CLAUDIO ANTONINI, Ph.D.

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PROFILE

Over fifteen years of activity on buy/sell sides spanning valuation control, systems development, quantitative modeling & research, and project management. Worked in both FO and control functions in Equities, Fixed-Income, Credit, and Interest Rates Derivatives. Also experienced in regulatory compliance in the commercial (AML, fraud) and the defense (counter-proliferation) fields. (Details follow for commercial banking activities.)

- <u>Valuation Control</u> – Established valuation control methodologies and created pricing and risk management tools for global applications.
- <u>Systems Development</u> – Created firm-wide pricing and risk management systems for trading desks and MO. Applications were used in Equities, Fixed-Income, Credit, and Interest Rates Derivatives.
- <u>Modeling & Research</u> – Developed pricing and risk management tools for desks to implement trading strategies and advisory functions. Researched for and supported Equities, Treasuries', and Interest Rate desks.
- <u>Project Management</u> – Managed numerous projects for pricing and risk management with experienced teams.
- <u>Compliance</u> – Quantified data quality and completeness risks of newly created compliance group (AML, fraud).

Expertise in numerous software tools used in the financial industry – Matlab, R, SQL, etc. Established track record of leading research projects and innovative developments in the aerospace industry in prior career. Active member of various professional organizations in the financial community. Published articles consistently in conferences (see Appendix). MIT education, with graduate degrees in Nuclear Engineering and Applied Mathematics.

PROFESSIONAL EXPERIENCE

AlixPartners LLP- New York, NY   **2014 to Present**
Director
Risk Research
Developing methods to monitor and forecast financial stability and other macro-prudential indicators.

Deloitte - New York, NY   **2012 to 2013**
Senior Manager
Financial Advisory Service - Analytic and Forensic Technology Consulting
Introduced data mining procedures in banking engagements.
- Created the policies and procedures of a new compliance group in an international investment bank who oversaw the activities of other 30 compliance groups, distributed worldwide. Interacted with the group that analyzed data quality and completeness, and the AML activities. Heavy use of Actimize, Mantas, and SQL.
- Analyzed heat maps (for the group described above) showing the likelihood of failure and the consequences, for about 75 systems and applications used by the compliance system for regulatory purposes, and to detect fraud. Used k-means clustering to determine risk areas and to establish priorities for risk reduction.
- Developed a methodology to replicate an international AML index based on regressions and random forests, in R. The method will also be applied to forecast the defense budgets of 50 countries based on macroeconomics.
- Created a country-wide data gathering system to automatically access semi-structured Excel and Word files from remote servers, analyze tables, and extract key terms. The identified terms will be loaded in a database for further analysis and eminence, and interaction with CapitalIQ. Prototype developed in 3 months.
- Taught 4h course "R for Analytics" with case studies in credit scoring and fraud detection.
- Led international team of 6 managers and developers to deliver a visualization decision engine for payment fraud detection (SQL, VBA, Gephi, Tableau). The system was delivered in 2 months.

UBS Investment Bank – Stamford, CT   **2003 to 2012**
Director
Valuation Control
Methodologies & Model Validation Group – Valuation Control – Head of Americas – (2006-2012)
Estimated valuation uncertainty based on applying alternative plausible models to value portfolios.
- Validated models for the structured rates business: SABR, LMM, BGM, copula models.
- Performed periodic calibration review of models with market data. Engaged teams to understand and resolve valuation differences with the market.
- Proposed reserving methodologies for complex structured products.
- Designed methodologies for prudential valuations to calculate regulatory capital per Basel requirements.
- Managed team of 3-4 quants.

Structured Rates Valuation – Head of Americas
Responsible for establishing valuation control for structured and exotic derivatives for portfolios in excess of $200b.
- Key products covered: vanilla, spread options, Bermudans, CMS range accruals, digitals, barriers, etc.
- Designed and calibrated pricing & reserving strategies by using appropriate market data on large distributed system running on DataSynapse (Hadoop-like) over 3,000 computers.
- Responsible for periodically liaising with market data vendors to evaluate reliability of pricing information.
- Conducted month-end pricing reviews with desk, senior management, and risk control.
- Designed numerous pricing tools for global usage.
- Managed teams of 4 people.

Front Office IT Quant & Fixed-Income Researcher (2003-2006)
Credit Derivatives
Developed & validated CDS pricing, risk management, and reporting system. Used firm-wide.
- Developed a simplified model for credit default swap pricing.
- Developed database and pricing tools to accelerate and automate risk runs.

Researcher & Developer - Treasuries Desk
Quant trading systems researcher.
- Applied factor analysis techniques for hedging and to find profitable trading strategies. These strategies were later recommended to clients in weekly reports.

Analytics Developer & Researcher
Implemented methods for yield curve construction and PCA analysis, investment research, stress testing, and portfolio management. These systems expanded the desk's research and portfolio management capabilities.

VIKING ASSET MANAGEMENT LLC. – New York, NY   **09/2002 – 07/2003**
Consultant **- Strategies' Quantitative Modeler**
Designed, optimized and back-tested statistical arbitrage, pairs and basket trading strategies, on eMinis and equities.
- Applied modern portfolio theory (a-la Black-Litterman) to enable better portfolio asset allocation.
- Used C++, TradeStation, and Matlab to design the optimization routines.

TIMBER HILL LLC. – INTERACTIVE BROKERS – Greenwich, CT   **09/2001 – 09/2002**
Consultant **- Quantitative researcher**
Implemented a KMV corporate bond pricing model and the infrastructure to run it.
- The model was developed in an aggressive timeframe to beat JPM's Creditmetrics release.
- Researched and implemented derivatives (options and futures) pricing and VaR subsystems, pairs trading strategies, index and volatility (GARCH) forecasting.

PALOMA PARTNERS – Greenwich, CT   **06/2001 – 09/2001**
Assistant VP
Set up a new equity-based market-neutral statistical arbitrage trading system, based on sectors of the economy.

VALIDEA, INC., West Hartford, CT   **06/2000 –6/2001**
Full time (The company—a dot-com—closed in June 2001 and reopened in 2004.)
Director of Financial Research

Led the development of a Web-based product for performance attribution and ranking of financial analysts' recommendations.

- The product was very successful and became the largest source of revenues for this 50-person firm.
- Performed event studies, regressions and other econometric studies to determine the effect of buy/sell/hold recommendations on returns.
- Managed a group of 10 people, including academics, HTML prototypers, website (Java) and database (SQL) developers, network integrators, and marketers.

THE MAGNUS CORPORATION, CC, Johannesburg, South Africa   **1995 – 2000**
Founder & President
Provided quantitative analytics support to asset management firms.

- Produced optimized portfolios, attribution analysis, and other computational financial services to support trading, risk, and wealth management activities.
- Integrated all aspects from data capture (Bloomberg), calculations (portfolio optimization and VaR), and HTML automatic reporting in Matlab/Access/Excel/VBA.

BANK von ERNST & Co Ltd. (Zürich), based in South Africa   **1999-2000**
Agent-in-training
First agent of this prestigious private bank in South Africa. Along with the optimized portfolios (see above), offered the bank's products to South African HNWI. Training conducted in Zürich.

DENEL, PRETORIA, SOUTH AFRICA   **1988 – 1998**
Missile Designer and Project Manager – Counter-Proliferation Manager
Led engineering design teams to develop complex solutions for state-of-the-art unmanned weapon systems.

- Pioneered and established new areas and departments, bridging the gap between research and application.
- Managed several financially critical development projects, completed within deadlines and budget constraints.
- Liaised with the South African Council for Non-Proliferation of Weapons of Mass Destruction.
- Helped in the marketing of products for export and led teams on international client pitches and visits.
- Company increased revenue substantially and earned international recognition.
- Promoted, nominated for prizes, and appeared in (internal) defense press releases due to contributions in the field. Nominated to become spokesman for the defense industry (60,000 people) to Parliament.
- Managed and led teams of 6 to 15 people.

ACADEMIC EXPERIENCE
Taught course on "R for Analytics and Credit Scoring" at Deloitte University   **2013**
Professor of modern control theory and optimization.
      UNIVERSITIES OF PRETORIA AND STELLENBOSCH, SOUTH AFRICA   **1989 – 2000**
      BUENOS AIRES INSTITUTE OF TECHNOLOGY, ARGENTINA   **1982 – 1987**

SYSTEMS AND PROGRAMMING SKILLS
Programming: VB.NET, VBA, R, Matlab (and various toolboxes, including Stats/Financial/Compiler/Database), STATISTICA, Gephi, Fortran, Access, SAS (Stats, Base, EM), SQL, C/C++, Tableau, Eclipse, Oracle, Sybase, Perl, Korn shell scripting, Unix.
Languages: Spanish (speak/write/read flawlessly)

EDUCATION
Massachusetts Institute of Technology   **- MSc** and **Nuclear Engineer** in Nuclear Engineering
Buenos Aires Institute of Technology   **- PhD** in Applied Mathematics

Other Work Experience - Publications and Professional Associations

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UNITED NATIONS – New York, NY   **10/2005 to 2007**

GDP-Indexed Bond WG
Group leader and coordinator for pricing and optimization
This exclusive group was tasked to find structures of GDP-indexed bonds attractive to investors. The group consisted representatives of the UNDP, World Bank and IMF, government officials, the largest global investors in public debt, and academics. I was chosen to represent UBS. Introduced the capability to price the bonds and simulate their performance in a representative model of the economy. Calculated the probability of default for countries in emerging and developed markets. Made recommendations to the executive committee and published position paper.

Available publications:
- IMF meeting report: www.un.org/esa/ffd/business/msc/GDP-indexedbonds-DC-report.doc
- Presentation: www.forecasters.org/submissions08/ClaudioAntoniniISF2008.pdf

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REFEREED PUBLICATIONS and BOOK CHAPTERS

Over thirty-five technical papers on control and the use of simulation tools for forecasting and financial analysis. Selected publications are listed below.

- "Tracking and Predicting Financial Crises through Data Mining," International Symposium on Forecasting, Rotterdam, June 2014.
- "Forecasting Network Stability through Robust Variance Decomposition." New England Statistics Symposium, Harvard University, May 2014.
- "Extending and Forecasting Anti-Money Laundering Indices through Multiple Imputations," International Society of Forecasters, June 2013, at http://forecasters.org/wp/wp-content/uploads/ISF2013_Proceedings.pdf.
- "Limitations in the Forecasting of Isolated and Rare Events and Prediction of their Awareness," ISF 2012
- "The Use of the q-Gaussian as a Leading Indicator in Financial Applications," ISF 2011, at www.forecasters.org/submissions/Claudio_Antonini_ISF2011.pdf
- "q-Gaussians in Finance," ISF 2010, at forecasters.org/submissions10/CLAUDIOANTONINIISF2010.pdf
- "A Maximum Likelihood Estimator for the q-Gaussian Distribution and its Application to Financial Time Series," New England Statistics Symposium, Harvard University, 2010.
- "A General Optimization Procedure for Parameter Estimation," 20th International Symposium on Mathematical Programming, Chicago, Illinois, August 2009.
- "Statistical Modeling," Futures Research Methodology, v. 3, Millennium Project, ISBN-978-0-9818941-1-9, 2009
- "The Effects of Forecasting: The Determination of Coupon Rates for GDP-Linked Bonds," June 2008.
- "Beyond Equal Weights: Interplay between Portfolio Selection and Forecasting Techniques", 2005.

PROFESSIONAL MEMBERSHIPS

- International Society of Forecasters (session organizer and presenter)
- Mathematical Optimization Society
- Millennium Project – United Nations University
- SWIIS Technical Group – International Federation on Automatic Control (ex-Co-ViceChairman)