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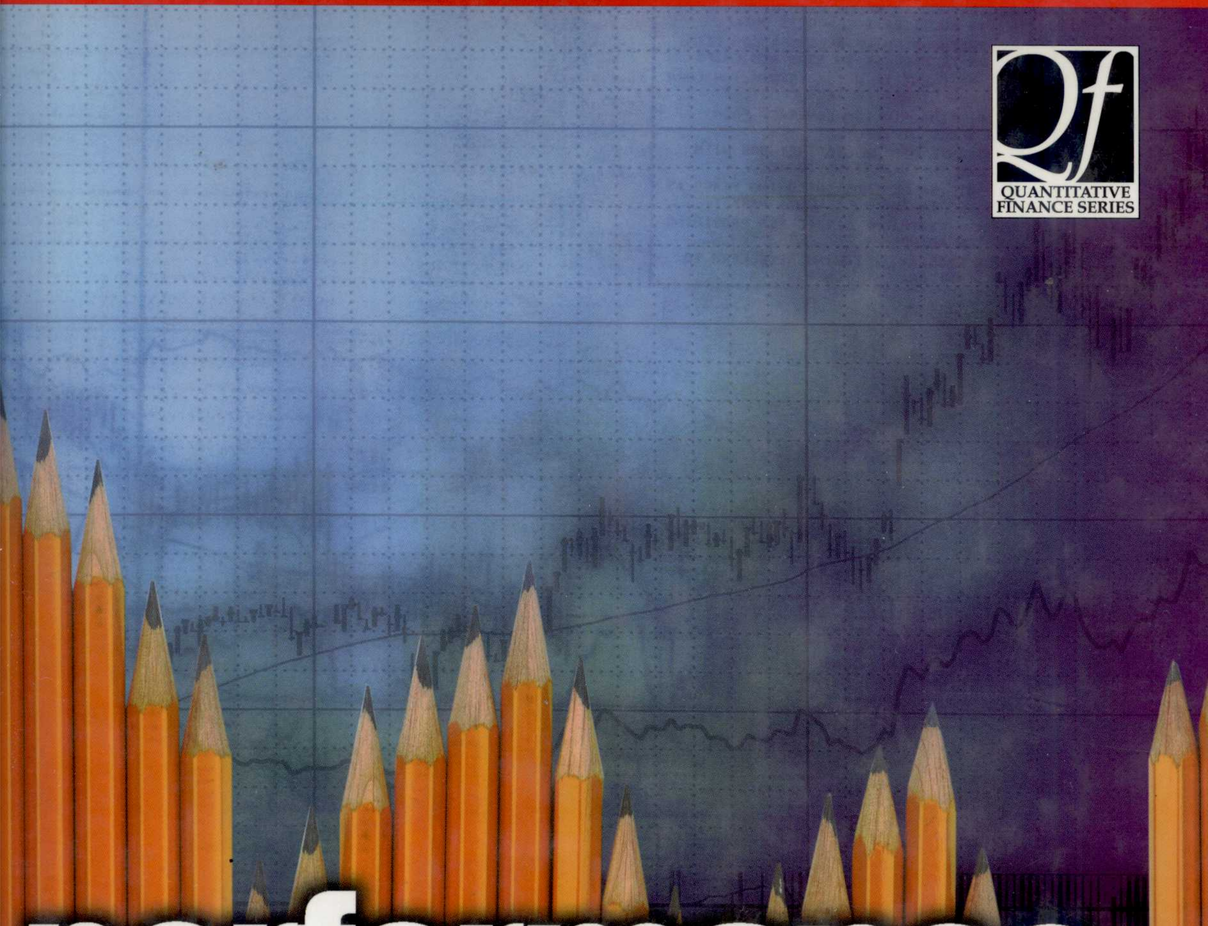

performance measurement in finance

firms, funds and managers

EDITED BY

John Knight & Stephen Satchell

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PERFORMANCE MEASUREMENT IN FINANCE

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QUANTITATIVE FINANCE SERIES

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Dr Stephen Satchell

Dr Satchell is Reader in Financial Econometrics at Trinity College, Cambridge; Visiting Professor at Birkbeck College, City University Business School and University of Technology, Sydney. He also works in a consultative capacity to many firms, and edits the journal *Derivatives: use, trading and regulations.*

Preface

The purpose of this book is to bring together recent research on performance measurement, from both academic and practitioner perspectives. As in previous edited works by ourselves, we start with some survey chapters to allow readers to refresh their knowledge.

Before we describe the contents of this book, it is worth considering a number of themes in performance measurement that are of current interest. First, there are issues such as how to deal with complex multi-period portfolio returns where the assets may be derivatives and returns non-linear and non-normal. Second, there are issues to do with short performance histories; third, there are problems to do with benchmark failure as many indices have recently experienced unprecedented levels of entry and exit. Finally, there are deep issues connecting the volatility of markets to the use of benchmarks; if all managers are rewarded in the same way and are measured against the same yardsticks, we get herding behaviour and the possibilities of excess volatility and panic.

While the book does not claim to answer and resolve all the above questions and issues, it does address them.

The first chapter by Nathalie Farah deals with the financial theory relevant to performance measurement. Next, Guoqiang Wang discusses issues of econometrics and statistics associated with performance measurement.

Dr Emmanuel Acar and Andrew Pearson discuss the real-world problems associated with stochastic exposures, i.e. when portfolio weights are themselves random. Focusing on Value at Risk, they show how awareness of stochastic exposures/stochastic cash flow information can be incorporated into an improved performance measurement methodology.

Gaurav Amin and Dr Harry Kat use recent theoretical results to evaluate performance in hedge funds, their methodology is particularly suited to dynamic trading strategies.

Professor David Blake and Professor Allan Timmermann investigate the merits of different benchmarks used in the UK and USA. This is a research area of great topicality as indices such as the FT100 have recently been found wanting as a choice of benchmark.

Frances Cowell brings a practitioner's perspective onto the issue of performance evaluation via simulation and the methodology that lies behind a performance simulator.

Dr Soosung Hwang and Professor Mark Salmon use the theory of copulae and 14 UK investment trusts to analyse the non-linear dependency properties of standard performance measures. For those not familiar with copula theory, this is a powerful technique for modelling non-standard correlations.

Professor Bob Korkie, who has made many important contributions to performance issues in finance, has contributed two chapters. The first is a detailed case study of a Canadian investment company, Nesbitt Burns. The second, joint with Dr Turtle, is a theoretical paper addressing the changing opportunity set in an intertemporal context. This set is equivalent to the feasible mean-variance space in a one period world and hence one can measure performance by considering frontier slopes.

Dr Mark Lundin and Dr Stephen Satchell investigate performance issues in a long–short framework and advocate a particular measure of risk. Dr Emanuela Sciubbia presents an analysis of performance from the perspective of economic theory.

David Spaulding considers the important issue of how to calculate rates of return. His chapter contrasts various methods and demonstrates that the differences can be significant. Professor Ian Tonks, in the final chapter, presents an analysis of UK pension fund performance focusing on whether there is an optimal fund size.

John Knight and Stephen Satchell

Contributors

Emmanuel Acar works at Citibank as a Vice-President within the FX Engineering Group. He was previously (since 1990) a proprietary trader at Dresdner Kleinwort Benson, BZW, and Banque Nationale de Paris' London Branch. He has experience in quantitative strategies, as an actuary and from having done his PhD on the stochastic properties of trading rules.

Gaurav S. Amin graduated as a Bachelor of Commerce from the University of Mumbai, India. He holds an MBA from Narsee Monjee Institute of Management Studies, Mumbai, India, and an MSc (with Distinction) in International Securities, Investment and Banking from the ISMA Centre at the University of Reading, UK. He is currently pursuing a PhD degree at the ISMA Centre, doing research on hedge fund performance.

David Blake is Professor of Financial Economics at Birkbeck College in the University of London and Chairman of Square Mile Consultants, a training and research consultancy. Formerly Director of the Securities Industry Programme at City University Business School and Research Fellow at both the London Business School and the London School of Economics. His research interests include the modelling of asset demands and financial innovations, the investment behaviour and performance of pension funds and mutual funds, and pension plan design. He has published in major economics and finance journals in all these fields. He is author of numerous books on financial topics, the most recent of which is *Financial Market Analysis.*

Frances Cowell works in London for Vestek-Quantec, a subsidiary of Thomson Financial. Before joining Quantec in 1998, she was part of the Quantitative Investments team at Natwest Investment Management in Sydney, where she was responsible for domestic and international indexed equity portfolios and indexed balanced portfolios. Experience in applying quantitative solutions to domestic equity portfolios has enabled her to proceed to construct investment strategies combining physical assets and derivatives; exploiting inconsistent pricing between related instruments; and subsequently to design portfolios with pre-specified return and risk characteristics.

Nathalie Farah is a PhD candidate at the Faculty of Economics and Political Science at the University of Cambridge. She is researching in portfolio theory and performance measurement. She completed her MSc in Finance and Economics at the London School of Economics after obtaining her BA in Economics at the American University of Beirut, Lebanon. She plans to make a career in investment consulting.

Soosung Hwang is a Lecturer in Finance in the Faculty of Finance and the Deputy Director of the Financial Econometrics Research Centre, City University Business School, London. He is also an Honorary Research Associate of the Department of Applied Economics, Cambridge University. He received his PhD from Cambridge University and his research interests include finance, financial econometrics and forecasting.

Harry M. Kat is currently Associate Professor of Finance at the ISMA Centre Business School at the University of Reading. Before returning to academia he was Head of Equity Derivatives Europe at Bank of America in London, Head of Derivatives Structuring and Marketing at First Chicago in Tokyo and Head of Derivatives Research at MeesPierson in Amsterdam. Dr Kat holds MBA and PhD degrees in Economics and Econometrics from the Tinbergen Graduate School of Business at the University of Amsterdam. He is a member of the editorial board of *The Journal of Derivatives* and *The Journal of Alternative Investments* and has (co-)authored numerous articles in well-known finance journals such as *The Journal of Financial and Quantitative Analysis*, *The Journal of Derivatives*, *The Journal of Financial Engineering*, *Applied Mathematical Finance* and *The Journal of Alternative Investments*. His new book *Structured Equity Derivatives* was published in July 2001 by John Wiley & Sons.

Bob Korkie is Head of Investment Research and Risk Management at OPTrust. He is formerly Professor of Finance at the University of Alberta and has been a visiting professor in Austria, France, Turkey and the United States. He is an affiliate member of the Society of Financial Analysts, and principal of

RMK Financial Consulting. He has an undergraduate degree in Engineering, an MBA (both Saskatchewan) and a PhD (University of Washington). His research has been published in numerous financial journals and magazines.

Mark Lundin is the Head of Quantitative Research at Fortis Investment Management in Brussels. His interests and activities primarily involve the application of advanced techniques to investing in and trading the financial markets. Before joining Fortis, Mark was a Research Scientist at Olsen & Associates Research Institute for Applied Economics in Zurich where he developed real-time, high-frequency trading models and performed multivariate financial research. Mark is an ongoing external technical referee for *Risk Magazine* and an independent referee for *IEEE Transactions on Neural Networks in Financial Engineering*. He holds a PhD in Particle Physics from Université Louis Pasteur, Strasbourg, and a BS in Mathematics and Computer Science from the University of Illinois.

Andrew Pearson is currently Vice-President within the FX Analytics group at Citibank. Previously he worked as a quantitative analyst for Citibank FX Options Technology. His PhD was in Theoretical Physics at Imperial College, London.

Mark Salmon joined City University Business School in 1997 having previously been Professor of Economics and Chair of the Economics Department at the European University Institute, Florence. He had earlier held appointments at the University of Warwick, the Australian National University, the Bank of England and the London Business School and visiting appointments at Nuffield College Oxford, Princeton, Paris I Sorbonne, Aix-Marseille, Bordeaux IV and Illinois. He has served as a consultant to a number of city institutions and was recently a member of a 'Task Force' set up by the European Commission to consider exchange rate policy for the euro. He has been a member of the European Financial Markets Advisory Panel and has worked with the National Bank of Hungary on transition policies towards membership of the European Union. He currently acts as a consultant to the Bank of England. He is a Research Fellow of the Centre for Economic Policy Research associated with the International Macro and Finance Programmes and has published widely in journals such as *Econometrica*, *The Annals of Statistics*, *Journal of Econometrics*, the *Economic Journal*, the *Journal of Economic Dynamics and Control* and the *International Economic Review*. His most recent book is a graduate level textbook on Financial Econometrics.

Mark is also Deutsche Morgan Grenfell Professor of Financial Markets and Director of the Financial Econometrics Research Centre.

Emanuela Sciubba is Fellow of Newnham College and University Lecturer in Economics at the University of Cambridge. She was previously a research fellow at the Tinbergen Institute in Rotterdam and at Ente Einaudi (Bank of Italy) in Rome. She received an MA in Business and Economics from LUISS University in Rome and a PhD in Economics from the University of Cambridge. She has been invited to present her work at universities and research institutes all over Europe and in the United States. Her research interests and writings have covered a variety of topics in economic theory and finance, including evolutionary finance and the survival of portfolio rules, the role of asymmetric information in dynamic financial markets, the implications of relative performance for portfolio choices and asset pricing, the implications of relative performance for risky choices in banking and the effect of entry in the banking sector.

David Spaulding is President of The Spaulding Group, Inc., a Somerset, NJ-based consulting, publishing and research firm that provides services to the money management industry. He is the founder and publisher of *The Journal of Performance Measurement* and the author of *Measuring Investment Performance – Calculating and Evaluating Investment Risk and Return*, which was published by McGraw-Hill in August 1997. He is a member of the AIMR Performance Presentation Standards Implementation Committee (AIMR-PPS) and the Investment Performance Council Interpretations Subcommittee. Several of Mr Spaulding's consulting assignments have involved Performance Measurement and the AIMR Standards, including the development of a standalone composite maintenance and reporting system. In addition, he has helped clients comply with the AIMR-PPS and address other performance-related issues. His articles have appeared in *Wall Street & Technology*, *Traders Magazine*, *Pensions & Investments*, *Dow Jones Investment Advisor*, *Dow Jones Asset Management* and *Premier Review*. Before founding TSG, he was Vice-President and Director of Systems for SunAmerica Asset Management. There, he and his staff were responsible for significantly enhancing the firm's use of technology. This included the design and development of a performance measurement system.

Allan Timmermann is a Professor of Economics at the University of California, San Diego, and has previously held positions at Birkbeck College and the London School of Economics. He acquired his PhD from the University of Cambridge. Dr Timmermann has published extensively on topics related to financial economics and econometrics and is currently an associate editor of *Journal of Business and Economic Statistics*, *Journal of Economic Dynamics and Control* and *Journal of Forecasting*.

Ian Tonks is a Professor of Finance in the Department of Economics at the University of Bristol, where he is the director of pensions research in the Centre for Market and Public Organization. Previously he has held positions at the London School of Economics and the University of British Columbia. His research has focused on market microstructure and the organization of stock exchanges; directors' trading in the UK; fund manager performance; and the new issue market. He has undertaken consultancy work for a number of regulators and private sector organizations.

Harry Turtle is an Associate Professor of Finance in the College of Business and Economics at Washington State University. His research interests lie in the fields of international finance, investment management and other general topics in financial economics. His work has appeared, or is forthcoming, in numerous financial journals including the *Journal of Business and Economic Statistics*, *Journal of Financial Economics*, *Journal of Financial and Quantitative Analysis*, *Journal of Portfolio Management*, and *Management Science*.

Guoqiang Wang is currently working as a data analyst for the Hudsons Bay Company. He got his PhD degree in Economics at the University of Western Ontario. His research interests are in risk management, mutual fund performance and data analysis of large financial databases.

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