

PROFILE

I have worked in investment banking for 15 years. I have performed a wide variety of functions, including trading a large equity options book, structuring and negotiating deals with clients and lawyers, developing and implementing equity and interest rate financial models used for front office trading and risk management, leading numerous significant software development projects, and managing a consortium of 7 large banks and dealers through launch of a new common internet application. This diversity in my experience demonstrates some of my key strengths: adaptability and problem solving. I have always prided myself on my ability to understand and master the complexities of disparate problems, and to solve them using innovative and imaginative solutions.

WORK EXPERIENCE

Vice President and Director, TD Securities, *July 2004-April 2007, June 2008-present.*

Global Equities Derivatives

- Chief architect for the Fundamental Pricing Framework underpinning the global equity derivatives business. FX business, and precious metals options business at TD. Responsibilities include ensuring integrity, stability, scalability, maintainability, and flexibility of our pricing framework. The framework is used: within Excel addins used by the trading desk; within the book-of-record booking and back-office system (Murex); and by risk management within a Riskwatch environment.
- Directed the coupling of this pricing framework into TD's book-of-record system Murex.
- Financial Engineer implementing and fine-tuning advanced equity derivative pricing models for front office trading and risk management. Models for both single stock and basket products included: variance swaps, cliquets, napolean, minimum absolute return, reverse swing, auto-cancellables, barrier options, digi-steppers, himalayan, and many, many more. Pricing models include analytic solutions, generalized PDE pricer, generalized Monte Carlo valuation framework for simple Black-Scholes process with varying underlying volatility assumptions, or generalized Heston process. All are implemented in a framework which plugs into front and back office systems and into trader spreadsheets.

Managing Director, Bear Stearns, *April 2007 - May 2008.*

F.A.S.T. Group, Emerging Markets & Credit Derivatives

- Worked on Lynx, which is an in-house developed front-to-back office system for derivatives. Lynx integrated derivatives pricing, risk management, trader book-running functionality, data-base booking (FO to BO), across equity, interest-rate, credit, FX and emerging markets derivatives. My work touched on most aspects of the system, but was primarily centred around the credit, FX and emerging markets businesses. Lynx uses Excel as a front-end interface, allowing exceptionally fast development of new product interfaces, but internally is written in C++ with extensive data-base linkage. Data base types dealt with include MySQL, Sybase, SQLite.

Parenting 101, 2002–2004. I took a 2 year sabbatical to spend time as primary care-giver for my family of 3 young boys and start a cottage rental business.

Associate Director, Scotia Capital, 1995–2002.

Bond Index and Equity Derivatives

- Was primary person responsible for Equity Derivatives Front Office Infrastructure, including systems, pricing models, and process design and implementation. Models implemented and used varied from simple forwards and options to Asian basket options with look-back features priced using Monte-Carlo models.
- Sole book-runner for Bond Index Derivatives Book — \$2 billion notional of index swaps generating \$2 million P&L annually. Responsibilities included pricing, funding, contract vetting, process design and implementation. I also built the systems infrastructure for much of this business.
- Primary book-runner for US Single Stock Business. Responsibilities included structuring, vetting contracts, co-ordinating execution, building infrastructure, designing and implementing process. The business included forwards, total return swaps, and stock monetization deals.
- Trader backup for Equity Derivatives Options Book. I have actively traded large US and Canadian equity options book.

Derivative Products/Analytics Group

- Financial Engineer implementing and fine-tuning models – both interest rate and equity models – for front office derivatives trading and pricing. Models included such simple things as interest rate swaps and equity options, to more the more complicated path-dependent interest rate models. All were implemented in C++ as part of a back-end library which was linked into various front-end interfaces such as Algorithmic's RiskWatch, ScotiaCapital's proprietary Java deal booking system, Applix and Excel addins, and other risk management systems.
- Designed and implemented Windows/Excel infrastructure for front office derivatives pricing used by Capital Markets Group in Toronto, London and NY. Excel addins utilized VBA to access a DLL library of core C++ pricing functions. Interest rate data obtained from a Unix infrastructure via Samba server.
- Sole person responsible for producing RiskScape for the Web, an interactive program with a Java front-end, and C++ back end, for stress testing large, complex derivative portfolios and displaying the results as 3–D landscapes.
- Front office business and technical liaison for production of ScotiaLive, flagship web site for corporate debt issuance. Responsibilities included ensuring all business, compliance and regulatory needs were satisfied.
- Managed CANissue, a consortium of 7 large Canadian banks and dealers, during the development and launch of new technology for our common Internet application used for corporate bond issuance.

Mathematics Research, 1994–1995. Natural Sciences and Engineering Research Council (N.S.E.R.C. Canada) Postdoctoral Fellow, McGill University, Montréal.

- Led professional seminar series.
- Gave talks in professional conferences at Yale University and DePaul University, Chicago.

Computer Consulting, *intermittent 1987–present*. Ran my own small corporation providing various forms of technical consulting and technical services, such as:

- Setup of business computer systems.
- Organizing and running courses to teach applications to business personnel.
- Statistical analysis of business data.

Mathematical Computing, 1985. Designed and implemented the differential forms package for the algebraic computing language Maple™.

Systems Design, 1981–1983. Bell Northern Research, Ottawa.

- Worked on design of the run-time architecture of a multi-tasking, multi-processor, 68000 based system.
- Wrote the code-generation stage for the compilers in this system.

EDUCATION

- **Ph.D.**, Mathematics, University of **Toronto**, 1993.
- **M.Sc.**, Mathematics, **Stanford** University, 1986.
- Honours **B. Mathematics**, Physics minor, University of **Waterloo**, Dean's Honour List, 1985.

AWARDS AND HONOURS

- **Stanford University Graduate Fellowship**, 1985. Awarded the second highest entrance scholarship (tuition and full support) in the mathematics department for the year I entered. (The 13 entering students came from 11 different countries throughout the world.)
- **Honorable Mention (37th)**, **William Lowell Putnam Competition**, 1983. Mathematics competition written by the best undergraduate mathematics students from most universities in North America and many better universities throughout the world.
- **N.S.E.R.C. Postdoctoral Fellowship**, 1993-1995. One of only two such fellowships awarded to mathematics Ph.D.'s at the University of Toronto in my graduating year.
- **University of Toronto Open Scholarship**, 1990. (Not taken.)
- **N.S.E.R.C. Postgraduate Scholarship**, 1986-1991.
- **Ontario Graduate Scholarship**, 1985. (Not taken).
- 1983–1985. 3 times N.S.E.R.C. Summer Research Fellow, University of Waterloo.
- **University of Waterloo Descartes Entrance Scholarship**, 1980-1982.
- High placement in many national and international mathematics competitions. Every year from grade 9 up to my 4th year in University, I placed in the top ten for my age in some national or international contest, some of which were written by invitation only.

PUBLISHED PAPERS

- “*Ergodic Averages for Weight Functions Moved by Non-Linear Transformations on \mathbb{R}^n* ”, Canadian Journal of Mathematics, Vol. **47** (4), 1995 pp. 852-876.