

G E O F F R E Y R . H A R R I S

TECHNICAL SKILLS

- Derivatives Pricing and Risk Management, Credit Risk Modeling, Structured Products.
- Modeling using Monte Carlo simulations and Stochastic Differential Equations.
- Statistical Analysis of Numerical, Experimental and Financial Data.
- Strong Communication/Writing Skills.
- C, some C++, VBA, Windows, UNIX, Matlab, Visual Studio, familiar with Mathematica.

EDUCATION

University of Chicago, PhD. in Physics (Century Prize Fellowship).

University of Chicago, A.B. in Physics with Honors, satisfied requirements for a B.S. in Mathematics.

PROFESSIONAL EXPERIENCE

2006-present Assistant Professor, Stuart School of Business, Illinois Institute of Technology. (Adjunct Professor from August 2006-August 2007; Assistant Professor from August 2007 forward.)

- Teaching courses in Financial Modeling and Fixed Income Instruments, covering fixed income structuring, interest rate and credit modeling and numerical methods used in option pricing.
- Presented the credit risk component for a course in Risk Management as part of the Masters in Finance program at Universidad Icesi, Cali, Colombia.
- Engaged in research on credit risk modeling.
- Member of the Student Affairs Committee, Curriculum Committee, Stuart School of Business.
- Attended AFA Conference, January, 2008; recruited and interviewed prospective faculty.

2004-2007 JP Morgan, Chicago IL, Quantitative Research. Director/VP.

- Developed and implemented counterparty credit risk methodologies to support JP Morgan's derivative and credit portfolio management businesses.
 - Performed tactical analysis to assess credit risk and capital for large structured transactions. This work is needed to assist the bank in hedging credit risk, and to aid marketers and traders in pricing complex transactions.
 - Developed a simulation model of electricity, coal and emissions that will be used to price the credit risk of structured electricity and electricity/fuel derivatives. This model has been implemented, and will be used in production later in 2007.
 - Extended JP Morgan's 'relatedness' methodology (which quantifies the correlation between counterparty creditworthiness and market rates) to energy commodities. Developed methodologies to model relatedness to commodity spreads, and proposed enhancements to the methodology that determines the sensitivity of credit risk pricing adjustments to commodity volatilities.

- Tested and improved the simulation model for gas and oil used to evaluate credit exposure (coding in C++).
- Researched and developed fast analytic approximations for exotic commodity and fx derivatives (coding in C++); proposed a methodology for very fast analytic estimation of the exposure for portfolios of swaps (that could be applied to e-trading).
- Designed, coded (in VBA) and supported a 'Generic Derivative Tactical Exposure Tool' that is used by Credit Portfolio Management to evaluate exposure for new transaction types that are not handled by our derivative credit exposure systems.
- Developed a methodology for estimating exposure to life re-insurers, which incorporates measurement of risk due to extreme events (pandemics).
- Designed and pitched a research project (modeling commodity spreads) undertaken by financial engineering Master's students at Cornell University (spring 2006).
- Contributed to JP Morgan's recruitment process by creating and delivering recruiting presentations and interviewing candidates.
- Delivered a series of lectures to colleagues and authored a tutorial explaining the workings of JP Morgan's Proprietary Economic Capital Model.
- Supervised research within Risk Methodology on Loss Given Default (LGD). Supported and improved tools that estimate LGD for Asset-Based Lending, Dealer Commercial Services and Commercial Real Estate Lending.
- Performed an in-depth review of JP Morgan's model used for pricing and risk management of Callable Power Reverse Dual Swaps. The pricing methodology combines sophisticated models of stochastic interest rates and foreign exchange. Also reviewed models used to evaluate exotic equity derivatives.
- Produced an extensive survey and analysis of literature on illiquidity and its impact on pricing and hedging. The survey explained methodologies that could be applied to problems such as optimal liquidation of large blocks of securities and constructing appropriate hedging strategies for derivatives when there are restrictions on trading the underlying securities.

**2000-2004 Bank One, Chicago IL, Quantitative Enterprise Development Group.
VP/Director.**

- Head of the Counterparty Credit Risk Group, supervising 3 employees.
 - Developed counterparty credit risk methodologies for a variety of derivative products (credit, equity and commodity derivatives and asset-backed security swaps) and implemented (in C) counterparty credit exposure models.
 - Performed quick customized measurements of counterparty exposure for complex structured transactions. In some cases, provided advice on how one to structure these transactions to minimize credit risk to the bank.
 - Supported Bank One's large-scale Monte Carlo simulation of credit exposure.
 - Thoroughly vetted risk management systems sold by Algorithmics and Sungard.
 - Researched and analyzed hedge fund credit risk, analyzed statistical properties of hedge fund returns, and proposed a methodology for risk rating transactions with hedge funds. The hedge fund study singled out one fund that subsequently failed, spurring senior management to request that the bank adopt more quantitative techniques in managing its business with hedge funds.
- Credit migration and credit derivative modeling.
 - Researched credit models, including a stochastic model of credit migration. Analyzed the stability of numerical solutions of PDEs for contingent claims using this model. Coded (in C) and implemented a pricer for loan prepayment options.

- Performed modeling for valuation and exposure measurement of a complex CLO.
- Assessed behavior of Copula and Credit-Metrics style models in valuations of Nth-to-Default Swaps.
- Performed and supervised empirical studies on ratings transitions and their connection with equity behavior; applied this study to build a historical simulation (in C) to measure the credit risk of collateralized stock forwards with ratings triggers.
- Miscellaneous projects.
 - Wrote a series of extensive ‘white-papers’ on collateral, transfer pricing, hedge funds, credit derivatives, etc., that communicated technical ideas to a diverse non-technical audience (marketers, traders, credit officers and senior management).
 - Worked on optimization of risk/return for loan portfolios.
 - Built a valuation model of securitized 12b1 fees from Bank One’s mutual fund group. This work was used to argue (successfully) that the bank should retain the fees, rather than sell them to a third party.

1996-1999 Bank One/First Chicago NBD, Chicago IL, Market Risk Management Department. Assistant Vice President/Vice President.

- Validated and reviewed Bank One’s derivative pricing models (particularly focusing on the most complex model, used to price interest rate derivatives).
- Monitored integrity of Bank One’s trading businesses, issuing ‘Risk Assessment Memoranda’ exposing potential problems and proposing solutions.
- Taught ‘Quantitative Finance for Risk Managers,’ a yearlong course offered within the Market Risk department.
- Performed extensive work on counterparty credit exposure methodology and models.

1994-1996 University of Chicago, Postdoctoral Research Associate.

- Investigated critical phenomena in the dynamics of the early universe.

1995 University of Chicago, Teaching Fellow, ‘Physics for Poets.’

- Taught discussion sections, tutored.

1991-1994 Syracuse University, Postdoctoral Research Associate.

- Performed computer simulations of surfaces with random profiles, spin models and percolation, research in string theory.

1987-1991 University of Chicago, Research Assistant.

- Wrote thesis on string theory and quantum gravity.
- Developed statistical software that synthesizes data from various particle physics experiments.

PUBLICATIONS AND PRESENTATIONS

- Published twelve articles (in physics) in refereed journals (three of these are sole-author). These articles have received well over 100 citations.
- Delivered talks at two Risk conferences on derivative credit risk and economic capital, five talks at scientific (physics) conferences and seminars at eleven universities and research institutions. Contributed to seven conference proceedings.