

# CAROL OLIVIA ALEXANDER

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University of Sussex Business School  
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## EDUCATION

1976 B.Sc. (Sussex) in Mathematics with Experimental Psychology (First Class)  
1980 Ph.D. (Sussex) in Algebraic Number Theory (Supervised by Walter Ledermann)  
1985 M.Sc. (LSE) in Mathematical Economics and Econometrics

## APPOINTMENTS

1977 – 1978 Editor, John Wiley (one year interim PhD research)  
1981 – 1982 Postdoctoral Research Fellow, University of Amsterdam  
1982 – 1983 Bond Analyst, UBS Phillips and Drew, London  
1983 – 1985 Teaching and Research Assistant, London School of Economics (part-time)  
1985 – 1996 Lecturer in Mathematics and Economics, University of Sussex  
1996 – 1998 Lecturer in Mathematics, University of Sussex (part-time)  
1996 – 1998 Academic Director, Algorithmics Inc., London (part-time)  
1998 Director, Head of Market Risk Modelling, Nikko Securities, London  
1998 – 1999 Visiting Research Fellow, Oxford Centre for Industrial and Applied Mathematics  
1999 – 2012 Chair of Financial Risk Management, ICMA Centre, Henley Business School  
2012 – now Professor of Finance, University of Sussex  
2013 – 2014 Head of Business and Management (now University of Sussex Business School)  
2019 – now Visiting Professor, Peking University

## GRANTS

1981 Leverhulme Foundation Post-Doctoral Award  
1986 Nuffield Foundation Award for New Science Lecturers  
1994 ESRC: Chaos in Financial Markets  
2003 Foundation for Managed Derivatives Research  
2003 British Academy (with Simon Burke, Henley Business School)  
2005 Australian Prudential Regulatory Authority (with Elizabeth Sheedy, Macquarie)  
2008 Europlace Institute of Finance (with Steve Ohana, ESCP-EAP)  
2014 Global Risk Institute (with Andreas Kaeck)

## HONOURS, PATENTS and AWARDS

1996 Winner, First International Non-Linear Financial Forecasting Competition (with Ian Giblin)  
2002 Honorary Professorship, Academy of Economic Sciences, Bucharest  
2003 International Financial Risk Institute (IFRI), 9th Roundtable Award  
2007 Professional Risk Managers International Association (PRMIA)  
Higher Standard Award (with Robert Merton)  
2009 [U.S. Patent Number 7,571,130](#): Hedging exchange traded mutual funds or other portfolio basket products  
2010 University of Reading award for outstanding contributions to teaching and learning  
2011 [U.S. Patent Number 7,979,336](#): A system for pricing financial instruments

## EXTERNAL ACADEMIC ACTIVITIES

2002 – 2012	Chair of Academic Advisory Council, Chairman of Board PRMIA (details overleaf)
2003 – 2006	Expert Witness, Richards Butler, London
2007 – 2009	Editorial Board, Journal of Banking and Finance
2011 – 2013	Editorial Board, Journal of Investment Strategies
2007 – now	Editorial Board, Journal of Portfolio Management
2011	External Assessor, PhD Programme in Economics and Finance, St. Gallen University
2011 – 2013	Member of CFA Advisory Council
2013 – now	Co-Editor of Journal of Banking and Finance, Elsevier
2015 – now	Advisory Editor, Journal of Commodity Markets, Elsevier
2018	John von Neumann Chair in Mathematics, Technical University of Munich
2018	Visiting Professor, Department of Statistics, La Sapienza University

## Selected Invited Talks at Professional Conferences

2003	9th Annual Round Table of the International Financial Risk Institute (IFRI, London)
2003	1st International Congress on Financial and Derivatives Markets, (BM&F, Brazil)
2007	Risk and Return Russia, (Moscow)
2009/8/7	Quant Congress Europe (London)
2009	Quant Congress USA (New York)
2010	FOW Derivatives World (London), Post-Crisis Risk Measurement (CFA UK)
2010	Changing Risk Landscape, Financial Times (London)
2011	Model Risk Validation (Paris)
2010/11/12	PRMIA webinars (Global)
2012	PRMIA 10th Anniversary Global Risk Conference (New York)
2012	Royal Institution (London), 14-10 Club for Quant Finance Professionals
2016	KPMG Chair, Frankfurt
2019	QuantMinds International, Hamburg
2019	Cryptocompare Digital Asset Summit, London
2020	QuantMinds International, Virtual
2020	Cryptocompare Digital Asset Summit, London
2020	Westminster Business Forum Policy Conference: Fintech in the UK
2020	Quant Insights, Virtual

## Selected Plenary or Keynote Talks at Academic Conferences

2003	New Directions in Risk Management, Frankfurt
2004	German Finance Association 9th Annual Congress, Augsburg
2004	Campus for Finance, Germany
2005	Quantitative Methods in Finance Conference, Sydney
2008	Third Annual Mathematics in Finance International Conference, Kruger, South Africa
2010	HVB-Institute for Mathematical Finance, Munich
2011	Campus for Finance, Germany
2012	Ninth Applied Financial Economics Conference, Greece
2013	Fields Institute, Toronto, Canada
2017	Fourth Conference on Non-linear Dynamics and Financial Markets, Paris
2018	Fifth International Symposium in Computational Economics and Finance
2018	EURO2018: 29th Annual European Conference of Operational Research Societies
2021	Sustainable Finance Conference, Birmingham University (Virtual)
2021	Financial Economics Meeting: Post-Crisis Challenges, Paris (France)
2022	International Conference on Computational Finance, Wuppertal, Germany

## Selected Refereeing

Journal of Banking and Finance, Financial Analysts Journal, Finance and Stochastics, Quantitative Finance, Journal of Portfolio Management, Journal Futures Markets, Journal Economic Dynamics and Control, Journal Applied Econometrics, Journal Financial Econometrics, Journal of Business Finance and Accounting, International Journal of Theoretical and Applied Finance, European Financial Management, Annals of Econometrics, Applied Mathematical Finance, Journal of Alternative Investments, Applied Financial Economics, European Journal of Finance, Finance Letters, European Journal of Operational Research, Review of Finance, Review of Financial Studies

## PhD Examining

2008	External Examiner	Imperial College Student of Mark Davis
2009	External Examiner	University Paris-Dauphine Student of Helyette German
2015	External Examiner	University of Cambridge Student of Andrew Harvey
2021	External Examiner	University of Oxford Student of Rama Cont

## INDUSTRY LINKS

### Consultancy

1990 – 1991	First Generation GARCH Models, Hill Samuel Bank, London
1992	Volatility Trading Models, Equitable House Investments, London
1994 – 2003	Hedge Fund Strategy Design, Pennoyer Capital Management, New York
1996 – 1997	Spot-Futures Arbitrage Models, ED&F Man, London
1996	Internal Value-at-Risk Model Design, Shell Pension Fund, Netherlands
1997 – 1998	Orthogonal GARCH Models, Robert Fleming, London
2001 – 2007	High Frequency Pricing and Hedging for Active ETFs, NYSE/AMEX, New York
2007 – 2008	Risk Research Advisor, SAS International
2009 – 2010	Value-at-Risk Model Design, Credit Agricole Asset Management, London
2012 – 2013	Fund Strategy Design, Tindoco Asset Management, Zurich
2012 – 2014	Margin Model Validation, ICE Clear Europe
2015 – 2016	Real Options Decisions, Defence Science and Technology Laboratory
2017 – now	Affiliated Academic Consultant, Fideres
2019	Benchmarking Bitcoin Futures, Chicago Mercantile Exchange
2019	Development of CryptoAsset Reference Rates, Kaiko, Paris
2019	Crypto Risk and Portfolio Advisory, Coinstrats, London
2020	Development of Bitcoin Implied Volatility Index, CryptoCompare, London

### Professional Risk Manager's International Association (PRMIA)

2002 – 2009	Founding Chair of the Academic Advisory Council
2003 – 2004	Co-Edited Professional Risk Manager's Handbook (3 volumes, with E. Sheedy, Macquarie)
2007	Recipient of Higher Standard Award (with Robert Merton)
2009 – 2012	Board Member
2010 – 2012	Chair of Board
2011 – 2012	Founding Editor of <a href="#">Intelligent Risk</a>

## TEACHING

**1985 – 1998**

Econometrics, PG  
Mathematics for Economists, 2yr UG  
Mathematics for Biologists, 1yr UG  
Group Theory, 2yr UG  
Linear Algebra, 1yr UG  
Microeconomics, 2yr UG  
Macroeconomics, 2yr UG  
Statistics, 2yr UG  
Game Theory, PG

**University of Sussex**

Economics  
Economics  
Mathematics  
Mathematics  
Mathematics  
Economics  
Economics  
Mathematics  
Mathematics

**2000 -2012**

Market Risk, PG  
Volatility Analysis, PG  
Quantitative Methods for Finance, PG

**University of Reading**

ICMA Centre  
ICMA Centre  
ICMA Centre

**2012 – 2018**

Topics in Finance, PG  
Hot Topics in Finance, MBA  
Essential Quantitative Finance, PG  
Advanced Quantitative Finance, PG  
Financial Risk Management, UG  
Blockchains and Crypto Assets, UG & PG

**University of Sussex**

Mathematics  
Business School  
Business School  
Business School  
Business School  
Business School

**2018**

Advanced Volatility Analysis, PG

**TU Munich**

**2019**

Financial Risk Management, PG

**Peking University  
HSBC Business School**

**2018 – now**

Financial Risk Management, UG  
Blockchains and Crypto Assets, UG & PG

**University of Sussex**

Business School  
Business School

## INTERNAL ADMINISTRATION

**1985 – 1999** **Convenor of BSc/BA Degrees**

Joint Degrees in Mathematics and Economics

**University of Sussex**

**2005 – 2012** **Convenor of MSc Degrees**

MSc Financial Risk Management, MSc Financial Engineering

**ICMA Centre**

**2005 – 2011** **Postgraduate Exchange**

Supervising Finance and Information Management MSc Students

**ICMA Centre-TU Munich**

**2000 – 2012** **Director of Research, Director of Enterprise** **ICMA Centre**

Established ICMA Centre research reputation, development of industry links

**2013 – 2014** **Head of Business and Management**

Managed development, expansion and transition to UoS Business School  
Jan 2013 to Dec 2014 – period of great change and rapid growth

**University of Sussex**

## PhD SUPERVISION

2004	Ali Bora Yigitbasioglu	Defaultable Convertible Bonds with Volatility Uncertainty and Call Notice Periods <i>Head of FX Total Return and Fixed Income, Pictet Asset Management, London</i>
2004	Anca Dimitriu	Portfolio Optimization Models for Traditional and Alternative Investments <i>Partner, Albourne Partners, London</i>
2005	Dmitri Lvov	Pricing Convertible Bonds and Bermudan Swaptions by Monte Carlo Simulation <i>Executive Director, Commodities Quant Research, JP Morgan, London</i>
2006	Leonardo Nogueira	Pricing and Hedging Options with Local and Stochastic Volatility Models <i>Head of the Deputy Governor's Office for Monetary Policy, Brazilian Central Bank</i>
2006	Emese Lazar	Multi-State Volatility Models: Theory and Applications <i>Associate Professor in Finance, ICMA Centre, Henley Business School at Reading</i>
2007	Andreza Barbosa	Pricing and Hedging Exchange Traded Funds <i>Executive Director, Model Risk Management, Goldman Sachs, London.</i>
2008	Naoufel El Bachir	Stochastic Default Intensity Modeling with Dependent Jump Processes <i>Executive Director - XVA Lead Quantitative Analyst at CIBC Capital Markets, London</i>
2008	Aanand Venkatrammanan	Multi-Asset Option Pricing <i>Vice President, ETF Investment Strategies at Legal &amp; General Investment Management, London</i>
2010	Joydeep Lahiri	Jump Diffusions for Modelling Default Intensity <i>Quantitative Risk Manager and Vice President at Swiss Re London</i>
2010	Stamatis Leontsinis	Model-Free Moment Indices <i>Research Director, Quantitative Derivative Strategies, CdR Capital Ltd, London.</i>
2010	Silvia Stanescu	Analytic Moments for GARCH Processes <i>Quantitative Analyst, Cantab Capital Partners</i>
2010	Andreas Kaeck	Equity Index and Index Derivative Dynamics <i>Professor of Finance, University of Sussex</i>
2010	Daniel Ledermann	Random Orthogonal Matrix Simulation <i>Senior Quantitative Analyst, HSBC, London</i>
2012	Dimitris Korovilas	Trading Volatility <i>Structurer, Citi, London</i>
2013	Julia Kapraun	Volatility Investments <i>Assistant Professor, Goethe University, Germany</i>
2014	Anannit Sumawong	Trading and Hedging Energy Futures <i>Senior Associate, PWC, London.</i>
2014	Xi Chen	Real Options and Decisions in Corporate Finance <i>Lecturer, University of Sussex</i>
2015	Johannes Rauch	Higher Moment Risk Premia and Discretization Invariance <i>Consultant, Oliver Wyman, London</i>
2019	Yang Han	New Methods for Multivariate Distribution Forecasting <i>Consultant, McKinzie and Company, Munich</i>
2020 (Exp)	Michael Dakos	Crypto Asset Markets <i>University of Sussex</i>
2021 (Exp)	Wei Wei	Random Orthogonal Matrix Simulation <i>University of Sussex</i>
2022 (Exp)	Daniel Heck	Crypto Asset Derivatives Pricing <i>University of Sussex</i>
2022 (Exp)	Arben Imeraj	Crypto Asset Derivatives Markets <i>University of Sussex</i>

## INTERNATIONAL UNIVERSITY LINKS

### **2005 – 2019 MSc Student Exchange**

**TU Munich**

Supervision of dissertations and research papers for MSc students

Collaboration with Professor Rudi Zagst, Chair of Mathematical Finance, TU Munich

### **2010 – 2011 Academic Visitor**

**University of Cantabria, Spain**

Research collaboration with Jose Maria Sarabia, Professor of Statistics, Department of Economics

### **2011 External Assessor**

**St. Gallen University, Switzerland**

Finance assessor for teaching quality on Ph.D. Program in Economics and Finance

– with Bo Honore (Economics) and Yacine Ait-Sahalia (Econometrics)

### **2012**

**Trondheim University, Norway**

Norwegian National PhD Student Summer School in Quantitative Finance Research

Collaboration with Prof. Sjur Westgaard, Norwegian University for Science and Technology

### **2016 KPMG Chair**

**Frankfurt & TU Munich**

Research at the Chair of Mathematical Finance at TU Munich

### **2018 John von Neumann Chair of Mathematics TU Munich**

Teaching and research at the Chair of Mathematical Finance at TU Munich

### **2018 Visiting Professor**

**La Sapienza University, Rome**

Research with Prof. Rita D'Ecclesia

### **2019 – now Visiting Professor**

**Peking University**

Developing research with faculty in the Peking University HSBC Business School in Shenzhen and Oxford

## WEB STATISTICS

### **SSRN**

Rank ~ 300 of 50,000 authors by Downloads

[SSRN Author Page](#)

### **Google Scholar**

Almost 10,000 Citations, h-index 45

## PERSONAL INTERESTS

Bridge, Cycling, Fitness Training, Mountain Hiking, Organic Gardening, Sea Swimming, Skiing

## PUBLICATIONS

### Papers in Advanced Stages of Preparation

1. Alexander, C. and J. Rauch. Regime-Switching Determinants of Higher-Moment Equity Risk Premia.
2. Alexander, C. and M. Dakos. The Changing Face of Initial Coin Offerings.
3. Alexander, C., Alexandre, H and M. Conelli. The Hazards of P2P Securitizations

### Papers under Review

4. Alexander, C., Meng, X., Coulon, M. and Y. Han. Evaluating the Discrimination Ability of Proper Multivariate Scoring Rules
5. Alexander, C., Deng, J. and Zou, B. Optimal Hedging with Margin Constraints and Default Aversion and its Application to Bitcoin Perpetual Futures.
6. Alexander, C., X. Meng, and Y. Han. Static and Dynamic Models for Multivariate Distribution Forecasts: Proper Scoring Rule Tests of Factor-Quantile vs. Multivariate GARCH
7. Alexander, C., Meng, X. and W. Wei. Extensions of ROM Simulation with Exact Kollo Skewness. 2nd Round.

### Forthcoming Journal Articles

8. Alexander C. and X. Chen (2019) Model Risk in Real Option Valuation *Annals of Operations Research*, Published online in 2019, <https://doi.org/10.1007/s10479-019-03273-4>.
9. Alexander, C. and A. Imeraj (2020) The Crypto Investor Fear Gauge and the Bitcoin Variance Risk Premium. *Journal of Alternative Investments*, Published online in 2020, <https://doi.org/10.3905/jai.2020.1.112>

### Published Academic Journal Articles

10. Alexander, C. and J. Rauch (2021) A General Property for Time Aggregation. *European Journal of Operational Research*, 291(2), 536-548
11. Alexander, C. and E. Lazar (2021) The Continuous Limit of Weak GARCH. *Econometric Reviews* 40(2), 197-216
12. Alexander, C., Lazar, E. and S. Stanescu (2021) Analytic Moments for GARCH Processes. *International Journal of Forecasting* 37(1), 105-124
13. Alexander, C. and D. Heck (2020) Price Discovery in Bitcoin: The Impact of Unregulated Markets. *Journal of Financial Stability* 50, 1-18.
14. Alexander, C., Choi, J., Massie, H. and S. Sohn (2020) Price Discovery and Microstructure in Ether Spot and Derivatives Markets. *International Review of Financial Analysis*, 71
15. Alexander C., Choi, J., Park, H., and S. Sohn (2019) BitMEX Bitcoin Derivatives: Price Discovery, Informational Efficiency and Hedging Effectiveness. *Journal of Futures Markets*, 40(1) 23-43
16. Alexander C. and M. Dakos (2019) A Critical Investigation of Cryptocurrency Data and Analysis *Quantitative Finance*, 20(2), 173-188
17. Alexander C., Kaeck, A. and Sumawong, A. (2019) A Parsimonious Parametric Model for Generating Margin Requirements for Futures *European Journal of Operational Research*, 273(1), 31-43
18. Leontsinis, S., and C. Alexander (2017) Arithmetic Variance Swaps *Quantitative Finance*, 17(4), 551-569.

19. Alexander, C., Korovilas, D. and J. Kapraun (2016) Diversification with Volatility Products *Journal of International Money and Finance*, 65, 213-235
20. Alexander, C., J. Kapraun and Korovilas, D. (2015) Trading and Investing in Volatility Products *Financial Markets, Institutions and Instruments*, 24(4), 313-347
21. Alexander, C., Lazar, E. and S. Stanescu (2013) Forecasting VaR using Analytic Higher Moments for GARCH Processes *International Review of Financial Analysis* 30, 36-45
22. Kaeck, A. and C. Alexander (2013) Stochastic Volatility Jump-Diffusions for European Equity Index Dynamics. *European Financial Management* 19(3), 470-496
23. Alexander, C. and D. Korovilas (2013) Volatility Exchange-Traded Notes: Curse or Cure? *Journal of Alternative Investments* 15(2), 52-70
24. Kaeck, A. and C. Alexander (2013) Continuous-time VIX Dynamics: On the Role of Stochastic Volatility of Volatility. *International Review of Financial Analysis* 28, 45-46
25. Alexander, C., Propoczuk, M. and A. Sumawong (2013) The (De)merits of Minimum-Variance Hedging: Application to the Crack Spread. *Energy Economics* 36, 698-707
26. Ledermann, D. and C. Alexander (2012) Further Properties of Random Orthogonal Matrix Simulation. *Mathematics and Computers in Simulation* 83, 56-79
27. Kaeck, A. and C. Alexander (2012) Volatility Dynamics for the S&P 500: Further Evidence from Non-affine, Multi-factor Jump Diffusions. *Journal of Banking and Finance* 36(11), 3110-3121
28. Alexander, C. and J-M. Sarabia (2012) Quantile Uncertainty and Value-at-Risk. *Risk Analysis: An International Journal* 32(8), 1293-1308
29. Alexander, C., Cordeiro, G., Ortega, E. and J-M. Sarabia (2012) Generalized Beta-Generated Distributions. *Computational Statistics and Data Analysis* 56(6), 1880-1897
30. Alexander, C. and A. Venkatramanan (2012) Analytic Approximations for Multi-Asset Option Pricing. *Mathematical Finance* 22(4), 667-689
31. Alexander, C. and A. Kaeck (2012) Does Model Fit Matter for Hedging? Evidence from FTSE 100 Options. *Journal of Futures Markets* 32(7), 609-638
32. Alexander, C., A. Rubinov, M. Kalepky and S. Leontsinis (2012) Regime-Dependent Smile-Adjusted Delta Hedging. *Journal of Futures Markets*. 32(3), 202-229
33. Venkatramanan, A. and C. Alexander (2011) Closed-form Approximations for Spread Options. *Applied Mathematical Finance*. 18(5), 447-472
34. Ledermann, W., Alexander, C. and D. Ledermann (2011) Random Orthogonal Matrix Simulation. *Linear Algebra and its Applications*, 434, 1444-1467
35. Alexander, C. and E. Lazar (2009) Modelling Regime-Specific Stock Price Volatility. *Oxford Bulletin of Economics and Statistics*, 71:6, 761 - 797
36. Alexander, C., A. Kaeck and L. Nogueira (2009) Model Risk Adjusted Hedge Ratios. *Journal of Futures Markets*, 29:11, 1021-1045
37. Alexander, C. and E. Sheedy (2008) Developing a Stress Testing Framework based on Market Risk Models. *Journal of Banking and Finance*, 32:10, 2220-2236
38. Alexander, C. and A. Kaeck (2008) Regime-Dependent Determinants of Credit Default Swap Spreads. *Journal of Banking and Finance*, 32:6, 1008 - 1021.
39. Alexander, C. and A. Barbosa (2008) Hedging Exchange Traded Funds. *Journal of Banking and Finance*, 32:2, 326-337
40. Alexander, C. and L. Nogueira (2007) Model-Free Price Hedge Ratios for Homogeneous Claims on Tradable Assets. *Quantitative Finance*, 7:5, 473 - 479



41. Alexander, C. and A. Barbosa (2007) Effectiveness of Minimum-Variance Hedging. *Journal of Portfolio Management*, 33:2, 46 - 59
42. Alexander, C. and L. Nogueira (2007) Model-Free Hedge Ratios and Scale-Invariant Models. *Journal of Banking and Finance*, 31:6, 1839-1861
43. Yigitsbasioglu, A. and C. Alexander (2006) Pricing and Hedging Convertible Bonds: Delayed Calls and Uncertain Volatility. *International Journal of Theoretical and Applied Finance*, 9:2, 415-437
44. Alexander, C. and E. Lazar (2006) Normal Mixture GARCH: Applications to Foreign Exchange Markets. *Journal of Applied Econometrics*, 21:2 307-336
45. Alexander, C. and A. Dimitriu (2005) Rank Alpha Funds of Hedge Funds. *Journal of Alternative Investments*, 8:2, 48-61
46. Alexander, C. and A. Dimitriu (2005) Detecting Switching Strategies in Equity Hedge Fund Returns. *Journal of Alternative Investments*, 8:1, 7-13
47. Alexander, C. (2005) The Present and Future of Risk Management. *Journal of Financial Econometrics*, 3:1, 3-25
48. Alexander, C. and A. Barbosa (2005) The Spider in the Hedge. *Review of Futures Markets*, 11:1, 89-113
49. Alexander, C. and A. Dimitriu (2005) Indexing and Statistical Arbitrage: Tracking Error or Cointegration? *Journal of Portfolio Management*, 31:2, 50-63
50. Alexander, C. and A. Dimitriu (2005) Indexing, Cointegration and Equity Market Regimes. *International Journal of Finance and Economics*, 10, 213-231
51. Alexander, C. and A. Scourse (2004) Bivariate Normal Mixture Spread Option Valuation. *Quantitative Finance*, 4:6 1-12
52. Alexander, C. (2004) Normal Mixture Diffusion with Uncertain Volatility: Modelling Short- and Long-Term Smile Effects. *Journal of Banking and Finance*, 28:12, 2957-2980
53. Alexander, C. and A. Dimitriu (2004) Sources of Out-Performance in Equity Markets: Common Trends, Mean Reversion and Herding. *Journal of Portfolio Management*, 30:4, 170-185
54. Alexander, C. and A. Dimitriu (2004) Equity Indexing: Optimising Passive Investments. *Quantitative Finance*, 4:3 C30 - C33
55. Alexander, C. (2002) Principal Component Models for Generating Large Covariance Matrices. *Review of Banking, Finance and Monetary Economics, Economic Notes*, 31:2, 337-359
56. Alexander, C., I. Giblin and W. Weddington (2002) Cointegration and Asset Allocation: A New Active Hedge Fund Strategy. *Research in International Business and Finance*, 16, 65-90
57. Alexander, C. (2000) Measuring Operational Risks with Bayesian Belief Networks. *Derivatives, Use Trading and Regulation*. 6:2, 166-196
58. Alexander, C. (1999) Optimal Hedging using Cointegration. *Philosophical Transactions of the Royal Society Series A*, 357, 2039-2058
59. Alexander, C. and C. Leigh (1997) On the Covariance Matrices used in Value-at-Risk Models. *Journal of Derivatives*, 4:3 50-62
60. Alexander, C. and I. Giblin (1996) Multivariate Embedding Methods: Forecasting High-Frequency Data in the First International Non-Linear Financial Forecasting Competition. *Journal of Computational Intelligence in Finance*, 5:6, 17-24

61. Alexander, C. and W. Ledermann (1996) Are Nash Bargaining Wage Agreements Unique? An Investigation into Bargaining Sets for Firm/Union Negotiations. *Oxford Economic Papers*, 48:2, 1-11
62. Alexander, C. and J. Wyeth (1996) Causality Testing in Models of Spatial Market Integration. *Journal of Development Studies*, 32:1, 144-146
63. Alexander, C. (1996) Evaluating the Use of RiskMetrics as a Risk Measurement Tool. *Derivatives: Use Trading and Regulation*, 2:3, 277-285
64. Alexander, C. and H. Rendall (1995) Data Generation Processes of Spatial Series: Analysis of Ephemeral Channel Form. *Geographical Analysis*, 27:1, 78-93
65. Alexander, C. (1995) Common Volatility in the Foreign Exchange Market. *Applied Financial Economics*, 5:1, 1-10.
66. Alexander, C. and J. Wyeth (1994) Cointegration and Market Integration: an Application to the Indonesian Rice Market. *Journal of Development Studies*, 30:2, 303-308
67. Alexander, C. and M. Barrow (1994) Seasonality and Cointegration of Regional House Prices in the UK. *Urban Studies*, 31:10, 1667-1689
68. Alexander, C. and W. Ledermann (1994) The Constrained Nash Bargaining Solution. *Journal of the Operational Research Society*, 45:5, 954-958
69. Alexander, C. (1993) The Changing Relationship between Productivity, Wages and Unemployment in the U.K. *Oxford Bulletin of Economics and Statistics*, 55:1, 87-102
70. Alexander, C. and A. Johnson (1992) Are Foreign Exchange Markets Really Efficient? *Economics Letters*, 40, 449-453
71. Alexander, C., I. Giblin and D. Newton (1992) The Symmetry of Fractals. *Mathematical Intelligencer*, 14:2, 32-34
72. Alexander, C. (1992) The Kalai-Smorodinsky Bargaining Solution in Wage Negotiations. *Journal of the Operational Research Society*, 43:8, 779-786
73. Alexander, C. (1988) On a Converse to the Tschebotarev Density Theorem. *Journal of the Australian Mathematical Society Series A*, 44, 287-293
74. Alexander, C. (1987) Duality in Non-Normal Quartic Number Fields. *American Mathematical Monthly*, 94, 279-284
75. Alexander, C. and W. Ledermann (1985) Integral Bases of Dihedral Number Fields. *Journal of the Australian Mathematical Society Series A*, 38, 351-371

#### **Authored Books**

76. Alexander, C. (2008) *Market Risk Analysis, Volume I: Quantitative Methods in Finance*. Wiley
77. Alexander, C. (2008) *Market Risk Analysis, Volume II: Practical Financial Econometrics*. Wiley
78. Alexander, C. (2008) *Market Risk Analysis, Volume III: Pricing, Hedging and Trading Financial Instruments*. Wiley
79. Alexander, C. (2008) *Market Risk Analysis, Volume IV: Value at Risk Models*. Wiley
80. Alexander, C. (2001) *Market Models: A Guide to Financial Data Analysis*. Wiley

## Edited Books

81. Alexander, C. and D. Cumming eds. (2020) Corruption and Fraud in Financial Markets: Malpractice, Manipulation and Misconduct. Wiley
82. Alexander, C. and E. Sheedy eds. (2008) The Professional Risk Manager's Guide to Finance Theory and Application. McGraw-Hill
83. Alexander, C. and E. Sheedy eds. (2008) The Professional Risk Manager's Guide to Financial Markets. McGraw-Hill
84. Alexander, C. and E. Sheedy eds. (2008) The Professional Risk Manager's Guide to Financial Instruments. McGraw-Hill
85. Alexander, C. and E. Sheedy eds. (2004) The Professional Risk Manager's Handbook: Volume 1, Finance Theory, Instruments and Markets. PRMIA Publications, Illinois
86. Alexander, C. and E. Sheedy eds. (2004) The Professional Risk Manager's Handbook: Volume 2, Financial Mathematics. PRMIA Publications, Illinois
87. Alexander, C. and E. Sheedy eds. (2004) The Professional Risk Manager's Handbook: Volume 3, Financial Risk Management. PRMIA Publications, Illinois
88. Alexander, C. ed. (2003) Operational Risk: Regulation, Analysis and Management. FT-Prentice Hall
89. Alexander, C. ed. (2001) Mastering Risk Volume II. FT-Prentice Hall
90. Alexander, C. ed. (2000) Visions of Risk. FT-Prentice Hall
91. Alexander, C. ed. (1998) Risk Management and Analysis Volume I: Measuring and Modelling Financial Risk. Wiley
92. Alexander, C. ed. (1998) Risk Management and Analysis Volume II: New Markets and Products. Wiley
93. Alexander, C. ed. (1996) The Handbook of Risk Management and Analysis. Wiley
94. Alexander, C. (1980-1990) The Handbook of Applicable Mathematics. Assistant editor volumes I - V and co-editor volume VI. Wiley

## Book Chapters, Reports and Conference Papers

95. Alexander, C. (2008) Hedging the risk of energy futures portfolios. Risk-Management in Commodity Markets: From Shipping to Agriculturals and Energy, H. Geman ed., Wiley
96. Alexander, C. (2008) Moving average models for volatility and correlation. Handbook of Finance, Volume 1, F. J. Fabozzi ed., Wiley
97. Alexander, C. (2008) Statistical models of operational loss. Handbook of Finance, Volume 1, F. J. Fabozzi ed., Wiley
98. Alexander, C. and A. Venkatramanan (2008) Commodity options. Handbook of Commodity Investing, F.J. Fabozzi, R. Fuss and D.G. Kaiser eds., Wiley
99. Alexander, C. and A. Dimitriu (2006) Rank alpha funds of hedge funds. Fund of Hedge Funds: Performance, Assessment, Diversification and Statistical Properties, G. N. Gregoriou ed., Elsevier
100. Alexander, C. (2005) Assessment of operational risk capital. Risk Management: Challenge and Opportunity, M. Frenkel, U. Hommel and M. Rudolf eds., Springer
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