

Mr Justin De Lorenzo
Group Chief Financial Officer
Networks NSW
Level 6,
44 Market Street
Sydney NSW 2000
(via email)

9 January 2015

Dear Mr De Lorenzo

In your letter to me dated 2 January 2015 you brought to my attention, and requested a response to, the following quote from a draft decision by the Australian Energy Regulator¹ (AER).

“The key reasons for giving the FFM no role at the time of the publication of the Guideline were:

- *There is little evidence of the use of the FFM either by companies to estimate their cost of capital or by regulators.*
- *Empirical implementation of the FFM is relatively complex and opaque and estimates are sensitive to the choice of estimation period and methodological assumptions. The two key points raised were:*
 - *Estimates of the value and size factors vary considerably suggesting the model is not robust and is sensitive to different time periods and estimation methodologies*
 - *The FFM is more complex to estimate than the SLCAPM as there are more input parameters to estimate.*
- *There is a lack of theoretical foundation for the factors and the instability of parameter estimates, as well as the disappearance of the size effect, may reflect the lack of theoretical foundations for the factors in the FFM.*
- *The ex-post (backward looking) observation of apparently priced risk factors does not actually mean these factors are priced ex-ante (on a forward looking basis).”*

I respond to each of the dot points listed above in order. In what follows I refer to ‘Fama French factor models’ to cover both the Fama French 3 factor models well established in the literature and the more recently developed Fama French 5 factor model.

¹ AER draft determinations for Ausgrid, Endeavour Energy and Essential Energy, section A2.2. of Attachment 3.
<http://www.aer.gov.au/node/11483>

First, I am not aware of any evidence about how widespread the use of Fama French factor models is to estimate the cost of capital by regulators. Nor am I aware of any evidence to support the proposition that regulators' views about the cost of equity are more or less authoritative than those of other market participants. I am aware of a 14 year-old survey of how corporations determine their cost of capital. Graham and Harvey (2001) surveyed 390 CFO's about which methods their firm used.² 73.5% of respondents replied that they used the CAPM. The next two most popular methods were the average historical return (more than 35%) and a "multi-beta CAPM" (more than 30%).³ The fourth most used method was the dividend discount model. Note that the surveyed CFOs did not use but one method. They used a number of methods simultaneously to arrive at an estimate of their firm's cost of capital. (This is obvious from the fact that $73.5\% + 35\% + 30\% > 100\%$.)

I do know that the Fama French factor models are widely used by fund managers who play an important role in financial market valuations and capital allocation in the economy. One such example is the widely respected Morningstar company, which publishes a Fama French "alpha" for index funds. The return required by suppliers of capital ultimately determines the cost of capital that must be used by companies if they wish to survive competition, not be taken over, and raise capital in the future. Morningstar's Fama French "alpha" measures the difference between the realized return on a function and the return predicted by its exposure to the 3 factors of the Fama French 3 Factor Model. Morningstar's Fama French "alpha" uses the Fama French 3 factor model as the benchmark for what investors should earn for taking on risk exposure.

Second, the AER's suggestion that implementation of the Fama French factor models is 'opaque' is inconsistent with the more than two decades of publications by Fama and French outlining in detail how to implement their model, the widespread replication of their studies across a number of jurisdictions and time periods, and the public provision of the data that underpins these studies—see the Fama-French data library on Ken French's website. This data library makes available the data underlying the research by Fama and French.

http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

I am similarly perplexed by the AER's claim that the Fama French models are complex. Given the transparency of the methodology, implementation of the Fama French models is straight-forward. I do not consider that implementation is materially more complex than for the Sharpe Lintner CAPM. While the AER believes "Estimates of the value and size factors [are] sensitive to different estimation methodologies", Fama and French (2014) documents at length that the performance of the Fama French model is not sensitive to the estimation methodology employed to examine data from a given time period.⁴

² Graham, John R. and Cambell R. Harvey, 2001, "The theory and practice of corporate finance: evidence from the field," *Journal of Financial Economics* 60, pp 187-243.

³ Whether the survey respondents were referring to the 2 factor variant of the Fama French 3 factor model that was being investigated by numerous researchers in the 1980's and 1990's (the 2 factors being the market and size factors) or the 3 factor Fama French model (the market, size and value factors) is not made clear in the paper.

⁴ Fama, Eugene F. and Kenneth R. French, 2014, "A five-factor asset pricing model," Fama-Miller Working Paper. Available at SSRN: <http://ssrn.com/abstract=2287202> or <http://dx.doi.org/10.2139/ssrn.2287202>

The AER is correct that estimates of the sensitivity of equity returns to value and size factors do vary across studies, in particular across the time period examined. However, the same is true in relation to estimates of the sensitivity of returns to the beta risk factor in the Sharpe Lintner CAPM. If variation through time in the estimated sensitivity of returns to a risk factor implies a model is not robust then the Sharpe Lintner CAPM must also be found to be not robust (and for analogous reasons all other models in finance and economics must be found not to be robust). The realized differences (i) between the returns on small versus large stocks (the realized return to the size factor), (ii) between the returns on value versus growth stocks (the realized return to the value factor), and (iii) between low and high beta stocks (the realized return to the market factor) all depend on the time period studied precisely because they must if we are dealing with the realized return associated with exposure to a risk factor. If one set of stock did always outperform another, then there would be an arbitrage opportunity! The difference in the returns on any two sets of stocks must sometimes be negative and sometimes be positive.

Moreover, it is empirically observed that where the Sharpe Lintner beta is the only risk factor modelled, the sensitivity of returns to beta is in fact much lower than predicted by the Sharpe Lintner CAPM. That is, the Sharpe Lintner CAPM results in biased predictions for stocks whose measured beta differs from 1.0. This is clear from a reading of the academic papers cited by the AER in its past decisions.

Third, it is correct that the Fama French factor models are empirical models in the sense that they seek to describe empirical regularities in the finance data. However, empirical models are at the heart of all science. Newton's theory of universal gravitation was an empirical model designed to fit the empirical observation. Newton discovered within the empirical data, a factor that explained (at least based on the data available to him) the observed strength of gravitational forces.⁵ The only theoretical foundation for Newton's theory was that it explained the empirical evidence. There was no theoretical foundation beyond that. Claiming that an empirically derived model should not be relied on because it lacks "theoretical foundations" implies that there is some form of 'truth' which is known and cannot be falsified by empirical observation. In this context it would appear that the AER regards the Sharpe Lintner CAPM model as the relevant source of 'truth'. I do not regard such a position as consistent with the scientific method.

It is also important to recognize that multi-factor models such as the Fama French model do in fact have a strong theoretical basis. In the real multi-period world in which investors invest in firms and firms invest in projects, it is well-established that required returns are determined not only by a project's beta with respect to the return on the market, but also by its beta with respect to factors that measure changes in the investment opportunity set. Investors care not only about how much they can consume at the end of the year, but also about what their reinvestment opportunities are at the end of the year. This fundamental observation dates to the seminal Merton (1973) paper.⁶ Financial theorists view the

⁵ A factor that was proportional to the product of two body's masses and inversely proportional to the square of the distance between them.

⁶ Merton, Robert C., 1973, "An intertemporal capital asset pricing model," *Econometrica* 41(5), pp. 867-887. Merton was awarded the Nobel prize in 1997.

empirically derived factors in the Fama French model as proxies for changes in the investment opportunity; i.e., for changes in the risk of and expected returns on investments to be made at future dates.⁷

The AER make an observation that “the disappearance of the size effect may reflect the lack of theoretical foundations for the factors in the FFM.” Based on the values of the realized size effect reported on Ken French’s website, the size effect did average negative 0.865% per annum for the 10 years from 1994 to 2003. Researchers using data from this period began to question whether the size effect had disappeared. But with the passage of time more data has been obtained and such questioning has not continued. Ken French’s website reports that the size effect has averaged 2.33% per annum over the subsequent 10 year period (2004 through 2013). One should always keep in mind that differences between the realized returns on any two sets of stocks *must* change in sign over time if there are not to be arbitrage opportunities and what occurred during the decade ending in 2003 is exactly what must occur from time to time. It is my opinion that the data does not support a conclusion that the size effect has disappeared.

Fourth, it is true that models that describe historical relationships do not necessarily explain future relationships. Past relationships may not exist in the future. However, it is reasonable to believe that the models that best describe the historical data under a given set of conditions will describe the future data under the same set of conditions. Moreover, it is quite unsafe to assume that a model like the Sharpe Lintner CAPM, the results of which do not explain the historical data, will reliably explain the future at all, let alone do so better than the Fama French models.

Yours sincerely,

A handwritten signature in cursive script that reads "Bruce D Grundy".

Bruce D. Grundy
Professor of Finance
The University of Melbourne

⁷ Fama, Eugene F. and Kenneth R. French, 2004, “The capital asset pricing model: Theory and evidence,” *Journal of Economic Perspectives* 18(3), pp. 25-46.

Mr Bruce Grundy

Faculty of Business & Economics

University of Melbourne
(via email)

2 January 2015

Dear Mr Grundy

AER critique of Fama French models

Thank you for agreeing to comment on the Australian Energy Regulator's (AER) draft determination for Ausgrid, Endeavour Energy and Essential Energy (Networks NSW). In particular we would appreciate your perspectives on the AER's critique of the Fama French model.

The key elements of the critique of the Fama French model by the AER are reproduced below.¹

"The key reasons for giving the FFM no role at the time of the publication of the Guideline were:

- *There is little evidence of the use of the FFM either by companies to estimate their cost of capital or by regulators.*
- *Empirical implementation of the FFM is relatively complex and opaque and estimates are sensitive to the choice of estimation period and methodological assumptions. The two key points raised were:*
 - *Estimates of the value and size factors vary considerably suggesting the model is not robust and is sensitive to different time periods and estimation methodologies*
 - *The FFM is more complex to estimate than the SLCAPM as there are more input parameters to estimate.*
- *There is a lack of theoretical foundation for the factors and the instability of parameter estimates, as well as the disappearance of the size effect, may reflect the lack of theoretical foundations for the factors in the FFM.*

¹ AER, draft decision, Ausgrid distribution determination, 2015–16 to 2018–19, Attachment 3: Rate of return, November 2014, p. 3-172.

- *The ex-post (backward looking) observation of apparently priced risk factors does not actually mean these factors are priced ex-ante (on a forward looking basis)."*

I am hopeful that you may be willing to write a short response to the AER on each of the four main dot point criticisms listed above. Please do not hesitate to contact me should you wish to clarify any part of this request.

Yours sincerely,

Justin De Lorenzo
Group Chief Financial Officer, Networks NSW

Bruce D. Grundy
Curriculum Vita
September 2014

Department of Finance, Faculty of Business & Economics
The University of Melbourne, Victoria 3010 Australia

Education

PhD, Finance, Graduate School of Business, University of Chicago. 1992.

Specialisations:

Finance and Economics. Beta Gamma Sigma. Dissertation: "Preferreds and Taxes."

Committee: Merton Miller (Chairman), George Constantinides, Douglas Diamond.

B. Com. Honours (1st Class), University of Queensland. 1977.

Academic Positions

Professor of Finance, University of Melbourne 2005-present

Ian Potter Professor, Melbourne Business School, 2000-2005.

Professor of Finance, University of Melbourne, 1998-1999.

Andrew Heyer Assistant Professor of Finance, Wharton School, University of
Pennsylvania, 1991-1998.

Assistant Professor of Finance, GSB, Stanford University, 1985-1990.

Visiting Positions:

Visiting Professor, London Business School, Fall 2013.

Visiting Professor, Wharton School, University of Pennsylvania, Fall 2005, Fall 2006,
Fall 2007.

Visiting Professor, Singapore Management University, Fall 2005.

Visiting Professor, University of Chicago, Winter 2003.

Metzler Bank Professor, Johann Wolfgang Goethe-Universität Frankfurt am Main,
Summer 1998.

Visiting Professor, Macquarie University, Summer 1994.

Publications

- “Charitable fund raising: Matching grants or seed money,” 2014, *Journal of Economic Behavior and Organization* 108, 147-165. Co-author: Ning Gong.
- “Why are conversion-forcing call announcements associated with negative wealth effects?” 2014, *Journal of Corporate Finance* 24, 149-157. Co-authors: Chris Veld, Patrick Verwijmeren, Yuriy Zabolotnyuk.
- “Stock returns and the Miller-Modigliani valuation formula: Revisiting the Fama-French analysis,” 2013, *Journal of Financial Economics* 110(2), 347-357. Co-authors: Gil Aharoni and Qi Zeng.
- “Convertibles and hedge funds as distributors of equity exposure,” 2012, *Review of Financial Studies* 25(10), 3077-3112. Co-authors: Stephen Brown, Craig Lewis and Patrick Verwijmeren.
- “Do option markets undo restrictions on short sales? Evidence from the 2008 short-sale ban,” 2012, *Journal of Financial Economics* 106(2), pp. 331–348. Co-authors: Bryan Lim and Patrick Verwijmeren.
- “Investor sentiment, executive compensation, and corporate investment,” 2010, *Journal of Banking & Finance* 34, pp. 2439-2449. Co-author: Michael Li.
- “Disclosure, hidden charges and indexed pensions,” 2005, *Agenda: A Journal of Policy Analysis and Reform*, 12(1), pp. 33-46. Co-authors: Diana Beal and Sarath Delpachitra.
- “Stock market volatility in a heterogeneous information economy,” 2002, *Journal of Financial and Quantitative Analysis* 37(1), pp. 1-27. Co-author: Youngsoo Kim.
- “Momentum: Fact or factor? Momentum investing when returns have a factor structure,” 2001, *Review of Financial Studies* 14(1), pp. 29-78. Co-author: Spencer Martin.
- “Merton H. Miller: His contribution to financial economics,” 2001, *Journal of Finance* 56(4), pp. 1183-1206.
- “Generalized properties of option prices,” 1996, *Journal of Finance* 51(5), pp. 1573-1610. Co-authors: Yaacov Bergman and Zvi Wiener.
- “Option prices and the underlying asset’s return distribution,” 1991, *Journal of Finance* 46(3), pp. 1045-1070.

- “Changing risk, changing risk premiums, and dividend yield effects,” 1990, *Journal of Business* 63(1), pp. 51-70. Co-authors: Nai-fu Chen and Robert F. Stambaugh.
- “Optimal investment with stock repurchase and financing as signals,” 1989, *Review of Financial Studies* 2(4), pp. 445-465. Co-author: George Constantinides.
- “Trade and the revelation of information through prices and direct disclosure,” 1989, *Review of Financial Studies* 2(4), pp. 495-526. Co-author: Maureen McNichols.
- “Call and conversion of convertible corporate bonds: theory and evidence,” 1986, *The Analysis of Security Prices* 31, pp. 35-70. Co-author: George Constantinides.
- “The behavior of stock prices around ex-dividend dates,” 1983, *The Analysis of Security Prices* 28, pp. 83-114.

Edited Volumes

- Selected Works of Merton Miller: A Celebration of Markets. Vol I Finance*, 2002
(University of Chicago Press, Chicago, Ill).
- Selected Works of Merton Miller: A Celebration of Markets. Vol II Economics*, 2002
(University of Chicago Press, Chicago, Ill).

Other Publications

- “Hedge Fund Involvement in Convertible Securities,” 2013, *Journal of Applied Corporate Finance* 25(4), 60-73. Co-authors: Stephen J. Brown, Craig M. Lewis and Patrick Verwijmeren
- “Stock return predictability in rational markets,” 2007, *Insights: Melbourne Economics & Commerce* 1(April).
- “Real options analysis and investment appraisal: the opportunities and challenges,” 2006, *Insights: Melbourne Economics & Commerce* 4(November).
- “Book Review: *Pricing and hedging of derivative securities* by Lars Tyge Nielsen,” 2000, *Journal of Financial Research* 23, pp. 391-394.

Working Papers

“Disappearing call delay and dividend-protected convertible bonds,” Co-author: Patrick Verwijmeren.

“Can socially responsible firms survive competition? An analysis of corporate employee matching grants,” Co-author: Ning Gong.

“Differential information and derivatives pricing,” Co-author: Qi Zeng.

Work in Progress

“Option microstructure and the smile,” Co-authors: Bryan Lim and Patrick Verwijmeren

“A market clearing explanation of the profitability of momentum strategies,” Co-authors: Wei Li, Qi Zeng and Zhe Zhang

“Hoteling, OPEC and the term structure of expected future oil prices,” Co-author: Richard Heaney.

“Valuation of crude oil and gas reserves,” Co-author Richard Heaney.

“An analysis of shareholder ownership patterns for Australian firms,” Co-authors: Dean Hamlon and Sean Pinder

Awards

2012 FIRN Best Policy Paper Prize

2012 Third Annual Financial Markets & Corporate Governance Research Prize

2010 Deakin University Quantitative Finance/Risk Management/Derivatives/Corporate Governance Conference Research Prize

1998 Geewax-Terker Research Prize

1994-95 Batterymarch Fellowship

2009, 2010, 2011 Faculty of Business and Economics Teaching Excellence Prize

2006, 2008 Faculty of Economics and Commerce Teaching Award

1994 Wharton Hauck Teaching Prize

1993 Outstanding Teaching Award (Wharton)

Grants

CPA Research Grant, “Links between Australia's taxation system and investment in Australian listed companies by different classes of resident and non-resident investors,” 2012-2013, joint with Sean Pinder and Dean Hamlon. \$40,000.

Faculty of Business and Economics Strategic Initiative Grant, “Neuro-Finance,” 2012-2015, joint with Carsten Murawski. \$600,000.

Australian Research Grants Council Discovery Grant, “Three Decades of Financial Distress and Corporate Restructuring in Australia” 2008-10, joint with Paul Kofman and Howard Chan. \$104,537

Australian Research Grants Council Discovery Grant, “Storage and the Hoteling Valuation Principle: Understanding the Dynamics of the Oil Industry” 2007-09, joint with Richard Heaney. \$345,000

National Science Foundation Grant, “Call and conversion of convertible bonds” 1985-1987, joint with George Constantinides. US\$300,000

Professional Society Activities

Founding Member: FIRN

Member: American Economic Association, American Finance Association, American Mathematical Society, European Finance Association, Asian Finance Association, Western Finance Association

SIRCA Research Committee: 2012-2014

Doctoral Colloquium Fellow: AFAANZ 2003 Colloquium, 2005 Colloquium

Doctoral Consortium Fellow: AFAANZ 2004 Consortium

Doctorial Consortium Fellow: Asian Finance Association 2005

Doctorial Consortium Fellow: FMA Asia 2010

Australian Society of CPA's 1999 Research Lecture

FIRN Doctoral Tutorial Discussant: 2005-07

FIRN Local Convener: 2006-2010

FIRN Governing Council: 2011-2012

Managing Editor:

International Review of Finance, 2004-2008

Associate Editor:

Journal of Finance, 2000-2003

Journal of Financial Research, 1999-2006

Accounting and Finance, 1999-2002

Journal of Financial and Quantitative Analysis, 1992-1996

Review of Financial Studies, 1988-1994

International Review of Finance, 2008-present

Advisory Editor:

International Review of Finance

Editorial Board:

Accounting and Finance, 2002-present

Business Research, 2007-present

Insights: The Faculty of Economics & Commerce, 2007-2010

Ad Hoc Referee:

Agenda, American Economic Review, Australian Economic Review, Australian Journal of Management, Accounting and Finance, European Economic Review, European Journal of Finance, Financial Management, Financial Review, Journal of Accounting Research, Journal of Business, Journal of Business and Economic Statistics, Journal of Corporate Finance, Journal of Finance, Journal of Financial Economics, Journal of Financial Intermediation, Journal of Financial Services Research, Journal of Political Economy, Journal of Public Economics, Management Science, Mathematical Finance, Review of Accounting Studies, Review of Quantitative Finance and Accounting, Review of Financial Studies, Review of Finance, Quarterly Journal of Economics

Program Committee:

Australasian Banking & Finance Conference: 2010, 2011, 2012, 2013
American Economic Association Meetings: 1998
American Finance Association Meetings: 2001
ASU Sonoran Winter Finance Conference: 2012, 2013, 2014, 2015
Asian Finance Association Meetings: 2004, 2005, 2006, 2009, 2012
Asian FMA Meetings: 2009, 2010
Finance Down Under Conference: 2009, 2010, 2011, 2012, 2013, 2014, 2015
European Finance Association Meetings: 2000, 2001, 2002, 2005, 2010, 2011, 2012, 2014
European Financial Management Association Meetings: 1999
Indiana University Symposium on Design of Securities and Markets: 1993
Journal of Accounting Research Annual Conference: 2002, 2003
Western Finance Association Meetings: 1990, 1991, 1994, 1995, 1997, 1998, 2004, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015
Review of Accounting Studies Annual Conference: 2004, 2005
Singapore International Conference on Finance: 2009, 2010
Society for Financial Econometrics: 2010
Financial Intermediation Research Society: 2010, 2011.

Reviewer:

Chair External Review Committee, ANU School of Business Department of Finance, Applied Statistics & Actuarial Science: 2010
Research Grants Council of Hong Kong: 1997, 2000, 2004, 2005, 2008, 2009, 2014
National Science Foundation Proposals: 1990, 1991, 1994, 1997
Australian Research Council: 1994, 1995, 2007
Social Sciences and Humanities Research Council of Canada: 1993 and 1994
Australian Accounting Research Foundation Exposure Draft on Director and Executive Disclosures
Singapore Management University Quantitative Finance Programme: 2003-2010.
External Reviewer, Accounting & Finance Department, Monash University: 2002
External Reviewer, Research School of Finance, Actuarial Science and Applied Statistics, Australian National University: 2012
External Reviewer, BBA, MBA and MM programs University of Malaya: 2014-2018

Discussant:

Accounting & Finance Association of Australia and NZ Meetings: 2006, 2007
American Finance Association Meetings: 1986-900, 1994-95, 2006
Annual Conference on Financial Economics and Accounting: 1992 and 1996
ANU Summer Camp: 2008, 2009, 2010, 2011, 2012
Asia-Pacific Finance Association Meetings: 1999
Asian Bureau of Finance and Economic Research Meetings: 2014
Asian Finance Association Meetings: 2004, 2005, 2006, 2009
Asian FMA Meetings: 2010
European Finance Association Meetings: 1995, 2002, 2005, 2010, 2011, 2012
Fifth Annual Texas Finance Festival: 2003
Finance Down Under: 2011, 2012, 2013
FIRN Research Day: 2010
FIRN Annual Conference, The Art of Finance, Hobart: 2012
Paul Woolley Centre on Capital Market Dysfunctional Conference: 2008, 2009, 2011
Simulation Based & Finite Sample Inference in Finance Conference: 2003
Singapore International Conference on Finance: 2008, 2009
Singapore Management University Summer Camp: 2014
Western Finance Association Meetings: 1993 and 1997
SIRCA Young Researcher Workshop 2012

Keynote Speaker:

16th Malaysian Finance Association Annual Conference: 2014
La Trobe Conference on Financial Markets and Corporate Governance: 2012
Asian FMA Meetings: 2010
Accounting & Finance Association of Australia and New Zealand Meetings: 2003
Australasian Banking & Finance Conference: 2002

Conference Organization:

The Dollars and Sense of Bank Consolidation: MBS Conference 2002
Risk Management and Pricing for Financial Institutions: Lessons from the Closed-End Fund Industry: Wharton Financial Institutions Centre Conference 1995
Finance Down Under Conference: 2007, 2008, 2009, 2010, 2011, 2012, 2015
FIRN Asset Pricing Group Meeting: 2013, 2014

Session Chair:

Accounting & Finance Association of Australia and NZ Meetings: 2003, 2004, 2005
Asian Finance Association Meetings: 2004, 2005, 2006, 2009
Asian FMA Meetings: 2010
Australasian Banking & Finance Conference: 2003, 2011
American Finance Association Meetings: 2001
European Finance Association Meetings: 2002, 2005, 2010, 2012
Western Finance Association Meetings: 1995

Conference Presentations:

Australasian Banking and Finance Conference: 1989, 2007, 2011
Australian Conference of Economists: 2006
Asian Finance Association Meetings: 2004, 2005 and 2006
Asian FMA Meetings: 2010
Australasian Q-group: 1999, 2004
FIRN Art of Finance Conference: 2012
Finance Down Under: 2010
HKUST Annual Finance Symposium: 2004
Third National Symposium on Financial Mathematics: 2004
AGSM Finance and Accounting Camp: 1996, 1997 and 1999
American Finance Association Meetings: 1986, 1989, 1990, 1996, 1997, 1998
NBER Summer Institute: 1998
Annual Conference in Financial Economics and Accounting: 1995 and 1996
American Mathematical Society Meetings: 1996
European Finance Association Meetings: 1995, 2002, 2005, 2010, 2012
NBER Financial Risk Assessment and Management Conference: 1995
N.J.C.R.F.S. Conference in Security Design and Innovations in Financing: 1993
Western Finance Association Meetings: 1984, 1989, 1993, 2010
Sixth Annual Conference MSMESB: 1991
ZEW Centre for European Economic Research, Mannheim: Conference on the Economics of Charitable Fundraising: 2009

Seminar Presentations:

Australian Graduate School of Management, Australian National University, Bond University, Boston College, Carnegie-Mellon University, Central Queensland University, Chinese University of Hong Kong, Columbia University, Commodity Futures Trading Commission, Cornell University, Dartmouth College, Deakin University, Duke University, Fields Institute for Research in Mathematical Sciences, Erasmus School of Economics, Hong Kong University of Science and Technology, Humboldt University, Indian School of Business, Insead, La Trobe University, Lancaster University, London Business School, London School of Economics, Macquarie University, Massey University, Melbourne Business School, MIT, Monash University, National University of Singapore, New York University, Northwestern University, NUS Risk Management Institute, Odense University, Ohio State University, Queen's University, Queensland University of Technology, Rutgers University, Singapore Management University, Stanford University, Tilburg University, University of Aarhus, University of Adelaide, University of Alberta, University of British Columbia, University of California Berkley, University of California Irvine, University of California Los Angeles, University of Chicago, University of Frankfurt am Main, University of Houston, University of Illinois Champaign, University of Oregon, University of Maryland, University of Melbourne, University of Michigan, University of Minnesota, University of New South Wales, University of North Carolina Chapel Hill, University of Queensland, University of South Australia, University of Sydney, University of Technology Sydney, University of Vienna, University of Western Australia, University of Washington in St Louis, Vanderbilt University, Victoria University Wellington, Washington University, Yale University

Manuscript Reviewer:

University of Chicago Press
Cambridge University Press
Academic Press

Teaching Experience

Derivatives-related courses: Honours, Masters and PhD courses on options, futures, swaps, mortgage-backed securities and exotics.

Corporate Finance-related courses: Honours, Masters and PhD courses on capital budgeting, mergers and acquisitions, corporate taxation, agency problems, information asymmetries, and security design.

Corporate Governance: MBA course

Real Options and Resource Projects: Undergraduate and MBA courses

Financial Management: Executive MBA course

Executive Education:

ABN Amro, Australian Graduate School of Management, KPMG, Liechtenstein Global Trust, Melbourne Business School, PaperLinx, PWC, Susquehanna Investment Group, Telstra Risk Management and Assurance, Turkish Capital Markets Board, Wharton School Pension Funds and Money Management Program

Member of Thesis Committees:

Completed (first appointment):

Mahmoud Agha (University of Western Australia), Alya Al Foori (Sultan Qaboos University), Ken Bechmann (Copenhagen Business School), Jacob Boudoukh (New York University), Cynthia Cia (Monash University), Jennifer Carpenter (New York University), Yangyang Chen (Monash University), Adam Dunsby (Goldman Sachs), Michael Gallmeyer (Carnegie-Mellon), Pekka Heitala (Insead), Terry Hildebrand (Enron), Ron Kaniel (University of Texas), Youngsoo Kim (Alberta), Michele Kreisler (Morgan Stanley), Guan Hua Lim (University of Singapore), Hui Li (Deakin), Zhenhua Liu (RepuTex), Spencer Martin (Ohio State), Krishnan Maheswaran (Melbourne University), Ed Nelling (Georgia State), Ian O'Connor (Melbourne University), Rob Reider (J.P Morgan), Mark Vargus (University of Michigan), Chelsea Yao (University of Lancaster), George Wang (University of Manchester)

In Progress: Michelle Zhou, Bill Zu, Emma Leyi, Yichao Zhu, John Tan

External PhD Examiner:

Aarhus University, Queensland University of Technology, University of Technology Sydney, University of Sydney, University of Western Australia, University of New South Wales, Massey University

Administrative Positions

University of Melbourne, Faculty of Business & Economics:

Acting Dean, Faculty of Business & Economics: 2007-2008.

Deputy Dean, Faculty of Business & Economics: 2006-2010.

Head, Department of Finance: 2010-2012.

Deputy Head, Department of Finance: 2008-2010.

FEC Advisory Board: 2007-2008.

Convener Melbourne Derivatives Research Group: 2006-2010

Finance Seminar Convener: 2007-2009.

FIRN Local Coordinator: 2006-2011

PhD Coordinator, Department of Finance: 2007, 2009-2011.

Research and Research Training Committee: 1999, 2007, 2009-2011

University of Melbourne

Cost Containment Committee: 2007.

Business@Melbourne Coordinating Committee: 2007-2008.

Melbourne Business School Committee: 2006-2011

Academic Structures Committee: 2008-2009

University of Melbourne, Melbourne Business School:

Director Ian Potter Centre for Financial Studies: 2000-2005

Academic Planning and Development Committee: 2002-2005

Curriculum Committee: 2002-2005

The Wharton School:

Convener Corporate Finance Workshop: 1995-1997

Wharton Fellows Fund Oversight Committee: 1993-1997

Recruiting Committee: 1995-1996

Finance Seminar Convener: 1992-1994

Stanford Graduate School of Business:

Finance Seminar Convener: 1988-1990

Deans Advisory Committee: 1986-1988