

## PROFESSOR CAROL ALEXANDER

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Carol Alexander is an expert in crypto asset and derivatives markets, financial risk analysis, high-frequency data analysis, blockchains, pricing and hedging financial instruments, volatility analysis, investment strategies, benchmarking and portfolio management. She has had a dual career in both industry and as an academic and is currently Professor of Finance at the University of Sussex.

Throughout her corporate and academic careers Carol has designed and implemented mathematical models for pricing, trading, hedging and risk assessment for numerous asset management, exchange, banking and legal clients such as Credit Agricole Asset Management, New York Stock Exchange, Intercontinental Exchange and the FTX.US Exchange. Carol has held corporate roles as a Director and Head of Market Risk Modelling for Nikko Securities; as Academic Director of Algorithmics Inc., and Risk Research Advisor for SAS software. She also acts as a consulting expert witness.

Her classic series [Market Risk Analysis](#) (2009) contains four textbooks that, even fifteen years later, remain required reading for quantitative finance practitioners. First exemplified by her best-selling textbook *Market Models* (2001), her characteristic expository style has copious numerical examples and illustrations using Excel. Carol has edited many other books on risk management and financial fraud, notably both conceiving the syllabus for the exams and designing and editing the original [PRMIA Handbooks](#).

Carol is a member of the Advisory Board for the Fields Institute Centre for Financial Industries, the Louis Bachelier prize committee, the FT Wilshire digital assets advisory group and its taxonomy working group, and several other advisory boards in both academia and the finance industry. She appears regularly on television, radio, mainstream media and podcasts as an expert in the risks of trading in centralised and decentralised token markets, and other crypto- and blockchain- related current issues. She has a popular [YouTube channel](#), and numerous lecture notes on quantitative finance and risk with about 5,000 Excel sheets supporting the *Market Risk Analysis* series are free to download from the resources section of [www.coalexander.com](http://www.coalexander.com).

She holds a BSc in Mathematics with Experimental Psychology and a PhD in Algebraic Number Theory from the University of Sussex, and an MSc in Mathematical Economics and Econometrics from the London School of Economics and Political Science. Carol has non-profit chairman and non-executive experience from the Professional Risk Manager's International Association. Carol offers expertise and credibility as a NED specialising in Risk, Indexing and/or Digital Asset Markets.

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- Financial Risk Management
  - Cryptocurrency Markets
  - Model Validation and Design
  - Financial Market Infrastructure
  - Hedge Funds
  - Exchanges
  - Regulators
  - Blockchains and DTL
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## BOARD ROLES

2002 – 2012  
(PRMIA)

### PROFESSIONAL RISK MANAGER'S INTERNATIONAL ASSOCIATION

*Global non-profit organization based in Minnesota, US, founded to promote sound risk management standards globally and the integration of practice and theory. Governed by a Board of Directors elected by its global membership and represented globally by 45 chapters in major cities around the world*

2010 – 2012

**Non-executive Chairman**

2010 – 2011

**Executive Chairman**

2009 – 2012

**Non-executive Director**

Founding chair of academic advisory council; co-editor of the Professional Risk Manager's Handbook (3 volumes); Board member; Chair of Board

## INDUSTRY ROLES

2023

**Skadden, Arps, Slate, Meagher & Flom LLP (UK)**

*Global law firm*

**Expert Witness**

Consulting expert witness at European Court in Luxembourg

2022

**White and Case (Washington DC, US)**

*Global law firm*

**Expert Witness**

Consulting expert witness working directly with legal counsel on class action

2021

**FTX US**

*Global centralised crypto exchange*

**Margin model application to CFTC**

Multivariate margin model and counterparty risk management design and build, writing pseudocode and overseeing coding team, writing whitepaper and presentations

2021/2

**CryptoCompare (UK)**

*Global crypto asset data provider*

**Indexing model validation**

Validation of model design for new crypto asset price indices, based on data filtering. Working with in-house analysts and computer programmers

2020

**CryptoCompare (UK)**

*Global crypto asset data provider*

**BVIN Index**

Design and implementation of real-time bitcoin implied volatility index, writing whitepaper

- 2017 – now**                      **Fideres (UK)**  
*Financial markets malpractice and manipulation specialists*  
**Affiliated Academic Consultant**  
 Advice on financial market and securities litigation cases
- 2015 – 2016**                      **DTSL (UK)**  
*Systems integration solutions and services for custom applications*  
**Real options decisions**  
 Advice on design of decision theoretic framework for project management by the Ministry of Defence
- 2012 – 2014**                      **ICE Clear Europe LTD (UK)**  
*Derivatives clearing house for the Intercontinental Exchange (ICE)*  
**Model validation**  
 Validation of model design for new margin system, based on portfolio mapping and risk measurement principles. Working for CRO with in-house risk analysts and computer programmers to produce validated model
- 2012 – 2013**                      **Tindecó Financial Services AG (Switzerland)**  
*Integrated investment management platform provider for banks, family offices, asset, fund and wealth managers*  
**Value-at-risk model design**  
 Risk assessment model design, working with post-doctoral researcher funded by Tindecó and employed by University
- 2009 – 2010**                      **Credit Agricóle Asset Management (UK)**  
*Asset management side of commercial Bank*  
**Value-at-risk model design**  
 Advised Risk Committee on modification of in-house Value-at-Risk model for group asset management arm
- 2007 – 2008**                      **SAS Institute, Inc (UK)**  
*Global leader in innovative analytics, business intelligence and data management software and services*  
**Risk Research Advisor**  
 Worked with Head of Risk for SAS UK on development of models for operational risk assessment
- 2003 – 2006**                      **Richards Butler LLP (UK)**  
*Former UK law firm*  
**Expert Witness**  
 Consulting expert witness working directly with Richards Butler and legal counsel pension fund vs major asset manager (settled out of court)

- 2001 – 2007**      **NYSE AMEX Options LLC (US)**  
*Owns and operates an options trading platform*  
**High frequency pricing and hedging of active exchange traded funds**  
 Advised NYSE, working with programmers from Alpha Strategies, on my own design of two complex models (both patented)
- 1998**              **Nikko Securities Inc. (US)**  
*Based in New York, offers a range of integrated financial services and solutions for individual and corporate clients*  
**Director, Head of Market Risk Modelling, UK Office**  
 Headed a team of mathematicians and programmers in building models of my own design for index tracking
- 1997 – 1998**      **Robert Fleming Ltd. (UK)**  
*Former leading asset manager and merchant bank*  
**Orthogonal GARCH models**  
 Implementing these models, of my own design, which measure risk in a market-sensitive fashion, hence producing capital requirements that were less onerous during periods of stability. Model designs were given to in-house programmer, and results were reported to Head of Risk Management
- 1996 – 1998**      **Algorithmics Inc. (US)**  
*Former Toronto based tech firm providing risk management software to financial institutions. At peak had a presence in 25 countries, with clients including 25 of the world's largest banks and over two thirds of the CRO Forum of leading insurers*  
**Academic Director**  
 Hired by CEO and reported to Head of London Office. Undertook client training and built an international reputation for the firm through a variety of angles of academic credibility. Designed the signature 'Histo-Risk' software for risk-sensitive VaR modelling
- 1996 – 1997**      **EDF MAN (UK)**  
*Agricultural commodities merchant*  
**Spot-futures arbitrage models**  
 Advice on statistical models for arbitrage
- 1996**              **Royal Dutch Shell PLC (Netherlands)**  
*Global group of energy and petrochemical companies*  
**Internal value-at-risk model implementation, Shell Pension Fund**  
 Working with a senior risk analyst and a computer programmer to build first-generation VaR models. These models provide risk-sensitive measures for capital requirements which allow firms to make more efficient use of capital

1994 – 2003

**Pennoyer Capital Management (US)**

*Former New York based hedge fund*

**Hedge fund software design**

Model design for cointegration-based statistical arbitrage. Working with programmer to implement the mathematical models that I designed, reporting to hedge fund owner. This attracted private investors, seeking alpha, to invest their resources in Pennoyer

1992

**Equitable House Investments (UK)**

*Former proprietary trading firm in London*

**Volatility trading models**

Advised CEO on design and testing of models for swapping realised and implied volatility (an early form of variance swap)

1990 – 1991

**Hill Samuel Bank (UK)**

*Former leading British merchant bank*

**First generation GARCH models**

Six-month secondment from University of Sussex. Worked with programmers to implement the GARCH models that I designed which provide risk-sensitive measures for capital requirements which allow firms to make more efficient use of capital. Reported to Head of Risk

1982 – 1983

**UBS Phillips and Drew (UK)**

*London-based stockbroker*

**Bond Analyst**

Client investment advice and research on valuing index-linked bonds using inflation forecasts. Passed actuarial examinations in statistics in this role