stanford University, 2005

Gauss Prize, German Society for Actuarial and Financial Mathematics, 2003

Post-Doctoral Fellowship, Deutsche Forschungsgemeinschaft, 2002-2003

Deutsche Bundesbank Fellow, 2002

Doctoral Fellowship, Deutsche Forschungsgemeinschaft, 1998-2001

Selected Research Grants

Morgan Stanley, 2010 ($25K, PI)

Mericos Foundation, 2010 ($50K, PI)

Mizuho-DL Financial Technology, 2008-2010 ($300K, PI)

J.P. Morgan Chase Academic Outreach Program, 2004-2008 ($150K, PI)

Global Association of Risk Professionals, 2007 ($12K, PI)

Stanford University, Presidential Research Grant, 2006-2007

American Express, 2005-2006 ($100K, PI)

Econa AG, 2006 ($13K, PI)

Moody's, 2006 ($43K, Co-PI)

EDITORIAL RESPONSIBILITIES

Operations Research, Associate Editor, 2008–present

Operations Research Letters, Associate Editor, 2009–present

IIE Transactions, Associate Editor, 2009–present

Journal of Banking and Finance, Associate Editor, 2011–present

PROFESSIONAL ACTIVITIES

Ad-hoc Reviewer

Annals of Applied Probability, Econometrica, Journal of Finance, Mathematical Finance, SIAM Journal on Financial Mathematics, Journal of Economic Dynamics and Control, Finance and Stochastics, Journal of Computational Finance, Financial Analysts Journal, Journal of Econometrics, Journal of Derivatives, Stochastic Processes and Their Applications, Management Science, Operations Research, Annals of Operations Research, Operations Research Letters, Academic Press, Elsevier, Springer-Verlag, etc., National Science Foundation, Social Sciences and Humanities Research Council of Canada

Conference Organization

Fourth SIAM Conference on Financial Mathematics and Engineering, Minneapolis, July 2012
Member of Scientific Committee

IMA Workshop The Mathematics of the New Financial System, Minneapolis, May 2012
Co-organizer

Third Stanford Conference on Quantitative Finance, Stanford, March 2012
Co-organizer

INFORMS Annual Meeting, Charlotte, November 2011
Organizer of Session on Financial Engineering

Seventh International Congress on Industrial and Applied Mathematics, Vancouver, July 2011
Organizer of Mini-Symposium on Credit Risk

Fourth Western Conference on Mathematical Finance, Los Angeles, June 2011
Member of Scientific Committee

Third SIAM Conference on Financial Mathematics and Engineering, San Francisco, November 2010
Conference Co-Chair

First North American Meeting on Industrial and Applied Mathematics, Huatulco, December 2010
Co-organizer Financial Mathematics Track

Second Stanford Conference on Quantitative Finance, Stanford, November 2010
Co-organizer

INFORMS Annual Meeting, Austin, November 2010
Organizer of session on Portfolio Credit Risk

Mathematical Finance and Partial Differential Equations, New Brunswick, December 2009
Member of Program Committee

INFORMS Annual Meeting, San Diego, November 2009
Organizer of session on Credit Risk

Second SIAM Conference on Financial Mathematics, New Brunswick, November 2008
Organizer of Mini-Symposium on Credit Risk

American Mathematical Society 114th Annual Meeting, San Diego, January 2008
Co-organizer of Special Session on Financial Mathematics

INFORMS Annual Meeting, Pittsburgh, November 2006
Organizer of Session on Financial Engineering

Stanford Conference on Quantitative Finance, Stanford, August 2006
Co-organizer

SIAM Activity Group on Financial Mathematics and Engineering

Secretary, 2011-2012

Program Director, 2009-2010

Financial Mathematics Program at Stanford University

Member of Steering Committee, Chair of Curriculum Committee

Member of Mathematical Finance Advisory Board, Rutgers University

Student Supervision

Post-Doctoral Students (Principal Advisor)

Hossein Kakavand

Doctoral Students (Dissertation Advisor)

1. Eymen Errais, Ph.D. 2006, Management Science and Engineering
Thesis: *Pricing and Hedging Credit and Interest Rate Derivatives*
First Position: Quantitative Analyst, Synthetic CDO Trading, Barclays Capital, New York
2. Shahriar Azizpour, Ph.D. 2008, Management Science and Engineering
Thesis: *Estimating Self-Exciting Models of Corporate Default*
First Position: Quantitative Analyst, Life Finance, Credit Suisse, New York
3. Baeho Kim, Ph.D. 2009, Management Science and Engineering
Thesis: *Essays in Portfolio Credit Risk*
First Position: Assistant Professor, Korea Business School, Seoul, Korea
4. Xiaowei Ding, Ph.D. 2009, Management Science and Engineering
Thesis: *Time-Changed Birth Processes, Random Thinning, and Correlated Default Risk*
First Position: Quantitative Analyst, Commodities Trading, Morgan Stanley, New York
5. Jack Kim, Ph.D. 2010, Management Science and Engineering
Thesis: *Credit Portfolio Optimization*
First Position: Quantitative Analyst, Credit Portfolio Management, J.P. Morgan, New York
6. Gerry Tsoukalas, Ph.D. 2012 (expected), Management Science and Engineering
Thesis: *Stochastic Models of Limit Order Books*
7. Alexander Shkolnik, Ph.D. 2012 (expected), Computational and Mathematical Engineering
Thesis: *Rare-Event Simulation for Point Processes*
8. Shilin Zhu, Ph.D. 2012 (expected), Statistics

Thesis: *Point Processes: Transforms and Simulation Algorithms*

9. Alexander Papanicolaou, Ph.D. 2013 (expected), Computational and Mathematical Engineering
   Thesis: *Hypothesis Testing for Continuous-Time Models of Asset Prices*
10. Dmitry Smelov, Ph.D. 2013 (expected), Management Science and Engineering
    Thesis: *Exact Simulation of Jump-Diffusion SDEs*
11. Gustavo Schwenkler, Ph.D. 2013 (expected), Management Science and Engineering
    Thesis: *Likelihood Inference for Stochastic Processes*
12. Gerald Teng, Ph.D. 2013 (expected), Management Science and Engineering
    Thesis: *Numerical Solution of Jump-Diffusion SDEs*
13. Vibhav Bukkapatanam, Ph.D. 2013 (expected), Management Science and Engineering
    Thesis: *Approximations for Portfolio Credit Risk: Design and Analysis*

Doctoral Students (Reading or Oral Committee)

Bjorgvin Sigurdsson (MS&E, 2005), Pete Meindl (MS&E, 2006), Jeremy Graveline (GSB, 2006), Andreas Eckner (Statistics, 2007), Guillaume Horel (Statistics, 2007), Tiago Requeijo (Mathematics, 2007), Wei Zhen (Statistics, 2008), Manuel Zamfir (Mathematics, 2008), Zhifeng Zhang (GSB, 2008), Benjamin Armbruster (MS&E, 2008), Jia Liu (MS&E, 2009), Sergey Lobanov (GSB, 2009), Kaiyuan Zhang (Mathematics, 2009), Ling Chen (Statistics, 2009), Shaojie Deng (Statistics, 2010), Anca Vacarescu (Mathematics, 2011), Xiaowei Zhang (MS&E, 2011), Michael Padilla (Electrical Engineering, 2011)

Media Coverage of Research

SIAM News, Volume 42, Number 1, 2009, "Contagion and Frailty in Clustering of Corporate Defaults"

Pension and Investments, May 12, 2008, "The Smart Money"

Professional Investor, April, 2004, "Six Steps to Better Credit Returns"

Teaching Experience

University Courses

Investment Practice, Stanford University

Investment Science Honors, Stanford University

Credit Risk: Modeling and Management, Cornell and Stanford Universities

Introduction to Credit Markets, UCLA Anderson School

Financial Engineering with Stochastic Calculus, Cornell University

Applied Financial Engineering, Cornell University

Credit Derivatives and Structured Credit Instruments, Free University Berlin

Executive Education

Correlated Corporate Default Risk, International Monetary Fund, Washington, 2008, 2009

Quantitative Credit, Stanford Financial Engineering Program, Hong Kong, 2008–2011

Giesecke on Portfolio Credit, Risk Leading Lights Series, New York and London, December 2007

Quantitative Credit, Morgan Stanley, March 2007

Credit Risk, European Commission, Luxembourg, September 2006

Portfolio Credit Risk, JP Morgan, March 2006

Risk Management and Derivatives School, Risk, New York, December 2005

Advanced Credit Risk Measurement & Modeling, Risk, Frankfurt, February 2005

Credit Masterclass, Global Association of Risk Professionals, New York, January 2005

Credit Risk Modeling, Bayerische Landesbank, Munich, December 2004

Non-Academic Work Experience

Deutsche Bank, Credit Control Division, Paris (July–September 1997)

Deutsche Bank, Credit Risk Methodology & Research, Frankfurt (April–June 1997)

KPMG Management Consulting, IT Division, Berlin (August–September 1996)

HypoVereinsbank International, Corporate Credit Division, Luxembourg (March 1995)

Selected Invited Lectures

ICBI Global Derivatives and Risk Management, Invited Speaker, Chicago, November 2011

INFORMS Annual Meeting, Charlotte, November 2011

7th International Congress on Industrial and Applied Mathematics, Invited Speaker, Vancouver, July 2011

Mathematics Seminar, ETH Zürich, December 2010

Risk Seminar, Columbia University, December 2010

Winter Simulation Conference, Baltimore, December 2010

INFORMS Annual Meeting, Austin, November 2010

Bachelier World Congress, Theme Speaker, Toronto, July 2010

Workshop on Systemic Risk, Fields Institute, Toronto, May 2010

Workshop on Numerical Methods in Finance, Fields Institute, Toronto, March 2010

Hong Kong University of Science and Technology, Hong Kong, February 2010

University of Michigan, Ann Arbor, January 2010

Western Conference in Mathematical Finance, Santa Barbara, November 2009

INFORMS Annual Meeting, San Diego, November 2009

PIMCO, Los Angeles, October 2009

DRO-IEOR Seminar, Columbia University, October 2009

International Monetary Fund, Washington, September 2009

15th INFORMS Applied Probability Conference, Ithaca, July 2009

Global Derivatives and Risk Management, Rome, April 2009

Global Association of Risk Professionals Convention, New York, February 2009

Professional Risk Managers International Association, Stanford, January 2008

Bachelier World Congress, London, July 2008

Winter Simulation Conference, Miami, December 2008

2nd SIAM Conference on Financial Mathematics, Plenary Lecture, New Brunswick, 2008

The Mathematics of Defaultable Securities, Plenary Lecture, Princeton, May 2008

Daiwa International Workshop on Financial Engineering, Kyoto, February 2008

American Mathematical Society, Annual Meeting, San Diego, January 2008

Winter Simulation Conference, Washington, December 2007

Credit Risk Summit, New York, November 2007

IEMS Seminar, Northwestern University, Evanston, October 2007

Stevanovich Center 2007 Conference on Credit Risk, Chicago, October 2007

Correlations and Copulas, Plenary Lecture, Melbourne, September 2007

14th INFORMS Applied Probability Conference, Eindhoven, July 2007

Fields Institute for Research in Mathematical Sciences, Toronto, June 2007

2007 Decision and Risk Analysis Conference, Dallas, May 2007

CreditMinds 2007, Geneva, March 2007

INFORMS Annual Meeting, Pittsburgh, November 2006

Conference on Lévy Models in Credit, Edinburgh, September 2006

German Mathematical Society Conference, Bonn, September 2006

Quant Congress USA, New York, July 2006

Numerical Methods for Finance, Plenary Lecture, Dublin, June 2006

ICBI Global Derivatives Trading & Risk Management, Paris, May 2006

J.P. Morgan, New York, March 2006

Stanford-Tsukuba Workshop on Financial Engineering, Stanford, March 2006

Global Association of Risk Professionals, San Francisco, January 2006

Quantitative Methods in Finance, Plenary Lecture, Sydney, December 2005

University of Michigan, Ann Arbor, December 2005

Fields Institute for Research in Mathematical Sciences, Credit Risk Conference, London, Nov. 2005

INFORMS Annual Meeting, San Francisco, November 2005

J.P. Morgan Workshop on Credit Risk, New York, October 2005

Newton Institute, Developments in Quantitative Finance, Cambridge, February 2005

The Inaugural Fixed Income Conference, Prague, September 2004

Frontiers in Financial Mathematics, Summer School on Copulas, Bologna, September 2004

Bank of Italy, Ente Einaudi, Rome, September 2004

Daiwa International Workshop on Financial Engineering, Keynote Speaker, Tokyo, August 2004

Global Association of Risk Professionals, Credit Risk Summit, New York, June 2004

J.P. Morgan Chase, Global Derivatives Research Conference, West Point, May 2004

Mathematical Finance Seminar, North Carolina State University, Raleigh

ORFE Seminar, Princeton University, Princeton

Frontiers in Finance, Petits Déjeuners de la Finance, Paris, December 2003

Center for Applied Probability at Columbia University, 10th Workshop on Derivative Securities & Risk Management, New York, November 2003

Erasmus Center for Financial Research, 12th Symposium, Rotterdam, May 2003

BNP Paribas, Credit Derivatives Research, London, May 2003

J.P. Morgan Chase, Derivatives Research, New York, June 2003

UC Berkeley, Mathematics Colloquium, Berkeley, March 2003

Courant Institute, Mathematical Finance Seminar, New York, February 2003

Credit Risk Conference, Paris, February 2003

Mathematical Sciences Research Institute, Event Risk Workshop, New York, November 2002

RISK Credit Summit, London, October, 2001

RISK MathWeek, London and New York, November and December 2000

SELECTED CONFERENCE PRESENTATIONS

World Congress on Computational Finance: The First Decade, London, March 2007

Bachelier Finance Society, Third World Congress, Chicago, July 2004

HEC Montreal, Second International Conference on Credit Risk, April 2004

9th International Conference on Computing in Economics and Finance, Seattle, July 2003

German Finance Association, Annual Meeting, Cologne, October 2002

European Investment Review, Annual Conference, London, September 2002

Econometric Society, European Meeting, Venice, August 2002

European Finance Association, Annual Meeting, Berlin, August 2002

Russian Academy of Sciences, Risk in Complex Systems, St. Petersburg, July 2002

9th International Conference on Computational Finance, London, May 2002

HEC Montreal, First International Conference on Credit Risk, Montreal, April 2002

European Finance Association, Annual Meeting, London, August 2000

Global Association of Risk Professionals, Research Conference, London, June 2000

7th International Conference on Computational Finance, London, May 2000