

Amine BADII (~ 15 Years' Experience)

Address: Flat 19, Mulberry Court 1 School Mews, E1 0EW

Phone : (+44) 7 440 240 344

Email : amine.badii@gmail.com

Front Office and Risk Models Quant

Quant Analyst Expert with an experience of almost 15 years and in-depth knowledge of Pricing and Risk Modelling within Investment Banks, respectively cross-asset pricing and trading, credit/counterparty and market risk modelling, developing quantitative pricing libraries, prototyping and designing risk engines relying on Monte Carlo simulations, building Regulatory IMM and IMA Frameworks and applications, Funding Risk, Capital Calculation, XVA, etc.

RELEVANT EXPERIENCE BRIEF SUMMARY

- Previous Role as an XVA Quant within **HSBC**, enhancing the XVA engine, redesigning the Interest rate modelling framework to accommodate the IBOR transition, including the multiple-curve building, dual-curve stripping and OIS/RFR discounting
- Previous role as a CCR Quant, supporting the **ECB (European Central Bank)** on site-inspection assessment methodology team, in the review of the overall bank's counterparty credit, XVA and Market risk models, by replicating a set of risk engine functionalities and implementing benchmarking tools for review and validation: focus on new developed models under CCR framework such as Wrong Way Risk modelling, trade and cash flow margin exchange within MPOR, dynamic initial margin and benchmarking against SIMM IM, Back testing Framework, stochastic volatility simulation,.
- Previous role finalising the roll out of full margining methodologies I did carry out throughout the model life cycle stages of every underpinning risk model and fully prototyped, for both Equity Clear and Repo Clear businesses of **LCH**. I had previously in the past the opportunity to work for LCH and provide significant contributions to the otherwise businesses: CDS, FX and Swap Clear. I covered therefore all the fund requirements for central counterparties.
- Previous role in **HSBC** is heavily involved in designing, implementing and automating the regular valuation exercise and stress tests methodologies for xVA amounts, including those that are reported under quarterly and annual Regulatory Stress Tests, conducted by the Bank of England/PRA, Federal Reserve Bank and EBA, and ensuring global consistency of the Fair Value methodologies, processes, governance and controls within the project and business teams such as Financial Markets Trading and Sales, liaising with IT developers, and reaching agreements with internal audit and model validation.
- Working on large scale projects first in the QA department of **Barclays** such as implementing the new 3 PCA IR modelling framework of the in-house CCR Engine in Python, the passage from VaR to ES in line with FRTB including Incremental risk charge and default risk charge, FO pricing models review, Before joining the independent Validation Unit (IVU), where I performed scoping work to test the robustness of model choices and assumptions, ensured the models are performing as expected, Performed 'tickbacks' against regulation (TRIM, CRR, SS), wrote responses to regulators' questions, and carried out further tests where necessary
- Quantitative Subject Matter Expert (SME) in **ENGIE** fully accountable of all xVA Engine frameworks, providing the regulatory teams and credit risk analysts teams with the relevant outputs such as EEPE, PFE, regulatory CVA capital charges, monitoring KPIs, etc., highlighting implementation errors and suggesting code fixes, liaising with Risk IT to implement fixes, Sensitivity testing to attribute changes in EE, PFE and EEPE, and validating the Counterparty Credit Risk models, covering calibration of risk factor projection models, building alternative projection models, assessing output exposure profiles are as expected, assessing backtesting methodology
- Quantitative Model Developer (**C/C++/C#, Python, R, VBA**) at **SOCIÉTÉ GÉNÉRALE, INVIVOO/NÉOMANTIS** (Hedge-Fund Trading Platform) and Actuarial Direction of **MUTUALITÉ FRANÇAISE**

KEY SKILLS

- Advanced Computational Finance and Risk Model development in **Python** under **PyCharm**, in **C++** under **Visual Studio 2017**, and Benchmarking/Prototyping in **R** under **RStudio**
- **Cross-Asset Classes** Trading and Pricing: Interest Rate/Inflation, Equity, FX, Credit
- **Counterparty Credit Risk Modelling**: Scenario Generation, Exposure Pricing/Computing for products across all asset classes, Computational Framework Implementation and Architecture Building, Risk Controlling/Pricing/Hedging, xVA computation
- **Market Risk Modelling**: FRTB, Risk Factors modelling, VaR/ES approaches and its different variants, Backtesting
- **Credit Risk Modelling**: Capital requirements under the internal Rating Based Approach (Foundation & Advanced), Building Rating models using PIT and TTC approaches, Methodological approaches for LGD estimates
- **Languages**: Native in Arabic and French, English (dual French-British citizen)

EXPERIENCE

HSBC London UK- Global Valuation Group XVA Analytics Quants, Senior Quant XVA and CCR, 30 March 2020 – To Present
GVG XVA Analytics Team aims to ensure that derivatives pricing is at market standards and compliant with regulatory rules, defines and enhances value adjustment methodologies, provides quantitative support to Front Office quantitative/XVA trading teams and works closely with Independent Model Review teams.

Main involvements & achievements:

- Review and analysis of XVA results across portfolios of the major bank's sites (London, New York, Paris, etc.)
- Performing in-depth analysis in CVA, Funding VA and other Valuation Adjustments stress results – leverage from portfolio/trade risks and identify/explain key impact drivers and risk concentration
- Collaboration and automation development on improvement of quality and efficiency of XVA processes including the performance of effective independent valuation control
- Developing and implementing new methodologies for xVA, Wrong Way Risk under stress tests, according to model governance standards, including independent model reviews
- Producing stress estimates of major Value Adjustments during regulatory stress testing exercises (FED, PRA, EBA, CCAR, ICAAP, etc.)
- Participating and adding value to machine learning projects/initiatives within the Quantitative Analytics group, and consistently looking for new and improved quantitative methods and their applications to Stress Testing, etc.

Environment: Advanced SQL, R/Python and C++ programming

ECB – European Central Bank, ECB Quantitative Inspector on Market Risk and Counterparty Credit Risk - 01 Sep 2019 – 31 Jan 2020
The ECB on-site inspection team is reviewing all the institution's market and counterparty credit risk models (All-CVA, All-IMM, IMA) for their IMM application

Main involvements:

- Building tools in Python for Critical review of the CCR pricing models framework:
 - Comparing the valuation techniques between the FO, Market risk (under FRTB Framework) and the IMM CCR, and assessing the differences in the modelling and their justifications
 - Critical review of the Market Risk models under FRTB IMA and SA (including SBM, DRC and NMRFs)
- Building tools in Python for Critical review of the CCR diffusion framework:
 - Challenging the hypotheses of the interest rate and inflation risk factor models: reviewing the three factor IR PCA model hypotheses, and inflation model
 - Raising findings on the calibration methodologies unstable for both Inflation and Interest rate model
 - Review of the gaussian copula model used for the IMM Risk Factor dependence
- Prototyping in MATLAB the collateral model framework: variation margin, initial margin and forward (dynamic) initial margin
 - Checking the conservativeness of the modelling of the margin and trade cash flows inside the Margin Period of Risk
 - Assessing the initial margin calculation at initial time against the ISDA SIMM, and the benchmarking adjustment to ISDA SIMM
 - Benchmarking and performing numerical & statistical tests (precision, convergence, etc.) on the reduction of number of scenarios used by the non-parametric regressor (Nadaraya-Watson) to forecast the forward initial margin

Environment: MATLAB (2019), Python (PyCharm)

LSE - LCH London Clearing House London UK, Quantitative Risk Modeler, 02 Jan 2019 – 01 Sep 2019
The Equity, Repo & CDS Clear Businesses and methodologies is to redesign its risk models and clearing platform and to validate the methodologies and the implemented framework for both existing products (Bond repos, equities, ETF, CFDs) and new products (mostly equity vanilla derivatives)

Main involvements:

- Review of the testing framework for the overall risk models through EquityClear, RepoClear and CDS Clear
- Redesign and implementation of a tactical solution fully replicating the risk and margining models (Initial Margin & Additional Margin) frameworks over EquityClear & RepoClear Businesses
- Assessment of the ongoing performance monitoring of the margin calculations and simulations
- Full Validation Workflow Management and Responding to BoE/PRA regulatory related queries

Environment: R under RStudio, SQL, Python under PyCharm

HSBC London UK- GRA Global Risk Analytics, Markets Model Quant, 02 April 2018 – 30 December 2018

The Markets Model Validation team is to validate the Markets models, assess their performance through key performance indicators, measure the impact on capital requirements and understand and manage the model risk within main Markets models: Market Risk, Counterparty Credit Risk, Margining, Stress testing, Economic Capital.

Main involvements:

- Full Completion of 5 collateral model validation according to the new QA(Quantitative Analytics) standards:
 - Collateral Risk: Collateral adjustments calculations through the CCR horizon
 - Variable MPoR (Margin Period of Risk) Assignment Algorithm
 - Strategic Lag Adjustment Calculation
- Initial Margin and Variation Margin in Collateral algorithm Simulation
- Review of the CCR VcV (Variance Covariance Matrix) calibration approach
- Full Review of the SA-CCR approach for the non-IMM scope, including:
 - Validation of the regulatory interpretation of the business rules
 - Validation of the methodologies and processes (such as Mapping, Proxying and Analysis), implied in data management and requirements for SA-CCR calculations
- Review of the regulatory requirement on FRTB SA and IMA methodologies, and IRC on Trading book credit products

Environment: R, SQL, Python, C++/C#

LSE- LCH Clearing House London UK, Quant Risk Analyst and developer, 02 Jan 2017- 01 Apr 2018

The Equity & Repo Clear Business and methodologies is to redesign its risk models and clearing platform and to validate the methodologies and the implemented framework for both existing products (Bond repos, equities, ETF) and new products (mostly equity vanilla derivatives)

Main involvements:

- Building up the whole prototype in R for the overall margining (Initial and Variation Margin) on Equities Scope, including the additional margins such as DFAM, STL, STLOIM, LCRM, CRIM, etc.
- Implementing the testing framework for the new Initial Margin Model based on ES and EWMA Scaling
- Implementing a portfolio based approach to design stressed scenarios on forward contracts and automating the implementation in R
- Reviewing the methodology of the LSE Derivatives Market: Delivering a full model documentation and enhancing the implementation of the prototype in Python

Environment: R, C++/C#, Python

Barclays London UK, IT FO Quant at QA Research Department, March 2015 -Jan 2017

The Quantitative Analytics risk projects team is in charge of modelling the methodologies relating to the new regulatory requirements by BCBS and Bank of England including their specification and execution (IMM, XVA, PRA Stress testing, FRTB)

Market Risk:

- Revising Internal Model Approach according to FRTB/ IRC
- Designing and developing prototypes & tools for research and in-depth investigation on the FRTB models, including Quantitative Impact Studies (QIS) and Portfolio Analysis & Benchmarking
- Leading the process end-to-end from the methodology implementation, analyses and to presenting the results to senior management and external regulators
- Implementing the rate FDSF Scenario Shocks to the whole scope of Rates Options and Rates Linear & Inflation on Full Revaluation Basis
- Analysing the impact of the PRA regulatory stress testing on the X-Value Adjustments (CVA, DVA, LVA, FVA, etc.)
- Review the Macro ROST (Rates Options Structured and Traded) Risk Metrics and the Libor Market Model Framework
- Duplicating and testing the Model pricing for Options on Interest Rate Futures
- Review the whole XVA framework and the CCR Framework, including back testing methodology for Representative Portfolios, Trade Selection Methodology and Metric Calibration

RWA Capital Requirements Calculation:

- Harmonizing the existing Current Exposure Methodology (CEM) through both Regulations PRA(UK) and FED (USA) and ensuring the passage to SA-CCR

Interest Rate Modelling Framework for the Counterparty Credit Risk Engine:

- Replacing the Hull & White Model by IR PCA 3 Factors in both simulation and pricing components of the CCR Engine and analyzing the impact on the IR and Non-IR derivatives

Environment: VaR, ES, Back testing, Eagle (Counterparty Credit Risk Engine), C/C++ under Microsoft Visual Studio

ENGIE (GDF SUEZ TRADING) France Paris – XVA Quantitative Developer, Jan 13 – March 15

As part of the Credit Risk Management on OTC Commodities Market Transactions, GDF Suez Trading rebuilds its credit risk computing system

Main achievements:

On the Economic CVaR Risk Indicator

- Implementing together with the risk methodology team of the CeresPlus pricer
- (Monte Carlo Pricer of CVAR Process) for linear products: financial and forward physical delivery (fixed price and indexed) financial swap (fixed or indexed price)
- Contribution to the reimplementation of the aggregation and diffusion process of the CVaR Calculation System
- Contribution to (or Involvement in) the implementation of a new contracts referential for improved handling/manipulation of the contracts characteristics (netting and collateralization) in the CVaR calculation System

On the Regulatory Requirements Calculation

- Adaptation of quantifying solvency capital requirements in compliance with Basel III external ratings,
- Implementation of the regulatory capital requirement of CVA under Basel III,
- Implementation of a new capital requirement for cleared exposures in compliance with EMIR regulation.

Environment: Meteor, DealCapture, Credit Risk Tools

SOCIÉTÉ GÉNÉRALE CIB (SGCIB) – Counterparty Credit Risk Quantitative Developer, Jul. 10 – Jan. 13

Credit risk calculation on all asset classes exotic derivatives, providing end-users with tools to follow up the counterparty risks on market operations for SocGen Group (from counterparty to trade level)

Main achievements:

- EEPE product extension: IMM Calculation of Repo on covered bonds, callable bonds and MBS, Inflation Swaps, Equity Swaps, etc
- Feeding the EMC Pricer (Engine Monte Carlo) with market data, characteristics of the deal, contract data netting / collateral
- Configuration and launching the simulation ASE (Algo Scenario Engine): definition of the diffusion process by setting calibrated trends, volatilities and correlations
- Validation of risks factors paths resulting from diffusion process by implementing a set of statistical tests
- Counterparty Risk Analysis through Stress-Testing and Sensitivities
- Validation of the pricing deals on the diffused trajectories across 50 time steps

Environment: Algorithmics (ASE, RiskWatch), Unix, Microsoft Visual Studio C++

INVIVOO/NEOMANTIS (HEDGE FUND) – IT QUANT ALGORITHMIC TRADING, March 2009– July 2010

Contribution to the development of the Algorithmic Trading Platform

Main achievements:

- Modeling and developing mathematical pricing and forecasting tools (Stochastic Methods, Non parametrical regression, Learning Algorithms)
- Estimation of Strategies Parameters, Back-testing and Calibration
- Support to Traders (Implementation of Trading Strategies and Indicators)
- Assessment and Monitoring of Risks
- Independent Reimplementation of calculus processes and models in C++, and their integration in the Trading Platform
- Developing in C# several components for the trading platform

Environment: C/C++/C#, R (Mathematical Modelling), VBA/RExcel

LA MUTUALITE FRANCAISE – Actuary /Modelling, Jan 2008 – March 2009

Actuarial Modelling -Internal Models in Solvency II-

Main achievements:

- Evaluating and Assessing the relative contribution of the main risk categories to the company's risk profile
- Evaluating the Capital Solvency Requirement (SCR) according to The Fourth Quantitative Impact Studies (QIS4)
- Conception of an Internal Model encompassing financial Market Risk (SCRmkt)
- Programming in VB/Excel Stochastic Models
- Actuarial Science Master's thesis on Solvency II

Environment: VBA/Excel, MATLAB

EDUCATION

MSc Actuarial Science “Financial Markets and Intermediaries” at TSE ‘Toulouse School of Economics, 2008-2009

Emphasis on Finance, Insurance and Modeling

MSc “Applied Mathematics” at University of Toulouse, 2007-2008

Emphasis on Statistics and Computer Science (Mathematical Modeling in C/C++)

ENSEEIHT, Toulouse (France) 2005-2007, Engineering School in Electrical Engineering, Electronics, Computer Science, Hydraulics and Telecommunications

Preparatory Classes for Engineering Schools MPSI/MP*- (Lycée Marcelin Berthelot) 2003-2005

Mathematics (Major), Physics and Computer Science (Minor)