



REPORT TO THE ERA: COMMENTS ON STATISTICAL REPORTS BY PINK LAKE

By Graham Partington and Stephen Satchell

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Author's Credentials

This report has been prepared by Associate Professor Graham Partington and Professor Stephen Satchell. We are senior finance academics who have published several books and many research papers in finance and we have extensive consulting experience, particularly with respect to the cost of capital and valuation. Our *curriculum vitae* can be found in Appendix 2.

We have read “Expert witnesses in proceedings in the Federal Court of Australia” which are attached as Appendix 3. This report has been prepared in accordance with those guidelines. An expert witness compliance declaration can be found following the reference list at the end of our report.

Table of Contents

AUTHOR’S CREDENTIALS.....	1
THE CONTEXT OF THE REPORT.....	3
COMMENTARY ON PINK LAKE ANALYTICS REPORTS	3
COMMENTS ON: STATISTICAL ADVICE TO THE ERA ON DBP SUBMISSION 56	3
Pink-Lake Summary.....	3
Comments on the body of the report.....	4
COMMENTS ON VARIANCE OF THE ZBP ESTIMATOR	6
EXPERT WITNESS COMPLIANCE DECLARATION	8
APPENDIX	9
CURRICULUM VITAE GRAHAM PARTINGTON	9
CURRICULUM VITAE STEPHEN SATCHELL	23
APPENDIX 2	63
Practice Note CM 7	63

The context of the report

The ERA has approached us with a request for comments on statistical reports provided to them by Pink Lake Analytics.

Commentary on Pink Lake Analytics reports

This report contains brief comments on two statistical reports submitted to the ERA by Pink Lake Analytics (hereafter PL). We are generally in agreement with the thrust of these reports and we find no statistical or mathematical problems that would significantly threaten the validity of the reports.

Comments on: Statistical Advice to the ERA on DBP Submission 56

Here we provide a brief commentary on a report titled: “Statistical Advice to the ERA on DBP Submission 56” written by Pink-Lake Analytics, 2016. Page and paragraph references in the section that follows are with respect to that document. We begin with comment on PL’s conclusions (pages 5 and 6) in their executive summary.

Pink-Lake Summary.

1. PL’s main conclusion is:

“Upon review of the Submission and associated documents there is strong evidence that the ZBP measure is not reliable, namely:

- *The variance of the ZBP estimator is large.*
- *The ZBP estimates are highly variable through time (i.e., are non-stationary).*
- *Estimation of the ZBP is implemented by different practitioners in different ways, leading to radically different estimates.*

Throughout the DBP Submission the ZBP estimate provided is treated as a fixed value within the Black CAPM model. However, the ZBP estimate is perhaps the term in the Black CAPM that is most subject to uncertainty. Yet DBP ignore that uncertainty. There is evidence that the ZBP estimate can differ significantly both between time periods when estimated by the same practitioner, the same practitioner can put forward multiple methods of estimating the ZBP, and different practitioners apply different methods, and consequently the ZBP estimate can vary widely.”

In our opinion this puts the position clearly and accurately and we further note that if the ZBP quantity were ever used to measure compensation for regulated businesses (something we are strongly opposed to) the value would change from year to year and be quite unfit for purpose.

2. PL state:

“The $\hat{\beta}^$ calculation proposed by DBP is mathematically ill-posed for ZBP/MRP ratios above 1. The inverse of $\hat{\beta}^*$ is ill-posed for all values of the ZBP/MRP ratio, and may not be used to justify some of the claims that DBP have made with regard to under-valuing $\hat{\beta}$. For these reasons the $\hat{\beta}^*$ calculation should not be considered for the upwards revision of the $\hat{\beta}$ estimate, given the uncertainty in both the ZBP and $\hat{\beta}$ estimates and the need for a smoothly varying $\hat{\beta}^*$ calculation.”*

We agree with this point, which we discussed in our prior report, where we explain that the ZBP/MRP ratio must lie below 1. Further discussion of this point can be found below.

3. PL argue that much of the discussion on cross-validation and model adequacy is largely beside the point. We agree with this. Asset pricing models are about equilibrium pricing. They are not forecasting models and to try and convert equilibrium pricing to a forecasting problem simply muddies the waters. The Black model is an economic model, and the justification for the zero-beta CAPM in the current context relies on the economic consequences of divergent borrowing and lending rates.

4. Independently we came to the same conclusion as PL, that while there may be some data/code issues with the ERA’s estimates that should be corrected, these issues are not likely to matter too much. We would expect substantial changes in the magnitude of ZBP estimates to be an unlikely outcome of the corrections. However, we note the caveat that estimates of ZBP can be unstable.

5. We do not have the relevant expertise to comment on the institution of a private code repository but from a lay perspective, we can see its appeal.

[Comments on the body of the report.](#)

Discussion of the relevant models, paragraphs 20-38, would be improved if error terms were added to the data generating processes and it was stressed that all versions of CAPMs are cast in

terms of parameters (expected values). However, the exposition is adequate in elucidating the relevant ideas.

We strongly agree with the points in paragraphs 39-53. This illustrates the weak nature of zero-beta CAPM analysis. Faced with an array of models, regulated businesses will promote the one that provides maximum returns. PL are restrained in their remarks in paragraph 53 where they say:

“DBP apply this logic to effectively free its analysis from the constraint that the ZBP must be less than the MRP, allowing itself to accept ZBP/MRP ratios that are greater than one.”

Whatever the true market portfolio may be, for the ZBP/MRP ratio to be less than one it is only required that the expected return on the market be greater than the expected return on the zero-beta portfolio. That the zero beta portfolio must lie below the market portfolio is a point made in our prior report. We note that the economics of the situation and MV mathematics imply that this is true. Thus the finding by DBP that the ZBP/MRP ratio is greater than one should be a source of real concern to ERA as it suggests something is seriously wrong. We stress that this has nothing to do with the un-observability of the market portfolio.

Turning now to paragraphs 54 to 69, we disagree with the thrust of much of this argument. We claim that whether the market is observable, or not, does not affect the cost of capital as long as the proxy used is mean-variance efficient (see Theorem 3, page 39 in our prior report). However, in the case that the proxy for the market portfolio is inefficient, it is not the case that we can treat the problem as in PL paragraph 64-65, we need to consider the fact that the inefficient portfolio will have a different beta as well. In effect PL are considering a special case of a more general problem where it becomes harder to make simple adjustments.

The next section of the PL report, paragraphs 70-80, covers problems in the ZBP estimates and we are in broad agreement with the content of these paragraphs. This is consistent with our endorsement above of PL's main conclusion in their executive summary.

The section “Propagation of Uncertainty in ZBP Estimates into the RoE” which covers paragraphs 81-100 is a very useful piece of analysis as it discusses links between the revised and original estimates of beta. We see PL's work as a useful insight into the technical problems involved. In

addition to technical problems, we do not regard beta adjustment as conceptually correct. PL's analysis of technical problems reinforces the inappropriateness of adjusting beta. We agree with PL's comments on ZBP uncertainty, but note that time varying betas and alphas seem more consistent with time-varying ZBP, and the latter makes ZBP less suitable for regulatory calculations.

We do not regard the DBP's cross-validation and model adequacy arguments as being particularly compelling for regulatory pricing as estimating the cost of capital is not a prediction problem. PL's work here is thorough and sensible and their summary in Appendix E is very reasonable. The points to do with searches and hits seem to us to be of second-order importance

Comments on Variance of the ZBP Estimator

In this section, we provide a brief commentary on the paper titled "Variance of the ZBP estimator", Pink-Lake Analytics 2016. This paper explicitly calculates the variance of the ZBP estimator, through a simulation exercise, the details of which are presented in PL's Appendix D. Overall, the paper is a very professional piece of work and we do not detect errors of logic or unreasonable assumptions. We shall discuss two features; firstly notational issues and secondly simulation design.

We find the notation confusing; the author would improve clarity by differentiating between actual returns, usually denoted by r or R and the expected values of returns, which in statistical notation are usually denoted by Greek letters. The CAPM is a theoretical relationship involving expectations whilst data-generating processes such as would be used in the simulation are equations in terms of actual returns.

In terms of design, there are a number of simplifying assumptions made by PL to reduce the computational burden. These assumptions need to be examined as to the extent to which they may bias the conclusions of the simulation. We deal with a number of points; we do not regard any of them as being especially damaging to the conclusions of PL, but we do think they are all worth considering in further work.

1. In particular, PL assume that:

$$\tilde{\alpha}_{it}^{FP}, \tilde{\beta}_{it}^{FP} \sim MVN \left(\hat{\alpha}_{it}^{FP}, \hat{\beta}_{it}^{FP}; VCOV(\hat{\alpha}_{it}^{FP}, \hat{\beta}_{it}^{FP}) \right)$$

Although it is not entirely clear to us from the document, we believe that it is assumed that independence is assumed across i and t . Whilst independence across i seems reasonable as that is consistent with the data structure normally assumed for the CAPM, independence through t (time) may raise issues. This is because in applications, it is quite likely that the parameters $\alpha_{it}^{FP}, \beta_{it}^{FP}$ are first estimated using over-lapping rolling windows. Such a procedure would create time-series dependence.

2. A second point for improvement would be to let interest rates vary through time; this would not be difficult and probably matters due to the large variations in interest rates over the last 20 years.

3. Thirdly, one may wish to allow the ZBP to be time-varying as in the specification described in paragraph 23 of the PL Variance report. This would be consistent with the assumption that $\alpha_{it}^{FP}, \beta_{it}^{FP}$ are time-varying.

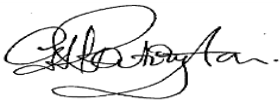
4. Given, as PL correctly point out, in the first report discussed above, that the expected zero-beta return should lie between the borrowing and lending rates. This constraint arises from the Brennan model and is the only plausible justification for the zero-beta CAPM, thus this constraint should be applied in estimation/simulation.

Whilst the above may seem rather laborious, the simulation would be very convincing if carried out as suggested. We expect the zero-beta CAPM results would then lead to much reduced estimates of required returns relative to the claims of DBP.

Expert Witness Compliance Declaration

We have read “Expert witnesses in proceedings in the Federal Court of Australia” which are attached as Appendix 3. This report has been prepared in accordance with those guidelines. As required by the guidelines, we have made all the inquiries that we believe are desirable and appropriate and no matters of significance that we regard as relevant have, to our knowledge, been withheld from the Court.

Signed



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PERSONAL

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HIGHER EDUCATION AND EMPLOYMENT

Academic Qualifications: B.Sc. (Hons) Economics/Forestry, University of Wales, 1971
MEc. (Hons) by thesis, Macquarie University, 1983.

My current position is Associate Professor of Finance in the Finance Discipline at the University of Sydney. I have been chair of the Finance Discipline and was also head of the postgraduate research program in finance. Concurrent with my position at the University of Sydney I was also the Education Director for the Capital Markets Co-operative Research Centre PhD

program. In a career stretching back more than thirty years I have held Associate Professorships in finance at The University of Technology Sydney and The University of British Columbia. I have also held academic positions at Macquarie University and the University of Bangor I have had extensive teaching and research responsibilities in finance and accounting as well as being head, or deputy head, of University Departments and Schools. I have been very influential in the design of several undergraduate and masters degrees in finance and also PhD programs.

I have written in excess of thirty consulting and expert witness reports covering topics such as valuation, the cost of capital, the value of imputation tax credits, and the market risk premium.

Awards and Major Research Grants

Awards

2013 Best paper prize for accounting, banking economics and finance, Global Business Research Conference.

2012 Bangor University: Honorary Visiting Senior Research Fellow title extended for the period 2013-2016.

2010 The GARP (Global Association of Risk Professionals) Prize for Quantitative Finance/Risk Management/Derivative Instruments, Finance and Corporate Governance Conference.

2009 The CFA (Chartered Financial Analyst) Prize Asian Investments, Asian Finance Association Conference

2009 Bangor University: Honorary Visiting Senior Research Fellow for the period 2009-2012.

2008: PhD students name their rock group after me "The Partingtons"

2001: Manuscript award for the best paper: Education Notes, *Accounting Research Journal*, 2000.

2000: Peter Brownell Manuscript Award. Awarded by the Accounting Association of Australia and New Zealand for the best paper in *Accounting and Finance*, 1999

1985: Butterworths Travelling Fellowship

Major Research Grants 2014-2016 Centre for International Financial Regulation (CIFR), *Measuring Market Quality: Current Limitations and New Metrics*, \$170,000.

2007-2014: National Co-operative Research Centre Scheme, grant for the Capital Markets Cooperative Research Centre (CMCRC) \$98 million (\$49 million in cash and matching in kind contributions.) About \$21 million cash over the term of the grant was under my management to run the scholarship and education program.

2000-2003: Australian Research Council, industry linked grant, *Intangibles, Valuation and Dividend Imputation* (\$667,000).

1985-1988: Australian Research Grants Scheme, *The Determinants and Consequences of Dividend Policy* (\$30,000).

PUBLICATIONS

Books

R. Brealey, S. Myers, G. Partington and D. Robinson, 2000, *Principles of Corporate Finance*, Australian Edition, McGraw-Hill (1st printing 2000, 2nd printing 2000.)

C.A. Martin, J. McKinnon, R. Hines, G. Harrison and G. Partington, 1983, *An Introduction to Accounting*, McGraw-Hill (1st edition, 1983, 2nd edition, 1988, 3rd edition 1990.)

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E. Carew, 1985, *The Language of Money*, George Allen and Unwin.

Refereed Journals

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A. Ainsworth, K. Fong, D. Gallagher, and G. Partington, 2015, Institutional Trading Around the Ex-Dividend Day, *Australian Journal of Management*, published on-line January, 2015.

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B. Wong, G. Partington, M. Stevenson and V. Torbey, 2007, Surviving Chapter 11 Bankruptcies: Duration and Payoff? *Abacus*, **43:1**, pp.363-387.

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S. Foley, G. Partington, J. Svec and N. Pritchard, 2014 *The Effects of Underwriting Dividend Reinvestment Plans*, CFA-JCF-Schulich Conference on Financial Market Misconduct, Toronto, April.

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- A. Jun and G. Partington 2011, *Taxes International Clienteles and the Value of ADR Dividends*, 9th INFINITI Conference on International Finance, Dublin.
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- H. Dang and G. Partington, 2010, *The Dynamic Estimation of Rating Migration Hazard*, Finance and Corporate Governance Conference, Melbourne, (Awarded the GARP prize in Quantitative finance/Risk Management/Derivatives).
- Partington G and Xu Y 2010, *Rights issue announcements motives and price response*, 8th INFINITI Conference on International Finance - International Credit and Financial Market Integration: After the Storm?, Dublin.
- A. Ainsworth, K. Fong, D. Gallagher, and G. Partington, 2009, *Institutional Trading Around the Ex-Dividend Day*, Asian Finance Association Conference, Brisbane. Awarded the CFA best paper prize (Asian Investments.)
- H. Dang and G. Partington, 2009, *Rating Migrations: The Effect of History and Time*, Financial Management Association (FMA) European Conference, Turin.
- H. Dang and G. Partington, 2008, *Rating History and the Rating Dynamics of Fallen Angels, Rising Stars, and Big Rating Jumpers*, Risk Management Conference: Credit and Financial Risk Management 40 Years after the Altman Z-score Model, Florence.

G. Partington, M. Stevenson, and J. Yao, 2008, *Predicting the Directional Change in Consumer Sentiment*, The 28th Annual Symposium on Forecasting, Nice.

M. Kim and G. Partington, 2008, *The Dynamic Prediction of Corporate Failure*, Australasian Finance and Banking Conference.

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H. Dang and G. Partington, 2007, *Modeling Rating Migrations*, Poster Session, CREDIT Conference, Venice

G. Truong and G. Partington, 2007, *Alternative Estimates of the Cost of Equity Capital for Australian Firms*, 20th Australasian Finance and Banking Conference, Sydney,

G. Partington, 2006, *Dividend Imputation Credits and Valuation*, Business Tax Reform Meet the Critics, Australian Tax Research Foundation Conference, Sydney.

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H. Chu and G. Partington, 2005, *The Market Valuation of Cash Dividends: The Case of the CRA Bonus Issue*, The European Financial Management Association Annual Meeting, Milan.

- G. Truong, G. Partington and M. Peat, 2005, *Cost of Capital Estimation and Capital Budgeting Practice in Australia*, Accounting and Finance Association of Australia and New Zealand Conference, Melbourne,.
- A. McAdam, and G. Partington, 2005, *Does the Choice of Share Price Matter when Examining Takeovers?* Accounting and Finance Association of Australia and New Zealand Conference, Melbourne.
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- M. Dempsey and G. Partington, 2004, *The Cost of Capital Equations Under the Australian Imputation Tax System*, Accounting Association of Australia and New Zealand Conference, Alice Springs,.
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- H. Chu and G. Partington, 2001, *The Value of Dividends: Evidence from a New Method*, Accounting Association of Australia and New Zealand Conference, Auckland.
- G. Partington, P Russell, M. Stevenson and V. Torbey, 2001, *Predicting Return Outcomes for the Shareholders of Companies Entering Chapter 11 Bankruptcy*, Accounting Association of Australia and New Zealand Conference, Auckland.
- H. Chu, L. Hodgkinson and G. Partington, 2001, *Right's Trade Adjustments: Evidence from the UK*, British Accounting Association Conference, Nottingham
- H. Chu and G. Partington, 2001, *The Value of Dividends Implicit in Rights Prices*, Australasian Finance and Banking Conference, Sydney.
- L. Hodgkinson and G. Partington, 2000, *The Motivation for Takeovers in the UK*, British Accounting Association Conference, Exeter.
- V. Alaganar, G. Partington and M. Stevenson, 2000, *Do Ex-dividend Drop-offs Differ Across Markets? Evidence From Internationally Traded (ADR) Stocks*, Accounting Association of Australia and New Zealand Conference, Hamilton Island.

- G. Partington and S. Walker, 2000, *A Theory of Ex-Dividend Equilibrium Under Imputation and Some Empirical Results*, Accounting Association of Australia and New Zealand Conference, Hamilton Island,.
- G Partington and S. Walker, 1999, *The 45-Day Rule: The Pricing of Dividends and the Crackdown on Trading in Imputation Credits*, Accounting Association of Australia and New Zealand Conference, Cairns.
- S. Walker and G. Partington, 1999, *Optus: A Market Valuation Pre-listing*, Accounting Association of Australia and New Zealand Conference, Cairns.
- H. Chu and G. Partington, 1999, *Dangers in Data Adjustment: The Case of Rights Issues*, Australasian Finance and Banking Conference, Sydney.
- G. Hobbes, G. Partington and M. Stevenson, 1997, *A General Model of Earnings Dividends and Returns*, Australasian Finance and Banking Conference, University New South Wales, Sydney.
- S. Walker and G. Partington, 1997, *The Ex-Dividend Drop-off: Evidence from Cum-dividend Trading in the Ex-dividend Period*, Accounting Association of Australia and New Zealand Conference, Hobart.
- G. Hobbes, G. Partington and M. Stevenson, 1995, *Earnings Dividends and Returns: A Theoretical Model*, Asia-Pacific Finance Association Conference, Hong Kong.
- G. Partington and E. Hutson, 1994, *Share Prices, Takeover Outcomes and the Expected Value Hypothesis*, invited paper at the University of Wales Finance & Accounting Colloquium, Gwynog.
- G. Partington and E. Hutson, 1994, *Share Prices, Takeover Outcome sand the Volume of Trades*, Australasian Finance and Banking Conference, Sydney.
- G. Partington, M. Peat and M. Stevenson, 1992, *The Probability and Timing of Corporate Financial Distress: Preliminary Results for Australia*, Australasian Finance and Banking Conference, Sydney.

G. Partington, M. Peat and M. Stevenson, 1991, *Estimating the Probability and Timing of Financial Distress*, Australian Institute of Bankers Conference, Melbourne.

P. Eddey, G. Partington and M. Stevenson, 1989, *Predicting the Probability and Timing of Takeover Success*, Australasian Finance and Banking Conference, Sydney.

G. Partington and T. Valentine 1984, *Finance for Australian Industry*, Metal Trades Industry Conference, Sydney.

G. Partington, 1983, *Why Firms Use Payout Targets: A Comparative Study of Dividend Policy*, Accounting Association of Australia and New Zealand Conference, Brisbane.

Unpublished Working Papers

H. Chu and G. Partington, 2001, *The Market Valuation of Cash Paid into Australian Companies: Evidence from Ex-Rights Day Share Price Behaviour*,.

G. Partington, 1993, *Miller Modigliani and Ohlson: A Note on Old Models in New Clothes*,.

Submissions to Government Inquiries and the Accounting Research Foundation

A. Ainsworth, A. Lee, G. Partington and T. Walter, 2013, *Analysis of ASX Cum Dividend Trading in the Ex Dividend Period 2003-2013: Submission to the Treasury on "Preventing Dividend Washing"*, submission to Treasury Inquiry: Protecting the Corporate Tax base from Erosion and Loopholes - Preventing 'Dividend Washing'

G. Partington, 1991, *Pricing and Capital Adequacy: Are the Banks Getting it Wrong?* a submission to The Australian Banking Inquiry.

G. Partington, 1989, *Accounting in Higher Education*, a submission to The Review of The Accounting Discipline in Higher Education.

J. McKinnon and G. Partington, 1980, *Statement of Sources and Applications of Funds - A Comment on the Exposure Draft*, a submission to the Australian Accounting Research Foundation.

C. Le Gras and G. Partington, 1979, *Commission Rates - Sheep and Cattle Sales*, a submission to the Prices Justification Tribunal.

R. Chenhall and G. Partington, 1979, *Financial Effects of Corporate Taxation*, an invited submission, Australian Financial System Inquiry.

R. Chenhall and G. Partington, 1979, *Submission on Corporate Sector Finance*, a submission to the Australian Financial System Inquiry.

Miscellaneous

G. Partington, 1989, *Careers in Finance, Focus on Careers; National Graduate Careers Magazine*. (Updated 1993, at the request of the Department of Education Employment and Training, Careers Reference Centre.)

D. Leece, G. Partington and R. Skellington, 1975, *Not All Over the Audience*, Bangor Arts Festival, Bangor.

D. Leece, G. Partington, D. Power and R. Skellington, 1974, *A Spring Revue*, Bangor Arts Festival, Bangor.

MEMBERSHIPS

Accounting and Finance Association of Australia and New Zealand (Current))

American Finance Association (Current))

American Accounting Association (1978–1992)

European Accounting Association (1984–1987)

Australian Institute of Bankers (1993–1997)

Royal Forestry Society (1978-1984)

CURRICULUM VITAE STEPHEN SATCHELL

NAME Stephen Ellwood SATCHELL

CURRENT POSITION College Teaching Fellow

COLLEGE Trinity College, Cambridge University

DATE OF BIRTH 22nd February 1949

CAREER 1971-73 - School Teacher

1973-74 - Computer Executive

1974-76 - Research Officer

1977-78 - Economic Advisor 10 Downing Street, (part-time)

1978-79 - Lecturer (Statistics Department) at LSE

1979-80 - Lecturer (Economics Department) at LSE

1980-86 - Lecturer, University of Essex

1986-2014 - Fellow(Title C), Trinity College

1986-89 - Assistant Lecturer, University of Cambridge

1989-2000 - University Lecturer at the University of Cambridge

1991-93 - Reader, Birkbeck College

2000-2009 - The Reader of Financial Econometrics, Cambridge University.

2010-2012 - Visiting Professor, Sydney University.

2011 - The Emeritus Reader of Financial Econometrics, Cambridge University.

2012- 2014 -Visiting Lecturer ,RHUL, London University

2013 -Professor, Sydney University

2014 - Fellow(Title E), Trinity College

CURRENT RESEARCH

I am working on a number of topics in the broad areas of econometrics, finance, risk measurement and utility theory. I have an interest in both theoretical and empirical problems. Many of my research problems are motivated by practical investment issues. My current research looks at alternative methods of portfolio construction and risk management, as well as work on non-linear dynamic models. I am active in researching the UK mortgage and housing markets.

I have strong links with Inquire (Institute for Quantitative Investment Research). This is a city-based organization that finances academic research on quantitative investment. I am also on the management committee of LQG (London Quant Group).

JOURNAL AFFILIATIONS

I am the Founding Editor of *Journal of Asset Management* (Palgrave Macmillan publishers) first issue, July 2000

I am the Series Editor of a book series, *Quantitative Finance* (Academic Press/Elsevier publishers).

I am the Editor of *Journal of Derivatives and Hedge Funds* (Palgrave Macmillan publishers). I am on the Editorial Board of *Applied Financial Economics*, *Journal of Financial Services Marketing*, *Journal of Bond Trading and Management*, *QASS*, *Journal of Financial Policy* and *European Journal of Finance* and senior associate editor of *Journal of Mathematical Finance*.

I am the Founding Editor of a journal for Incisive-Media Ltd, *Journal of Risk Model Validation*. and was editor for another of their journals, *Journal of Financial Forecasting*.

SUBMITTED PUBLICATIONS

Estimating Consumption Plans for Endowments with Recursive Utility by Maximum Entropy Methods, (with S. Thorp and O. Williams), submitted to *Applied Mathematical Finance*

Aligned with the stars: the Morningstar rating system and the cross-section of risk aversion (with S. Thorp and R. Louth)

"Individual capability and effort in retirement benefit choice" (with H. Bateman, S. Thorp, , J. Louviere, C. Eckert) submitted to *Journal of Risk and Insurance*

("Default and Naive Diversification Heuristics in Annuity Choice", (with H. Bateman, S. Thorp, J. Louviere, C. Eckert) submitted to *Journal of Behavioural Finance*

Selfish Banks and Central Price Setting :The LIBOR price setting mechanism(with O. Ross and M. Tehranchi) submitted to OR

."Investigating a Fund Return Distribution when the Value of the Fund under Management is Irregularly Observed", with John Knight and Jimmy Hong, submitted to the *Journal of the Royal Statistical Society: Series A*.

Biased estimates of beta in the CAPM(with R.Philip and H. Malloch) submitted to *Applied Economics*

An Equilibrium Model of Bayesian Learning(with O.Ross and M.Tehranchi) submitted to *Econometrica*.

FORTHCOMING PUBLICATIONS

Time Series Momentum, Trading Strategy and Autocorrelation Amplification", (with J. Hong) in *Quantitative Finance. A*

Theoretical Decomposition of the Cross-Sectional Dispersion of Stock Returns(with A.Grant) forthcoming in *Quantitative Finance. A*

Evaluating the Impact of Inequality Constraints and Parameter Uncertainty on Optimal Portfolio Choice with A.Hall and P. Spence, forthcoming in *Applied Economics*

2015 Publications

On the Difficulty of Measuring Forecasting Skills in Financial Markets, (with O. Williams), in *Journal of Forecasting A* <http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291099-131X>

2014 Publications

'Modelling Style Rotation: Switching and Re-Switching', (with Golosov, E.) in

Journal of Time Series Econometrics,(A) vol.6, no. 2, pp.103-28. Citation Information: Journal of Time Series Econometrics. Volume 0, Issue 0, Pages 1–26, ISSN (Online) 1941-1928, ISSN (Print) 2194-6507, DOI: [10.1515/jtse-2012-0028](https://doi.org/10.1515/jtse-2012-0028), April 2013

Steady State Distributions for Models of Locally Explosive Regimes: Existence and Econometric Implications (with J.Knight and N. Srivastava) in *Economic Modelling*. (A) Volume 41, August 2014, Pages 281-288, ISSN 0264-9993, <http://dx.doi.org/10.1016/j.econmod.2014.03.015>.
(<http://www.sciencedirect.com/science/article/pii/S0264999314001114>)

A General Theory of Smoothing and Anti-Smoothing (with M.Mackenzie and W.Wongwachara) in *Journal of Empirical Finance*, vol 28, pp 215-219.(A)

Risk Presentation and Portfolio Choice (with H.Bateman, S. Thorp, J. Geweke, J. Louviere, C. Eckert) in *Review of Finance*. ((A+) 12/2010; DOI: 10.2139/ssrn.1776525, Source: OAI

'Financial Competence, Risk Presentation and Retirement Portfolio Preferences', (with - Bateman, H., Eckert, C., Geweke, J., Louviere, J., Satchell, S. and Thorp, S.) in *Journal of Pension Economics and Finance*, vol. 13, no. 1, pp. 27-61

Is Rating associated with better Retail Funds' Performance in Bull or Bear Markets? (with R.Louth and W.Wongwachara)in *Bankers, Markets and Investors*. In Vol 132,sep-oct 2014, 4,25

Testing linear factor models on individual stocks using the average F-test', (with S.Hwang,) in *European Journal of Finance*, vol. 20, no. 5, pp. 463-98. DOI:10.1080/1351847X.2012.717097; Version of record first published: 10 Sep 2012

'The sensitivity of beta to the time horizon when log prices follow an Ornstein-Uhlenbeck process', (with - Hong, K.H.) in *European Journal of Finance*, vol. 20, no. 3, pp. 264-90 DOI:10.1080/1351847X.2012.698992;Version of record first published: 24 Jul 2012

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Efund research.com 07/10/2014; <http://ch.e-fundresearch.com/newscenter/120-lombard-odier/artikel/23090-what-factors-drive-the-us-labour-market>

Art as a Luxury Good, with N. Srivastava in" *Risk and Uncertainty in the Art World*", edited by A. Dempster, ;Chapter 9, Bloomsbury Publishing, London; 2014.

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2013 PUBLICATIONS

How Much does an Illegal Insider Trade? (with A. Frino and H. Zheng) in *The International Review of Finance* Article first published online: 4 FEB 2013 | DOI: 10.1111/irfi.12006

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2012 PUBLICATIONS

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The Best of Intentions? The Allocation of Resources between Large and Small Subjects, (with O. Williams), *Higher Education Review*, Vol 39.Number 2 , pp. 65-73, (Spring 2007).

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Robust Optimisation for Utilising Forecasted Returns in Institutional Investment: (with C. Koutsoyannis) in *Forecasting Expected Returns*; S. Satchell(editor).

Optimal Forecasting Horizon for Skilled Investors, (with O. Williams); in *Forecasting Expected Returns*, S. Satchell (editor).

The Hidden Binomial Economy and The Role of Forecasts in Determining Prices, (with O. Williams) in *Forecasting Expected Returns*; S. Satchell (editor).

Stochastic Volatility Models with Markov Regime Switching State Equations' with S. Huang and P. Valls in *Journal of Business ,Finance and Accounting*, vol 34, issue 5-6, pp 1002-1024, (June/ July 2007).

Analytic Models of the ROC Curve: Applications to Credit Rating Model Validation, *Journal of Risk Management in Financial Institutions*, (with W. Xia), volume 1, 1.

UK Measures of Firm-Lived Equity Duration: Value Creation in Multinational Enterprise, (with R. A. Lewin, M. J. Sardy), (editors J. J. Choi, R. W. Click), *International Finance Review*, vol. 7, pp. 307-338, (2007).

Enhancing Available Returns From Short-term Client Funds, with R. A. Lewin & M. J. Sardy, *Papers & Proceedings of Academy of Economics and Finance*, (2007).

2006 PUBLICATIONS

Estimation of the Risk Aversion of the Representative U.K. Pension Fund Investor, (with Wei Xia), published as S. Satchell, and W. Xei (2006), "A Matter of Attitude", *Life and Pensions*, (December 2006).

Measures of Equity Duration, (with R. A. Lewin and M. J. Sardy), in *International Finance Review*, vol. 7, *Value Creation in Multinational Enterprise*, (edited by J. J. Choi and R. W. Click), chapter 13, pp. 315-349, (2006) .

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Asymmetry and Downside Risk in Foreign Exchange Markets, (with S.A. Bond)
in *The European Journal of Finance*, vol. 12, no. 4, pp. 313-332, (2006).

2005 PUBLICATIONS

GARCH Model with Cross-sectional Volatility; GARCHX Models (with S. Hwang), in *Applied Financial Economics*, vol. 15, no. 3., pp. 203-216, (February, 2005).

A Re-examination of Sharpe's Ratio for Log-Normal Prices, (with J. Knight), in *Applied Mathematical Finance*. vol. 12, no. 1, pp. 87-100, (March 2005).

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Simple and Cross Efficiency of CTA's Using Data Envelopment Analysis.(2003) (with Gregoriou, G, Rouah, F. and Diz, F.) in *The European Journal of Finance* October 2005, Vol. 11, No. 5, pp. 393-410.

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B) PAPERS (PAST)

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Are There Bubbles in the Art Market? (with N. Srivastava)

EDUCATION

1965-9 - BA in Economics, Mathematics, Statistics and Politics, University of New South Wales.

1971 - Diploma in Education, Balmain Teachers' College

1972 - Teachers Certificate, Department of Education, NSW

1972-73 - MA in Mathematics, University of Sydney

1974-75 - M. Commerce in Economics, University of New South Wales

1976-80 - Ph.D. in Economics, University of London (The Ph.D. was supervised by Professor J.D. Sargan), examined by P. Phillips and D. Sargan.

1990 - MA (Cambridge).

1995 - Ph.D (Cambridge), examined by P. Robinson and P. Schmidt.

2001 - FIA (Institute of Actuaries) Honorary

SUPERVISION

1987-2007 Have supervised students from all colleges in Paper 12, now Paper 11. Have supervised papers 1, 2, 5, 6 of Prelim and papers 7, 11, and 12 of Part 2 (now 6, 10, and 11).

TEACHING

1973 - Taught for two years in high school, was inspected and received Teacher's Certificate.

1975 - Taught again at NCR, learnt and taught various computing languages.

1976-78 - Taught Introductory Econometrics in a September Mathematics Course to MA in Economics students at the LSE.

1977 - Whilst Lecturer in Statistics, taught:

- (i) post-graduate course in Causal Analysis
- (ii) post-graduate course in Advanced Time-Series

1978 - Shared courses in Econometric Theory

1979-86 - At Essex: Taught courses in Econometric Theory

- (i) Statistics
- (ii) Econometrics
- (iii) Computing
- (iv) Mathematical Economics
- (v) Finance

1987-90 - Finance, Econometrics (Cambridge Papers 12, 25, 31)

1990-91 - Taught Advanced Econometrics at Birkbeck.

1991-92 - Taught Introduction to Mathematical Economics.
Advanced Econometrics.

BASE (Birkbeck Advanced Studies in Economics) course on Finance

1992-93 - Taught September course Mathematics, taught Theory of Finance (M.Sc.), Financial Econometrics (M.Sc.), Financial Econometrics (B.Sc.).

1993-2004 - Taught Papers 7, 12, 31 201, 231, 301 and 321 (not all simultaneously).

2005-2007 Taught Papers 7, 11, and 403, also taught Risk Management in Msc, Financial Engineering, Birkbeck, and Corporate Finance, University of Sydney.

CONSULTING EXPERIENCE

My consulting experience is very extensive, particularly in the areas of asset management and investment technology. I have supervised the building and maintenance of portfolio risk models. I have organised conferences for risk managers, investment professionals, and academics. I have carried out risk analysis on investment strategies and investment products. I can provide specific details on any of these areas if requested. I have worked with large numbers of international financial institutions and can provide testimonies as to my value – added if required.

I also work in mortgages, house prices, and real estate generally; recently, I designed with G. Christodoulakis the FT House Price Index for Acadametrics. I have also built mortgage default and loss models for Acadametrics. In conjunction with Acadametrics, I have been involved in the validation of risk models for lending institutions; this has been part of Basle II work in the recent past.

GENERAL CONTRIBUTION

I received colours from the LSE for cross-country running in 1977 and 1978. I was also Secretary of London University Cross-Country Club 1978. I represented Trinity College at cross-country running 1987-1988, completed the London Marathon on 5 occasions, best 3.04.41 (1987). I was

reserve for Cambridge University Marathon Team (1990). In recent years, I ran 10 km in 44.32, Oct 2000, 44.05 in Mar, 2001; 44.48 in Jan, 2003, 44.52 in March 2005 , 42.53 in Feb, 2006, 44.24 in April 2007. I have won a number of medals in Veteran's road running.

CAMBRIDGE FACULTY ADMINISTRATION

At various stages I have been on:

Management Board for Management Studies Tripos

Statistics Committee (Chair)

Graduate Admissions Committee, was acting Admissions Officer 1989

Organised Seminar Series in Finance

Organising Seminar Series in Econometrics

Future Needs and Lecture List Committee

Faculty Board

Appointments Committee

College Administration

Director of Studies (1987- 2011) and Director of Admissions in Economics (1987-1994)

Trinity College

Finance Committee (1991-2003) ,2008 to 2011 and Treasurer of Trinity in Camberwell (charity) (1989-1992) plus other minor committees. Inspector of Accounts 1994-5 and 1996-97.

Wine Committee from 2005 to 2012.

Birkbeck Administration 1991-92

Department Seminar Organiser

Chairman Finance Examinations

Appointments Committee

Ph.D. Admissions

M.Sc. Finance Admissions

Jointly responsible for the creation of the new M.Sc. Finance (currently 70 students) which has now run successfully for 15 years.

Cambridge Administration 1993 to present

Appointments Committee

M.Sc. Finance Admissions

Chairman Finance Exams

M.Sc. Finance Co-ordinator

1993-94 Coordinator Papers 12, 31, 201, 231.

MSc Finance Admissions

1994-95 Coordinator Papers 12 and 231.

1995-96 Coordinator Papers 12, 201,231. Chairman ETE Exams.

1996-1999 Coordinator Papers 7 and 12.

1999-2000 Acting Graduate Chairman

2000-2001 Coordinator Paper 301.

2002-2006 Coordinator Papers 6 and 11. Head of Part 1 Examiners (2004).

PROFESSIONAL CONTRIBUTIONS

Refereeing

I have refereed articles for the *Journal of Econometrics*, *Econometrica*, *IER*, *Mathematical Social Sciences*, *Journal of Public Economics*, *Review of Economic Studies*, *Econometric Theory*, and *Journal of Applied Econometrics* plus many other journals.

Visiting and Seminars

I have given seminars at many British and Australian Universities and have been a visitor at Monash University (1985), (1987) and the University of New South Wales (1986) and Australian National University (1986), (1987). I have visited the University at Western Ontario (1988) and been a Visiting Fellow to University College, London. In 1989, I visited Complutense, Madrid. I am currently 4 times a Visiting Professor at Birkbeck College, London (1994 -). I recently visited University of Technology, Sydney (1998-2006). I have been appointed Visiting Professor at CASS/CUBS (2000-2006) and Visiting Professor at Birkbeck College (2000-2006) and Visiting Lecturer in Applied Mathematics at Oxford University (2002-2004). I am currently an Adjunct Professor at UTS (Sydney), and have had an association since 1997.

Supervision and Examination

I have supervised numerous post-graduate students and have successfully supervised the Ph.D.'s of A. Nasim at Essex and of M. Ncube and Y. Yoon, B. Eftekhari and S Hwang, G. Kuo, C. Pedersen, M. Sokalska, S. Bond, L. Middleton(Judge), M. Pitsillis, T. Darsinos, A. Sancetta, S. Yang, R. Lewin(Judge), G. Davies, W. Cheung , R. Corns, O. Williams and P. Contreras ,J.Zhang, R. Louth, Jimmy Hong, Nandini Srivastava, Omri Ross(Maths) at Cambridge, plus other Cambridge students on a joint supervision basis including A. Timmermann and L. Shi. Other successful PhD students supervised at Birkbeck include Y. Hatgioniddes, R. Daccó, M. Karanassou, G. Christodoulakis , B. Chu , Wei Jin, Wei Xia , Riko Miura and John Wylie from Sydney University.

My current students consist of four Cambridge Ph.D. students in Economics and three Birkbeck students. Plus one from Sydney University I have been an Examiner every year that I have taught at University. I have been external examiner at Queen Mary College and London School of Economics (Econometrics), and at London School of Economics (Economics), Imperial College, and Essex University. I have also examined over forty doctoral dissertations in Econometrics, Finance and Land Economy at universities in Great Britain, Europe, Canada, and Australia.

Awards and Prizes

My research project was awarded a prize (the Inquire Prize for the best presentation at the annual Inquire Conference, Bournemouth, 1991 value £3,000).

Received Econometric Theory Multa Scripsit Award (1997).

My paper The Pricing of Market-to-Market Contingent Claims in a No-Arbitrage Economy was runner-up 1997 E. Yetton Award for the best paper published in AJM (1997).

Received Honorary Membership of the Institute of Actuaries (2001), received F.I.A.

Fund Raising

I have raised well in excess of £1,000,000 since 1991, I give details below:

I raised £105,000 for a financial econometrics project, the research was done at the Department of Applied Economics (Cambridge). This was funded by Inquire and the Newton Trust. The research project brought Professor W. Perraudin to Cambridge and employed Y. Yoon.

I have received £9,000 from the Newton Trust for 1993-94; and have had 2 research grants from ESRC joint with W. Perraudin, total value about £60,000. I have received £17,500 from Inquire for 93-94. I have received a further £20,000 from the Newton Trust (1993).

I started a new research project on the Econometrics of Emerging Markets. I received £30,000 from the Newton Trust (1994) and £10,000 from Inquire (1995) and £30,000 from Kleinwort Benson Investment Management (1995) plus a further £28,000 from Alpha Strategies (1998). This project has employed R. Daccó, and S. Huang.

I received £26,000 from the DSS to work on Pension Funds (joint with C. Pratten). I received £10,000 from Inquire (1996). I received a further £10,000 from Inquire (1997). In 1998, I received £7,500 for research on trading rules from a private donor and a further £25,000 from the Newton Trust. I received £4,500 research donation from Alpha Strategies and £2,500 from General-Re to speak at their annual conference (joint with C. Pratten), plus £6,500 from Inquire (1998) and £9,000 from Inquire (2000), £8,000 from Inquire (2003) and a grant of £6,000 from Acadametrics to employ J. Zhang.

I have received an ESRC grant of £80,000, which employed A. Sancetta for two years (2003-2004).

In 2005 I received with S. Hwang and B. Chu £45,000 from the ESRC to research on risk-management and non-linear correlation.

I have also received two grants of 3000 pounds each from Reading University(2005-2006) to work on real estate finance and a grant of (approx.) 20,000 pounds in 2006, joint with S. Bond and S. Hwang to work on asset allocation issues, the grant being from IRF.

Summary of Discovery Project Proposal for Funding to Commence in 2010

DP1093842 A/Prof HJ Bateman; Prof JJ Louviere; Dr SJ Thorp; Dr C Ebling; A/Prof T Islam; Prof S Satchell; Prof JF Geweke

Approved The paradox of choice: Unravelling complex superannuation decisions

Approximately A\$960,0000

CIFR Grant Graham Partington, Steve Satchell, Richard Philip, Amy Kwan
Measuring market quality: current limitations and new metrics \$140,000 total

CIFR Grant: Identifying Asset Price Bubbles in Australian Listed Securities

\$122,000 total

Popular Articles

Making Money Out of Chaos, *Investors Chronicle*, 10th July 1992. (Interview)

Articles in the *International Broker*, (with Allan Timmermann), (15 pieces), listed next.

Weekly columns on Investment Techniques:

Equity switch programme (Vol. 6, page 7)

Making money out of chaos (Vol. 7, page 6)

Where random walks trips up (Vol. 8, page 7)

Ignorance can be profitable (Vol. 9, page 7)

Making money from market volatility (Vol. 10, page 7)

High-low prices in options trading (Vol. 11, page 7)

Can heavy trading be profitable? (Vol. 12, page 7)

Economic variables show stock returns (Vol. 13, page 7)

No mean return on shares (Vol. 14, page 9)

Do option prices augur a crash? (Vol. 15, page 9)

Puzzles in closed-end fund prices (Vol. 16, page 9)

Capital asset pricing model challenged (Vol. 17, page 9)

How dividends affect share prices (Vol. 18, page 9)

The relationship between price and volume (Vol. 19, page 9)

How persistent are financial market shocks? (Vol. 22, page 9)

Research work written up by International Management (April 1993).

Article in the *Professional Investor* (May 1995), Short-termism (with D.C. Damant), (pages 21-27).

Article in the *Professional Investor* (July 1995), Accounting for Derivatives (with D.C. Damant).

Book Review on Ethnic Minorities and Higher Education in *Higher Education Review*, 1996, 28:2, 96.

Article in the *Professional Investor* (June 1996), Downside Risk (with D.C. Damant).

Contribution to discussion *British Actuarial Journal*, Volume 3, Part I, pages 10-11, 1997

Contribution to discussion *British Actuarial Journal*, 1998.

Article on Lloyd's Syndicate Valuations Methodology, (*ALM News*), 1998.

Research discussed in *Observer* (26th April 1998, page 11).

Research discussed in *Inside Monthly* (April 1998, pages 12-14).

Interviewed on Bloomberg TV (27th February 1998)

Pension Scheme Investment Policies, DSS Research Report No. 82 (with C. Pratten), 1998.

Designed the FT Acadametrics House Price Index, 2003. This Index appears monthly in the FT and is

usually discussed by journalists and market pundits.

Contribution to discussion, *British Actuarial Journal*, 2006.

The Impact of Utility on Endowment Strategy, *Professional Investor*, April 2007.

Interviewed on ABC re financial crisis(October 2008)

Research Affiliations (past and present)

Head of Research,Bita-Risk.

Academic Advisor, Alpha Strategies

Advisory Panel, IFC (Subsidiary of the IMF)

Academic Advisor, Kleinwort Benson Asset Management

Academic Advisor Kiln Colesworth Stewart (Member's Agents, Lloyds)

Academic Panel, Panagora Asset Management (1992-1998)

U.K. Representative, Pension Research Institute (State University of California)

Fellow, Pensions Institute (Birkbeck College)

Academic Adviser, Quantec

Academic Panel, State Street Global Advisors

Research Advisor, Thesys Forecasting, currently Acadametrics.

Visiting Professor, Cass Business School, City University,

Visiting Professor University of Technology, Sydney.

Visiting Professor, Birkbeck College.

Honorary Visiting Professor University of Sydney

Academic Advisor, Style Research Associates

Visiting Lecturer, University of Oxford, applied mathematical finance diploma.

Academic Adviser, Northern Trust.

Academic Advisory Board, Old Mutual Asset Management.

Expert Witness between fund Manager and Pension Fund., 2003.

Expert Witness between fund Manager and Pension Fund, 2004-2006.

Expert Witness between Insurance Company and Lettuce Grower.

Adviser in Risk Management to the Governor of the Bank of Greece.

Head of Research, BITA Risk..

Member, Advisory Board, Quantitative Finance Research Centre, UTS.

Member, Steering Committee, CIMF, Cambridge University.

Area Coordinator, Fundamentals of Economic Analysis, Libros de Economía y Empresa, Real Academia de Ciencias Morales Y Políticas.

Consultant, JP Morgan AM, Behavioural Equity Team.

Academic Advisor, Lombard-Odier Asset Management.

Program Committees

European Meeting of the Econometric Society (1997)

Forecasting FX Conference organized by Imperial College and B.N.P. (1996 to 2007)

Inquire UK (2006, 2007)

Program Committee, UK Inquire.

Prize Committee, European Inquire.

Conferences and Seminars

NZ Econometric conference, feb,2011.

Conferences and Seminars (2009)

Presented seminars at:

Sydney University (April 3rd);

Macquarie Bank (April 7th),

CRMC Sydney (April 8th);

Sydney Q group, April 15th.

Conferences (2008)

Finance Conference, London, October, key-note speaker.

Chair, LQ conference (Cambridge, September), presented.

Prize Committee, Inquire Europe(Bordeaux, October).

Conferences (2007)

Finance Conference, Imperial College, March 2007, Discussant.

Finance Conference, Zurich, March 2007. Invited Key Note Speaker.

Alpha Strategies Finance Conference, April 2007, Duke University, chaired conference.

UKSIP Lecture on Endowments, April 2007.

Alpha Strategies Finance Conference, September 2007, Oxford University, chaired conference.

Conferences (2006)

Alpha Strategies Finance Conference, April 2006, Duke University, chaired conference.

Risk Management Conference, June 2006, Bank of Greece, Athens. Gave paper, helped organize programme.

Asset Allocation Summit, July 2006, London, presented paper.

New Zealand Econometrics Conference Dunedin August 2006, chaired session, gave paper, was on prize committee.

Alpha Strategies Finance Conference, September 2006, Cambridge University, chaired conference.

FEDERAL COURT OF AUSTRALIA

Practice Note CM 7

**EXPERT WITNESSES IN PROCEEDINGS IN THE
FEDERAL COURT OF AUSTRALIA**

Practice Note CM 7 issued on 1 August 2011 is revoked with effect from midnight on 3 June 2013 and the following Practice Note is substituted.

Commencement

1. This Practice Note commences on 4 June 2013.

Introduction

2. Rule 23.12 of the Federal Court Rules 2011 requires a party to give a copy of the following guidelines to any witness they propose to retain for the purpose of preparing a report or giving evidence in a proceeding as to an opinion held by the witness that is wholly or substantially based on the specialised knowledge of the witness (see **Part 3.3 - Opinion** of the *Evidence Act 1995* (Cth)).
3. The guidelines are not intended to address all aspects of an expert witness's duties, but are intended to facilitate the admission of opinion evidence¹, and to assist experts to understand in general terms what the Court expects of them. Additionally, it is hoped that the guidelines will assist individual expert witnesses to avoid the criticism that is sometimes made (whether rightly or wrongly) that expert witnesses lack objectivity, or have coloured their evidence in favour of the party calling them.

¹ As to the distinction between expert opinion evidence and expert assistance see *Evans Deakin Pty Ltd v Sebel Furniture Ltd* [2003] FCA 171 per Allsop J at [676].

Guidelines

1. General Duty to the Court²

- 1.1 An expert witness has an overriding duty to assist the Court on matters relevant to the expert's area of expertise.
- 1.2 An expert witness is not an advocate for a party even when giving testimony that is necessarily evaluative rather than inferential.
- 1.3 An expert witness's paramount duty is to the Court and not to the person retaining the expert.

2. The Form of the Expert's Report³

- 2.1 An expert's written report must comply with Rule 23.13 and therefore must
 - (a) be signed by the expert who prepared the report; and
 - (b) contain an acknowledgement at the beginning of the report that the expert has read, understood and complied with the Practice Note; and
 - (c) contain particulars of the training, study or experience by which the expert has acquired specialised knowledge; and
 - (d) identify the questions that the expert was asked to address; and
 - (e) set out separately each of the factual findings or assumptions on which the expert's opinion is based; and
 - (f) set out separately from the factual findings or assumptions each of the expert's opinions; and
 - (g) set out the reasons for each of the expert's opinions; and

²The "*Ikarian Reefer*" (1993) 20 FSR 563 at 565-566.

³ Rule 23.13.

(ga) contain an acknowledgment that the expert's opinions are based wholly or substantially on the specialised knowledge mentioned in paragraph (c) above⁴; and

(h) comply with the Practice Note.

2.2 At the end of the report the expert should declare that “[the expert] has *made all the inquiries that [the expert] believes are desirable and appropriate and that no matters of significance that [the expert] regards as relevant have, to [the expert's] knowledge, been withheld from the Court.*”

2.3 There should be included in or attached to the report the documents and other materials that the expert has been instructed to consider.

2.4 If, after exchange of reports or at any other stage, an expert witness changes the expert's opinion, having read another expert's report or for any other reason, the change should be communicated as soon as practicable (through the party's lawyers) to each party to whom the expert witness's report has been provided and, when appropriate, to the Court⁵.

2.5 If an expert's opinion is not fully researched because the expert considers that insufficient data are available, or for any other reason, this must be stated with an indication that the opinion is no more than a provisional one. Where an expert witness who has prepared a report believes that it may be incomplete or inaccurate without some qualification, that qualification must be stated in the report.

2.6 The expert should make it clear if a particular question or issue falls outside the relevant field of expertise.

2.7 Where an expert's report refers to photographs, plans, calculations, analyses, measurements, survey reports or other extrinsic matter, these must be provided to the opposite party at the same time as the exchange of reports⁶.

⁴ See also *Dasreef Pty Limited v Nawaf Hawchar* [2011] HCA 21.

⁵ The *“Ikarian Reefer”* [1993] 20 FSR 563 at 565

⁶ The *“Ikarian Reefer”* [1993] 20 FSR 563 at 565-566. See also Ormrod *“Scientific Evidence in Court”* [1968] Crim LR 240

3. Experts' Conference

- 3.1 If experts retained by the parties meet at the direction of the Court, it would be improper for an expert to be given, or to accept, instructions not to reach agreement. If, at a meeting directed by the Court, the experts cannot reach agreement about matters of expert opinion, they should specify their reasons for being unable to do so.

J L B ALLSOP

Chief Justice

4 June 2013