NERA
ECONOMIC CONSULTING

The Payout Ratio

A report for the Energy Networks Association

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Executive Summary

This report has been prepared for the Energy Networks Association (ENA) by NERA Economic Consulting (NERA). The ENA have asked NERA to estimate what proportion of imputation credits created are distributed to shareholders through franked dividends, ie, the payout ratio. We understand that our findings will inform the ENA's forthcoming response to the Australian Energy Regulator's (AER's) recently published *Consultation Paper* produced under the recently revised National Electricity Rules (NER) and National Gas Rules (NGR).

The value of a one-dollar imputation credit created, *gamma*, is the product of the *payout ratio* and the value of a one-dollar credit distributed, *theta*. In the AER's post-tax revenue model (PTRM) the value of gamma is used to determine the proportion of assumed company income tax that does not need to be included in a regulated firm's annual revenue requirement. In this report we compute estimates of the payout ratio using tax statistics.

In particular, we examine:

- whether current tax statistics support an estimate of the payout ratio of 0.7;

- whether, in our opinion, the payout ratio has deviated in recent years from its long term average;

- whether there are issues with the way the tax statistics are constructed that will make an estimate of the payout ratio in any one year an unreliable guide as to the long-run payout ratio; and

- how economic conditions may impact the estimation of the payout ratio.

In this report we find that:

- an estimate of the cumulative payout ratio up until 2010-11 drawn from tax statistics is 0.69, that is, identical to the estimate of the ratio that Hathaway (2010) reports; [1]

- an estimate of the payout ratio for 2010-11 will depend on the data source used:

  o an estimate of the payout ratio for 2010-11 constructed from net tax and the change in the franking account balance is 0.92; and

  o an estimate of the payout ratio for 2010-11 constructed from net tax and franked dividends distributed is 0.54;

- an estimate of the average annual payout ratio over the last five years is 0.70 and 0.53 using the tax and dividend measures, respectively;

- there is no evidence that the payout ratio has increased permanently in recent years, aside from a somewhat higher initial estimate of the payout ratio that uses the tax measure for the most recent year for which data are available, 2010-11;

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[1]   Hathaway, N., *Imputation credit redemption: ATO data 1988-2008*, Capital Research, July 2010.

- there is evidence that initial estimates of the payout ratio that use the tax measure are subsequently revised downwards;

- there are several issues with the way the tax statistics are constructed that are likely to:

  o result in estimates constructed from tax statistics overstating the cumulative payout ratio; and

  o render an estimate of the payout ratio in any one year an unreliable guide as to the long-run payout ratio; and

- economic conditions can, in principle, have an impact on the payout ratio in the short term – we find, however, little evidence that the dividend payout ratio is currently above its long-run mean.

In conclusion, we find that the cumulative payout ratio and the two measures of the annual payout ratio estimated from the latest published ATO taxation statistics support a dividend payout ratio of no more than 0.70.

1.   Introduction

This report has been prepared for the Energy Networks Association (ENA) by NERA Economic Consulting (NERA). The ENA have asked NERA to estimate what proportion of imputation credits created are distributed to shareholders through franked dividends, ie, the payout ratio. We understand that our findings will inform the ENA's forthcoming response to the Australian Energy Regulator's (AER's) recently published *Consultation Paper* produced under the recently revised National Electricity Rules (NER) and National Gas Rules (NGR).

The value of a one-dollar imputation credit created, *gamma*, is the product of the *payout ratio* and the value of a one-dollar credit distributed, *theta*. In the AER's post-tax revenue model (PTRM) the value of gamma is used to determine the proportion of assumed company income tax that does not need to be included in a regulated firm's annual revenue requirement. In this report we examine issues concerning the payout ratio.

Prior to the AER's first *WACC Review*, it had been standard regulatory practice to set gamma to 0.5 (with a range of 0.3 to 0.5)[2]. In the May 2009 *Statement of Regulatory Intent* (the 2009 SORI)[3], the AER departed from this long-term regulatory practice and set the value of gamma to be 0.65. This value was based on an assumed payout ratio of one and a theta value of 0.65.

The AER used two rationales for setting the payout ratio to one in the 2009 SORI:

First, the AER argued that while the payout ratio empirically appears to hover around 0.7, some value must be given to imputation credits that companies retain. Given the difficulty of reliably estimating the value of these retained credits, the AER considered an estimate of the payout ratio of one would be both simple and appropriate.[4] As we point out in our 2010 *Report for JGN*[5], however, an estimate of the payout ratio of one is not consistent with the data and the AER's 2010 suggestions of how firms might distribute credits over time.[6]

Second, the AER considered that assuming the payout ratio to be one was consistent with the Officer *WACC* framework and the PTRM, which assumes cash flows occur in perpetuity and are fully distributed at the end of each period.[7] Similarly, assuming a payout ratio of one is not consistent with the empirical evidence.

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[2]   AER, *Review of the weighted average cost of capital (WACC) parameters for electricity transmission and distribution – Issues Paper*, August 2008, page 74.

[3]   AER, *Electricity transmission and distribution network service providers: Statement of revised WACC parameters (transmission): Statement of regulatory intent on the revised WACC parameters (distribution),* May 2009, pages 6-7.

[4]   AER, *South Australian Distribution Determination 2010-2011 to 2014-2015*, May 2010, page 151.

[5]   NERA, *Payout Ratio of Regulated Firms*, 5 January 2010, page 6.

[6]   AER, *South Australian Distribution Determination 2010-2011 to 2014-2015*, May 2010, page 151.

[7]   AER, *Queensland distribution determination 2010–11 to 2014–15*, May 2010, page 200.

The 2009 SORI was subject to a challenge by ETSA Utilities, Ergon Energy and Energex before the Australian Competition Tribunal (the Tribunal). The Tribunal's decision on 13 October 2010, reported that:[8]

> 'the AER acknowledges that there was evidence submitted to the AER that identified the error and that the evidence was persuasive evidence justifying departure from the value of gamma, insofar only as it relates to the distribution ratio, that was adopted in the SORI.
>
> The Tribunal accepts the AER's submissions and finds that an error of fact occurred in the making of the distribution ratio.'

The Tribunal concluded that the payout ratio for the calculation of gamma should be set to 0.7.[9]

The AER, however, has foreshadowed an intention to revisit these issues. For example, the AER's *Consultation Paper* states:[10]

> 'We currently apply a payout ratio of 0.7, based on an average of estimates from two studies. Both of these studies measured the aggregate value of all franking credits accumulated against the amount of franking credits distributed for all Australian firms using tax office statistics
>
> …
>
> More recently, IPART and the ERA have also adopted payout ratios of 0.7. Nonetheless, we consider that this estimate is not definitive, and the payout ratio is not settled.'

Further the *Consultation Paper* notes that the AER is also exploring the option of adopting a specific industry sector payout ratio.[11] We note that tax statistics are not provided on an industry basis and so could not be relied on to determine the payout ratio. Instead it would be necessary to estimate the payout ratio directly from financial accounts. In our view, there are a number of practical issues associated with estimating the payout ratio from financial accounts, namely:

- the significant non-resident ownership in the sector, with some shares not publically listed (for example, Jemena); and

- the complex financial structures of a listed energy infrastructure businesses (such as the stapling of debt and equity).

In this report we examine:

- whether current tax statistics support an estimate of the payout ratio of 0.7;

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[9]   Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompt9, paragraph 5.

[10]   AER, Consultation Paper, Rate of return guidelines, May 2013, page 128.

[11]   AER, Consultation Paper, Rate of return guidelines, May 2013, page 129.

- whether, in our opinion, the payout ratio has deviated in recent years from its long term average;

- whether there are issues with the way the tax statistics are collected that will make an estimate of the payout ratio in any one year an unreliable guide as to the long-run payout ratio; and

- how economic conditions may impact the estimation of the payout ratio.

Section 2 of this report estimates the payout ratio from tax statistics and assesses whether current tax statistics continue to support the adoption of a payout ratio of 0.7. Appendix A of this report considers the impact of economic conditions on the payout ratio and Appendix B provides our curricula vitae.

1.1. Statement of Credentials

This report has been jointly prepared by **Brendan Quach** and **Simon Wheatley**.

Brendan Quach is a Senior Consultant at NERA with eleven years' experience as an economist, specialising in network economics and competition policy in Australia, New Zealand and Asia Pacific. Since joining NERA in 2001, Brendan has advised a wide range of clients on regulatory finance matters, including approaches to estimating the cost of capital for regulated infrastructure businesses.

Simon Wheatley is a Special Consultant with NERA, and was, until 2008, a Professor of Finance at the University of Melbourne. Since 2008, Simon has applied his finance expertise in investment management and consulting outside the university sector. Simon's interests and expertise are in individual portfolio choice theory, testing asset-pricing models and determining the extent to which returns are predictable. Prior to joining the University of Melbourne, Simon taught finance at the Universities of British Columbia, Chicago, New South Wales, Rochester and Washington.

2. Estimating the Payout Ratio from Tax Statistics

In this section, we construct estimates of the payout ratio using currently available data from the ATO's published taxation statistics. This section is structured as follows:

- section 2.1 sets out how the cumulative and annual payout ratios may be derived from published tax data;

- section 2.2 tabulates the estimated payout ratio of imputation credits from tax statistics; and

- section 2.3 assesses whether the most recent tax data supports the continued use of a payout ratio of 0.7.

2.1. Cumulative and Annual Payout Ratios

The most recent edition of the ATO's published taxation statistics is *Taxation Statistics 2010-11*. Within this publication, information that one can use to estimate the payout ratio can be found in *Company Tax: Table 1, Selected items, 1979-80 to 2010-11 income years*. [12]

For the purpose of our analysis the key pieces of information contained in Table 1 are:

- *Net tax (row 339)* – which is the aggregate amount of company tax paid (and so the imputation credits created) in a given year;

- *Class A and Class C franking account balances (rows 215 and 213)* – which can be used to determine the aggregate franking account balances of reporting companies;[13,14] and

- *Dividends franked (row 207)* – which is the aggregate amount of franked dividends distributed by reporting companies.

- *Franking credits (row 116)* – which is the aggregate amount of imputation credits received by companies directly from other companies.

2.1.1. Cumulative payout ratio

The cumulative payout ratio estimates the total proportion of all imputation credits created that have been distributed by companies since the start of the tax imputation system on 1 July 1987.

The cumulative payout ratio is relatively straightforward to calculate, since:

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[12]   Table 1 can be found in the workbook cor00345977_2011COM1.xls which in turn can be found at

http://www.ato.gov.au/corporate/content.aspx?menuid=0&doc=/content/00345977.htm&page=9#P315_13385

[13]   The franking account balance prior to 2000-01 consisted of Class A, Class B and Class C franking account balances. Since 2001-02 the franking account balance has consisted of only Class C balances.

[14]   Prior to 1 July 2002, the ATO reports franking account balances as the amount of franked dividends that the companies could distribute. From 1 July 2002 (ie, from 2002-03) the ATO's franking account balances represent the amount of franking credits that could be attached to dividends.

- the total amount of imputation credits not distributed (ie, retained) is reported for each year in the franking account balances; and

- the total amount of imputation credits created can be derived from the net tax paid since 1 July 1987.

We therefore compute the cumulative payout ratio as:

$$CUMULATIVE\ PAYOUT\ RATIO(t) = 1 - \frac{FAB(t)}{\sum_{s=1}^{t} NET\ TAX(s)}$$

where year 1 is the year in which the imputation system began.

There is the potential that this method will overestimate the cumulative payout ratio (ie, that it could overstate the true cumulative payout ratio). The first source of potential for bias arises because the published franking account balance at the end of each financial year is the sum of the franking accounts of reporting companies. If a company goes bankrupt, any credits in its franking account will cease to be reported to the ATO. Since a bankrupt company's retained imputation credits will no longer be reported, our measure of the cumulative payout ratio will assume the credits have been distributed. In reality, the credits retained by bankrupt companies are, typically, never distributed. Thus, for this reason, our measure of the payout ratio may be upwardly biased.

The second potential source of bias arises because some firms fail to report their franking account balances. Our measure of the cumulative payout ratio will treat any unreported franking balances as being distributed even though no credits may have actually been distributed. So this is also a reason why our measure of the payout ratio may be upwardly biased.

While it is not possible to determine the extent of these upward biases attached to estimates of the cumulative payout ratio, we note that in correspondence with the ATO, the ATO informed us that the substantial rise in the Class C franking account balance from 1999-00 to 2000-01 was due, in part, to an increase of around 11,000 entities completing the label.[15] In other words, the annual payout ratio calculated below in section 2.2.1 will overstate the payout ratio since credits held in unreported franking balances are assumed to be distributed.

2.1.2.   Annual payout ratio

The annual payout ratio measures the ratio of imputation credits distributed to those created in a given year. We have calculated the annual payout ratio of imputation credits using the following two methods:

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[15]   A label is the ATO's description of what the US Internal Revenue Service would refer to as a line. It is a request by the ATO for information. Thus an entity that completes a label enters data in the space provided by the ATO on the appropriate line. See, for example:

ATO, *Company tax return instructions*, 2012.

1. $\text{Annual payout ratio}(t) = \dfrac{NET\ TAX(t) - FAB(t) + FAB(t-1)}{NET\ TAX(t)}$ (the "tax measure")

2. $\text{Annual payout ratio}(t) = \dfrac{NET\ CREDITS\ DISTRIBUTED(t)}{NET\ TAX(t)}$ (the "dividend measure")

For the dividend measure, we compute net credits distributed as the credits that companies distribute less the credits that companies receive directly from other companies (row 116 in the ATO workbook cor00345977_2011COM1.xls) less an estimate of the credits that life offices distribute. [16] We compute the credits that companies distribute as the aggregate amount of franked dividends distributed by reporting companies (row 207) multiplied by:

$$\frac{TAX(t)}{1 - TAX(t)},$$

where *TAX*(*t*) is the corporate tax rate in year *t*. We estimate the credits that life offices distribute each year from the data that Hathaway (2010) provides. [17] He estimates that over the five-year period 2003-04 to 2007-08, life offices distribute $5.4 billion of credits. So we assume that each year life offices distribute $5.4 ÷ 5 billion = $1.08 billion of credits. Companies also receive credits indirectly from other companies through trusts and partnerships. We have considered these amounts but determine them not to be sufficiently reliable to be inputted into our findings because it would be difficult to extract reliable estimates of the credits that flow to companies in this way from the statistics that the ATO supplies.[18]

Note that both measures of the annual payout ratio can be distorted. For example the tax measure can provide a distorted measure of the true annual payout ratio because:

- companies that enter bankruptcy will no longer report their existing franking account balances – this can lead one to overestimate the annual payout ratio; and

- some firms will fail to report their franking account balances – this can lead one to overestimate the annual payout ratio when the level of underreporting rises and underestimate the annual payout ratio when the level of underreporting falls.

We note that changes to the reporting requirements in the 2002-03 financial year resulted in the level of franked dividends estimated using the tax measure to fall dramatically. The lower annual payout ratio for this year is potentially a reflection of the new reporting requirements which may have improved the reporting by companies of their franking account balances.

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[16]   Again, the workbook cor00345977_2011COM1.xls can be found at

http://www.ato.gov.au/corporate/content.aspx?menuid=0&doc=/content/00345977.htm&page=9#P315_13385

[17]   Hathaway, N., *Imputation credit redemption: ATO data 1988-2008*, Capital Research, July 2010.

[18]   The impact of not including indirect dividend income received by companies is to overstate the payout ratio since not including the income lowers our estimate of the credits recycled to companies.

There is also the potential for the dividend measure to overstate the payout ratio. For example, while we remove credits that companies receive directly from other companies from our measure of net credits distributed, we do not remove credits that flow from companies to other companies via trusts. Thus our dividend measure may also overstate the true payout ratio.

2.2. Estimates of the Cumulative and Annual Payout Ratios

2.2.1. Estimates of the cumulative payout ratio

Table 2.1 provides the cumulative net corporate tax paid, the franking account balance (adjusted for changes in the way the ATO reports franking account balances between 2001-02 and 2002-03) and an estimate of the cumulative payout ratio for each year from 1995-96 to 2010-11. [19] The table indicates that the franking account balance has risen monotonically each year from 1995-96 to 2010-11.

Table 2.1
Cumulative payout ratio

| Year	Cumulative net tax	Franking account balance	Cumulative payout ratio
1995-96	118,840	36,310	0.69
1996-97	137,851	42,044	0.70
1997-98	159,646	47,325	0.70
1998-99	182,610	51,919	0.72
1999-00	211,270	61,856	0.71
2000-01	238,904	72,039	0.70
2001-02	267,117	79,712	0.70
2002-03	298,580	100,119	0.66
2003-04	335,368	108,109	0.68
2004-05	377,107	120,786	0.68
2005-06	426,629	135,127	0.68
2006-07	486,070	153,922	0.68
2007-08	545,154	179,510	0.67
2008-09	604,408	201,381	0.67
2009-10	658,391	217,419	0.67
2010-11	720,082	222,447	0.69

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[19] Again, before 1 July 2002, the ATO reports franking account balances as the amount of franked dividends that the companies could distribute. From 1 July 2002 (ie, from 2002-03) the ATO's franking account balances represent the amount of franking credits that could be attached to dividends.

Notes: Cumulative net tax since the start of the imputation system on 1 July 1987 and franking account balance are in millions of dollars. The cumulative payout ratio is calculated as one minus the ratio of the franking account balance to cumulative net tax. Data are from the ATO's Taxation Statistics 2010-11, Company Tax: Table 1.

Figure 2.1 illustrates the steady rise in the franking account balance. In the three years for which data have become available since the AER made submissions to the Tribunal in December 2010, the franking account balance has grown by $42.9 billion from $179.4 billion to $222.4 billion. In other words, the franking account balance has grown by 24 per cent over these three years.

Table 2.1 also shows that there has been little variation in the cumulative payout ratio. The cumulative payout ratio has ranged over the 16 years from 1995-96 to 2010-11 from a low of 0.66 in 2002-03 to a high of 0.72 in 1998-99. The cumulative payout ratio currently sits at 0.69.

Figure 2.1
Franking account balance
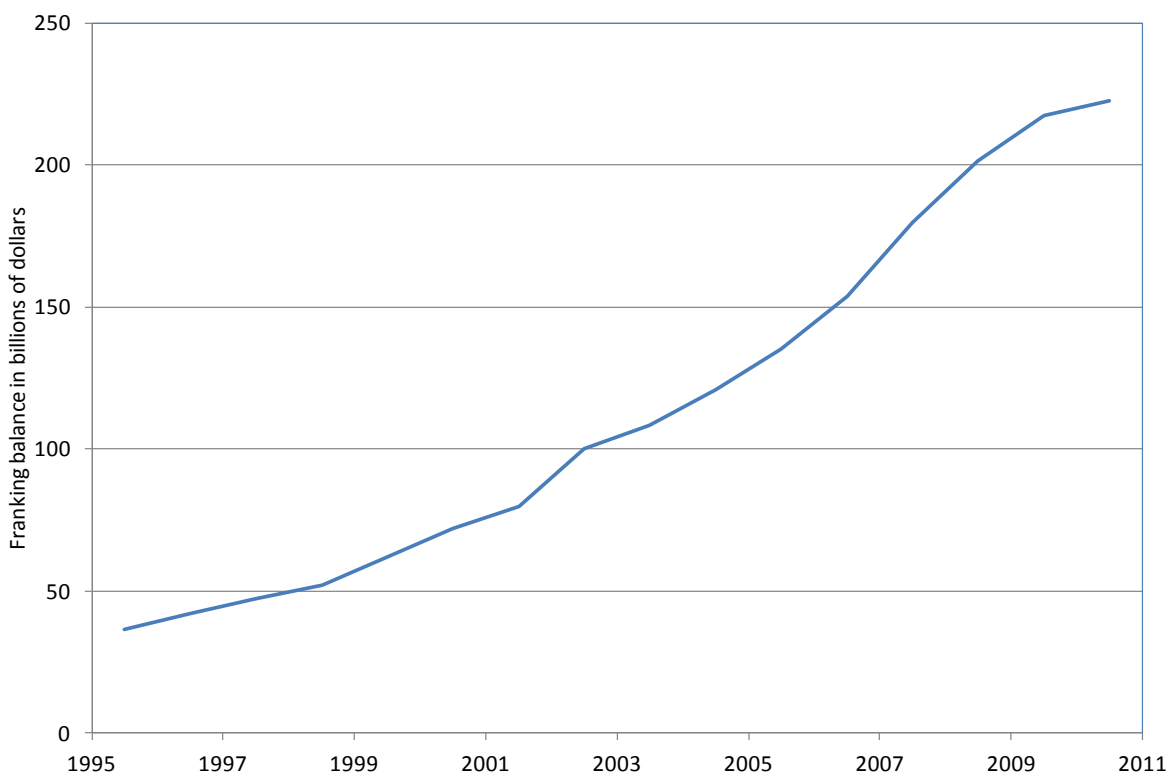
Note: Data are from the ATO's Taxation Statistics 2010-11, Company Tax: Table 1.

2.2.2.   Estimates of the annual payout ratio

While there has been little variation in the cumulative payout ratio over the 16 years that we examine, there has been a substantial variation over time in estimates of the annual payout ratio. Table 2.2 provides, for each year the corporate tax paid, our two measures of credits distributed, where data are available, and our two measures of the annual payout ratio.

There is less variation in the dividend measure of the annual payout ratio than in the tax measure. From 2002 onwards the tax measure of the annual payout ratio ranges from a low of 0.35 in 2002-03 to a high of 0.92 in 2010-11. Over the same period, the dividend measure of the annual payout ratio ranges from a low of 0.47 in 2006-07 to a high of 0.56 in 2002-03, 2004-05 and 2008-09. The tax measure of the annual payout ratio, as we already point out, currently sits at 0.92 while the dividend measure of the payout ratio sits at 0.54.

Table 2.2
Annual payout ratio

Year	Credits distributed			Annual payout ratio	
	Net tax	Tax measure	Dividend measure	Tax measure	Dividend measure
1995-96	16,856				
1996-97	19,011	13,278		0.70	
1997-98	21,795	16,514		0.76	
1998-99	22,963	18,369		0.80	
1999-00	28,660	18,722		0.65	
2000-01	27,634	17,452		0.63	
2001-02	28,213	20,540		0.73	
2002-03	31,463	11,056	17,626	0.35	0.56
2003-04	36,788	28,798	18,736	0.78	0.51
2004-05	41,739	29,062	23,226	0.70	0.56
2005-06	49,522	35,180	26,045	0.71	0.53
2006-07	59,441	40,646	28,144	0.68	0.47
2007-08	59,084	33,497	30,052	0.57	0.51
2008-09	59,253	37,383	33,393	0.63	0.56
2009-10	53,983	37,945	29,595	0.70	0.55
2010-11	61,691	56,663	33,185	0.92	0.54
			Average (life)	0.69	0.53
			Average (5yrs)	0.70	0.53

Notes: Net tax and credits distributed are in millions of dollars. Data are from the ATO's Taxation Statistics 2010-11, Company Tax: Table 1.

The high 2010-11 tax measure of the annual payout ratio suggests that perhaps firms may have decided to lift the fraction of credits created that they distribute. This initial estimate of the 2010-11 payout ratio, however, should be treated with caution. An analysis of how the

ATO revises the data that it provides indicates that initial estimates of the annual payout ratio constructed from the data are subsequently revised downwards – sometimes substantially.

Table 2.3 provides an analysis of the impact of the revisions that the AER carries out on tax estimates of the annual payout ratio. The table indicates that while net tax is revised upwards by on average 2.7 per cent, the change in the franking account balance is revised upwards by on average 36.9 per cent. As a result, a tax estimate of the annual payout ratio computed from the revised data sits on average seven percentage points below an initial estimate. For 2009-10, the most recent year for which revised data are available, the impact of the revisions is to lower an estimate of the annual payout ratio by 14 percentage points.

Table 2.3
Impact of revisions on annual payout ratio

Year	Net tax			Change in franking account balance			Annual payout ratio	
	Initial	Revision	Increase	Initial	Revision	Increase	Initial	Revision
2004-05		41,231			17,447			0.58
2005-06	47,806	48,652	1.8%	10,638	12,759	19.9%	0.78	0.74
2006-07	58,189	59,020	1.4%	15,849	19,367	22.2%	0.73	0.67
2007-08	57,850	58,482	1.1%	21,543	24,064	11.7%	0.63	0.59
2008-09	56,111	57,008	1.6%	14,313	18,831	31.6%	0.74	0.67
2009-10	50,265	53,983	7.4%	8,065	16,038	98.9%	0.84	0.70
2010-11	61,691			5,029			0.92	
Average			2.7%			36.9%	0.74	0.67

Note: Data are from the ATO's Taxation Statistics 2004-05, Company Tax: Table 6, ATO's Taxation Statistics 2005-06, Company Tax: Table 6, ATO's Taxation Statistics 2006-07, Company Tax: Table 6, ATO's Taxation Statistics 2007-08, Company Tax: Table 6, ATO's Taxation Statistics 2008-09, Company Tax: Table 6, ATO's Taxation Statistics 2009-10, Company Tax: Table 6 and ATO's Taxation Statistics 2010-11, Company Tax: Table 1.

Thus we conclude that there is no evidence in the most recent release of the ATO's taxation statistics to suggest that firms quickly distribute all of the credits that they generate.[20] Figure 2.2 plots the cumulative payout ratio and the two measures of the annual payout ratio against time.

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[20]   In the 2009 *WACC* Final Decision, the AER argued that it was reasonable to assume that 71 per cent of franking credits are distributed immediately while the remaining 29 per cent are distributed within five years.

Figure 2.2
Estimates of the payout ratio computed from tax statistics
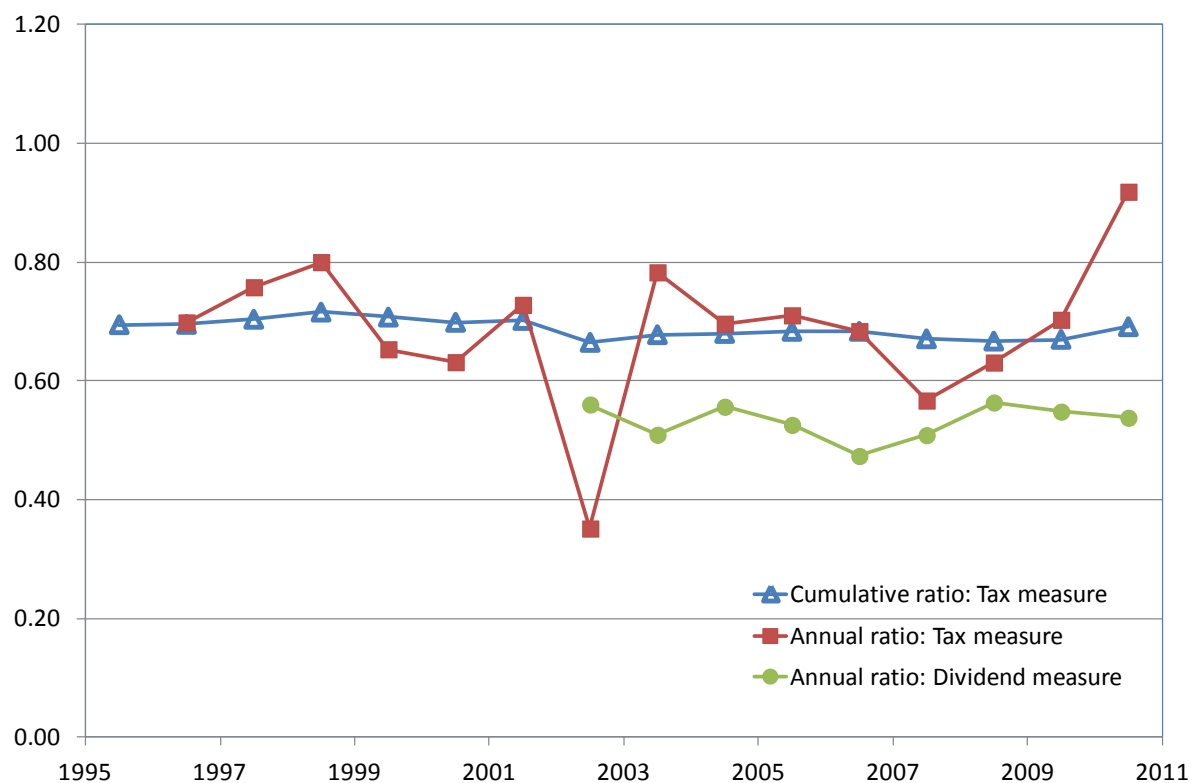
Note: Data are from the ATO's Taxation Statistics 2010-11, Company Tax: Table 1.

2.3. Assessment of the Payout Ratios

It is clear from Figure 2.2 that the three measures have been remarkably stable over time, at or under 0.7. In our opinion, the cumulative payout ratio is the most reliable estimate that is least likely to be affected by potential distortions in the underlying data set. The cumulative payout ratio as at 30 June 2011 was 0.69 and it has remained virtually unchanged since 2003-04. We note that this is likely to be an upwardly biased estimate of the long run payout ratio due to underreporting by companies of franking account balances and the treatment of firms who go bankrupt.

Estimates of the annual payout ratio range from a low of 0.35 in 2002-03 to a high of 0.92 in 2010-11 using the tax measure. The average annual payout ratio is 0.69 over the period spanning 1997-98 to 2010-11 and 0.70 over the last five years. Over the 2002-03 to 2010-11 period the dividend measure of the annual payout ratio ranges from a low of 0.47 in 2006-07 to a high of 0.56 in 2002-03, 2004-05 and 2008-09. The average annual payout ratio using the dividend measure is 0.53 over the 2002-03 to 2010-11 period and has averaged 0.53 over the last five years.

The tax measure of the annual payout ratio for 2010-11 appears higher than the values computed over previous years. An examination of how the ATO revises the data that it provides, however, suggests that initial estimates of the annual payout ratio be treated with caution as in the past they have sat below estimates constructed from revised data. In

contrast to the tax estimate that we provide, the dividend estimate of the 2010-11 payout ratio that we compute is 0.54, that is, considerably lower. We do not know what is responsible for the substantial gap between tax-based estimates of the annual payout ratio and dividend-based estimates.

The cumulative payout ratio and the two measures of the annual payout ratio estimated from the latest published ATO taxation statistics support a dividend payout ratio of no more than 0.70.

3.   Conclusions

To conclude, our examination of the most recently published company tax statistics provided by the ATO shows that:

- the cumulative payout ratio since the start of the tax imputation system to 30 June 2011 is 0.69, and this cumulative payout ratio has remained relatively stable over the period from 1995-96 to 2010-11 ranging from a high of 0.72 in 1998-99 to a low of 0.66 in 2002-03;

- an estimate of the annual payout ratio for 2010-11 ranges from:

  o 0.92, when estimated using net taxes and the change in the reported franking account balance; to

  o 0.54, when estimated from net taxes and net credits distributed;

- an estimate of the average annual payout ratio over the last five years is 0.70 and 0.53 using the tax and dividend measures, respectively;

- there is no evidence that the payout ratio has increased permanently in recent years, aside from a somewhat higher initial estimate of the payout ratio that uses the tax measure for the most recent year for which data are available, 2010-11;

- there is evidence that initial estimates of the payout ratio that use the tax measure are subsequently revised downwards;

- there are several issues with the way the tax statistics are constructed that are likely to:

  o result in estimates from tax statistics overstating the cumulative payout ratio; and

  o render an estimate of the payout ratio in any one year an unreliable guide as to the long-run payout ratio; and

- economic conditions can, in principle, have an impact on the payout ratio in the short term, however, we find little evidence that the franked dividend payout ratio is currently above its long-run mean.

In conclusion, we find that the cumulative payout ratio and the two measures of the annual payout ratio estimated from the latest published ATO taxation statistics support a dividend payout ratio of no more than 0.70.

The authors of this Report, Mr. Brendan Quach and Dr. Simon Wheatley have made all the inquiries that each of them believes are desirable and appropriate and that no matters of significance that each of them regards as relevant have, to each of their knowledge, been withheld.

Appendix A.   Economic Conditions and the Payout Ratio

Economic conditions can affect the dividend payout ratio – defined to be the ratio of dividends paid out to earnings – and so economic conditions may also affect the short-term ratio of credits distributed to credits created.

Lintner (1956) provides a model that Fama and Babiak (1968) and Allen and Michaely (2003) conclude provides a good description of dividend behaviour.[21] The model is:

$$D^*(t) = aE(t),$$

$$D(t) - D(t-1) = b + c(D^*(t) - D(t-1)) + \varepsilon(t),$$

where

$D^*(t)$	=	the target level of dividends to be paid at time t;
a	=	the target payout ratio at time t;
$E(t)$	=	earnings at time t;
$D(t)$	=	dividends paid at time t;
b	=	a constant;
c	=	a partial adjustment factor between zero and one; and
$\varepsilon(t)$	=	an error term.

In Lintner's model firms only partially adjust the dividends that they pay at time t to their new target level. So the model implies that an increase in earnings will lead to an immediate increase in the target level of dividends to be paid but that firms will only partially adjust their current payout to this higher target. As a result, the model predicts that the payout ratio will initially fall when earnings rise and rise when earnings fall. Since the quantity of credits created is strongly linked to earnings and the quantity of credits distributed is strongly linked to dividends paid, it is likely that the annual payout ratio will be negatively related to credits created, that is, net tax.

To examine whether the current payout ratio is either higher or lower than its historical mean, we construct the franked payout ratio to be the ratio of franked dividends to taxable income using data from *Company Tax: Table 1* of the ATO's *Taxation Statistics 2010-11*.[22] We construct franked dividends using the relation:

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[21]   Allen, F. and R. Michaely, *Payout policy*, in North-Holland Handbook of Economics edited by George Constantinides, Milton Harris, and Rene Stulz, 2003.

   Fama, E. F. and H. Babiak, *Dividend policy: An empirical analysis*, Journal of the American Statistical Association, 1968, pages 1132-1161.

   Lintner, J., *Distribution of incomes of corporations among dividends, retained earnings, and taxes*, American Economic Review, 1956, pages 97-113.

[22]   Again, we use the workbook cor00345977_2011COM1.xls that can be found at

$$FRANKED\ DIVIDENDS(t) = NET\ CREDITS\ DISTRIBUTED(t) \times \left(\frac{1 - TAX(t)}{TAX(t)} \right)$$

where net credits distributed are computed either:

- by subtracting the change in the franking account balance (adjusted for changes in the way the ATO reports franking account balances between 2001-02 and 2002-03) from net taxes; or

- as the credits that companies distribute less the credits that companies receive directly from other companies less an estimate of the credits that life offices distribute.

We plot the two series in Figure A.1. There is little evidence from the figure below that the franked payout ratio is above its long-run mean. This is not surprising since real GDP growth over the last three years has averaged 2.90 per cent per annum – just 65 basis points below its mean of 3.55 per cent per annum over the period 1960-61 to 2011-12.[23]

Figure A.1
The franked dividend payout ratio
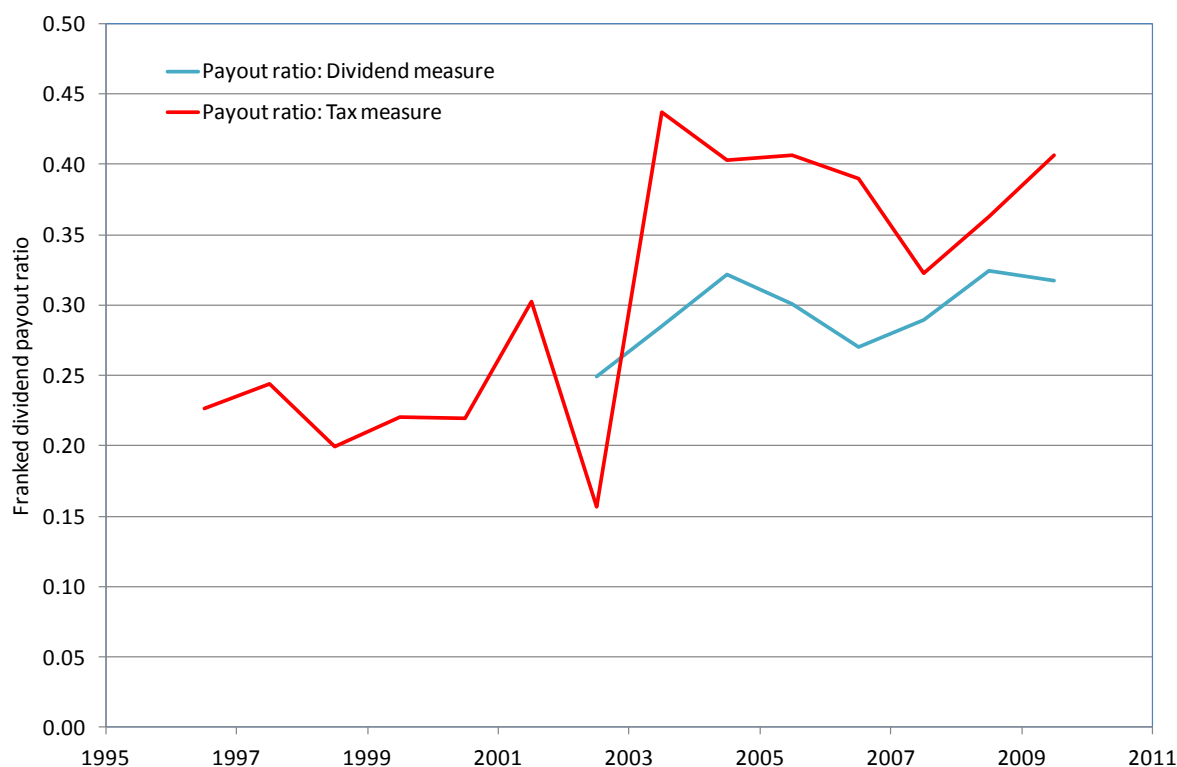
Note: Data are from the ATO's Taxation Statistics 2010-11, Company Tax: Table 1.

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http://www.ato.gov.au/corporate/content.aspx?menuid=0&doc=/content/00345977.htm&page=9#P315_13385

[23]   http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5206.0Jun%202012?OpenDocument

Appendix B.   Curricula Vitae

Brendan Quach

Senior Consultant

NERA Economic Consulting
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Sydney NSW 2000
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Website: www.nera.com

Overview

Brendan Quach has eleven years' experience as an economist, specialising in network economics, and competition policy in Australia, New Zealand and Asia Pacific. Since joining NERA in 2001, Brendan has advised clients on the application of competition policy in Australia, in such industries as aviation, airports, electricity, rail and natural gas. Brendan specialises in regulatory and financial modelling and the cost of capital for network businesses. Prior to joining NERA, Brendan worked at the Australian Chamber of Commerce and Industry, advising on a number of business issues including tax policy, national wage claims and small business reforms.

Qualifications

1991-1995	**AUSTRALIAN NATIONAL UNIVERSITY** Bachelor of Economics. (High Second Class Honours)
1991-1997	**AUSTRALIAN NATIONAL UNIVERSITY** Bachelor of Laws.

Career Details

2001 -	**NERA ECONOMIC CONSULTING** Economist, Sydney
1998-1999	**AUSTRALIAN CHAMBER OF COMMERCE AND INDUSTRY** Economist, Canberra
1996	**AUSTRALIAN BUREAU OF STATISTICS** Research Officer, Canberra

Project Experience

Industry Analysis

2011   **Energy Networks Association**
                        Review of the regulatory frameworks for energy networks
                        Brendan is currently advising the ENA on the Australian Energy
                        Regulator's (AER's) potential Rule change proposal. Advice currently
                        focuses on a range of issues including the propose-respond framework,
                        expenditure incentives, the cost of capital and the potential role of
                        judicial reviews.

2011   **MSAR Office for the Development of the Energy Sector**
                        Development of a New Tariff Structure
                        Brendan is currently leading a team reviewing Macau's current
                        electricity tariffs. This requires NERA to model and analyse long- and
                        short-run marginal costs, sunk costs and generation dispatch. Our
                        work for the Macau Government will be incorporated into the potential
                        development of new tariffs for residential, commercial and casino
                        customers.

2010   **Industry Funds Management/Queensland Investment Corporation**
                        Due diligence, Port of Brisbane
                        Brendan was retained to advise on various regulatory and competition
                        matters likely to affect the future financial and business performance of
                        the Port of Brisbane, in the context of its sale by the Queensland
                        government.

2010-2011   **Minter Ellison /UNELCO**
                        Review of regulatory decision by the Vanuatu regulator
                        Assisted in the development of an expert report on a range of matters
                        arising from the Vanuatu regulator's decision to reset electricity prices
                        under four concession contracts held by UNELCO. The matters
                        considered included the methodology employed to calculate the new
                        base price, the appropriateness of the rate of return, the decision by the
                        regulator to reset future prices having regard to past gains/losses.

2010   **Gilbert + Tobin/Confidential – Telecommunications**
                        Incentive Arrangements for Regulated Telecommunications
                        Services
                        Brendan provided strategic advice to Gilbert + Tobin on possible
                        regulatory arrangements that allow for the efficient delivery of fixed
                        line telecommunications services in the context of the government
                        mandated roll out the National Broadband Network.

2009-10   **EnergyAustralia – NSW Electricity Distribution**
                           Review of Public Lighting Services
                           Brendan provided advice to EnergyAustralia during its electricity
                           distribution price review on the provision of public lighting services.
                           Our work provided strategic and regulatory advice to EnergyAustralia
                           during the appeal of the AER's revenue determination for the 2009-
                           2014 period.

2009   **CitiPower/Powercor**
                           Efficiency carryover mechanisms
                           Assisted in the development of an expert report submitted to the AER
                           on the consistency of carrying-forward accrued negative amounts
                           arising from the application of the ESC's efficiency carryover
                           mechanism with the National Electricity Law and the National
                           Electricity Rules.

2009   **Prime Infrastructure**
                           Sale of Dalrymple Bay Coal Terminal (DBCT)
                           Brendan provided regulatory advice to a number of potential bidders
                           for the assets of DBCT. Advice included an assessment of the rate of
                           return parameters, depreciation, regulatory modelling and the
                           regulatory arrangements in Queensland.

2008-09   **MSAR Office for the Development of the Energy Sector**
                           Review of Electricity Cost and Tariff Structures
                           Review of current and projected costs of electricity provision in
                           Macau, including modelling and analysis of marginal costs and sunk
                           cost attribution to various consumer classes. Our work for the Macau
                           Government has incorporated the development of potential tariff
                           structures (specifically rising block tariff structures) and scenarios,
                           including modelling revenue recovery and cross subsidies.

2008   **Singaporean Ministry for Trade and Industry**
                           Electricity Industry Review
                           NERA was retained by the Singaporean Ministry for Trade and
                           Industry (MTI) to provide a comprehensive review of the Singaporean
                           electricity market. Brendan was involved in the analysis of the costs
                           and benefits arising from the restructuring and reform of the
                           Singaporean electricity industry since the mid 1990's, the estimated
                           costs and benefits of future security of supply and energy
                           diversification approaches. The project required NERA to undertake
                           quantitative dispatch modelling of the Singaporean electricity market.

2008	**Ministerial Council Energy**
	Retailer of Last Resort
	Assisted in the development of a joint expert report with Allens Arthur Robinson (AAR) that: reviewed the existing jurisdictional retailer of last resort (RoLR) frameworks; advised the MCE on the development of an appropriate national policy framework for RoLR and developed a suggested base set of proposals for a national RoLR scheme.
2005-06	**Freehills/South Australian Gas Producers, NSW and South Australia**
	Gas supply agreement arbitration
	Assisted in the development of an economic expert report in the arbitration of the price to apply following review of a major gas supply agreement between the South Australian gas producers and a large retailer in NSW and South Australia.
2005-2006	**Australian Energy Market Commission (AEMC), Australia**
	Advised the AEMC on its review of the Electricity Rules relating to transmission revenue determination and pricing, which included providing briefing papers to the Commission on specific issues raised by the review.
2005-2006	**Minter Ellison/ South West Queensland Gas Producers, Queensland**
	Gas supply agreement arbitration
	Advised Minter Ellison and the Producers in an arbitration of the price to apply following review of a major gas supply agreement between the South West Queensland gas producers and a large industrial customer.
2005	**International Utility, Queensland**
	Generator sale, due diligence
	Part of the due diligence team acting on behalf of a large international utility in the purchase of two coal fired generators in Queensland, Australia. Provided advice on the features of the Australian electricity market and regulatory environment.
2003	**Auckland City Council, New Zealand**
	Rationalisation Options Study
	Conducting a rationalisation options study to examine alternative business models for Metrowater. Our report assessed different vertical and horizontal integration options for Metrowater.

2003   **Metrowater, New Zealand**
                        Institutional Restructuring
                        Prepared advice for the board of the Auckland City Water and wastewater service provider, Metrowater on options for institutional and regulatory reform of the entire Auckland regional water sector.

2002 - 2003   **Rail Infrastructure Corporation, Australia**
                        Research to RIC on their proposed access undertaking.
                        Provided research and advice into various components of RICs proposed access undertaking with the ACCC including the cost of capital, asset valuation and pricing principles.

2002   **Argus Telecommunications, Australia**
                        Critique of CIE's bandwidth pricing principles.
                        Provided a critique of a CIE report on bandwidth pricing principles for the fibre optic networked run owned by Argus Telecommunications.

2001   **Screenrights, Australia**
                        Advice on valuing retransmission of local TV
                        A review and analysis of different methodologies in valuing retransmission of local television on pay TV services.

Regulatory and Financial Analysis

2012   **Queensland Competition Authority**
                        Review of the retail water regulatory models
                        Brendan undertook an independent quality assurance assessment of the financial models relied on by the QCA to set the regulated revenues of SunWater. The review considered: SunWater's Financial model, a model used by SunWater to calculate future electricity prices, an renewals annuity model, as well as the QCA's regulatory model. These models established a set of recommended prices for each of the 30 irrigation schemes operated by SunWater for the period 2014 to 2019.

2011   **Queensland Competition Authority**
                        Review of the retail water regulatory models
                        Undertook an independent quality assurance assessment of the models used to calculate regulated revenues for Queensland Urban Utilities, Allconnex Water, and Unitywater. The review considered: the formulation of the WACC; the intra year timing of cashflows; and the structural, computational and economic integrity of the models.

2011   **Queensland Competition Authority**
                        Review of the wholesale water regulatory models
                        Undertook an independent quality assurance assessment of the models used to calculate regulated revenues for LinkWater, Seqwater; and

WaterSecure. The review considered: the formulation of the WACC; the intra year timing of cashflows; and the structural, computational and economic integrity of the models.

2011	**Multinet Gas and SP AusNet - Gas Distribution**

Report on the market risk premium

Co-authored a report that examined a number of issues arising from the draft decision on Envestra's access proposal for the SA gas network. The report considered whether: the historical evidence supported the use of a long term average of 6 per cent; there is any evidence to warrant a MRP at it long term average; and the evidence relied on by the AER to justify its return to a MRP of 6 per cent.

2011 **Dampier to Bunbury Natural Gas Pipeline - Gas Transmission**

Cost of Equity

Co-authored two reports that updated the cost of equity for a gas transmission business and responded to issues raised by the regulator in its draft decision. The report re-estimated the cost of equity of a gas distribution business using the Sharpe Lintner CAPM, Black CAPM, Fama-French three-factor model and a zero beta version of the Fama-French three-factor model.

2010-2011 **Queensland Competition Authority**

Weighted Average Cost of Capital (WACC) for SunWater

Retained to provide two expert reports on the WACC for SunWater a Queensland rural infrastructure business. The first report considered issues pertaining to whether a single or multiple rates of return can be applied across SunWater's network segments. The second report focuses market evidence on the appropriate rate of return for SunWater.

2011 **Mallesons Stephens Jaques, on behalf of ActewAGL Distribution**

Determining the averaging period

Assisted in the development of an expert report that considered the economic and financial matters arising from the Australian Energy Regulator's decision to reject ActewAGL's proposed risk free rate averaging period.

2010 **Orion Energy, New Zealand**

Information disclosure regime

Provided advice and assistance in preparing submissions by Orion to the New Zealand Commerce Commission, in relation to the Commission's proposed weighted average cost of capital for an electricity lines businesses. Issues addressed included the financial model used to calculate the required return on equity, the appropriate term for the risk free rate and the WACC parameter values proposed by the Commission.

2010	**Ministerial Council on Energy, Smart Meter Working Group, The costs and benefits of electricity smart metering infrastructure in rural and remote communities** This report extends NERA's earlier analysis of the costs and benefits of a mandatory roll out of smart meters, by consider the implications of a roll out in rural and remote communities in the Northern Territory, Western Australia and Queensland. The project has focused on eight case study communities and has examined the implications of prepayment metering and remoteness on the overall costs and benefits of a roll out.
2010	**Grid Australia, Submission to the AER on the proposed amendments to the transmission revenue and asset value models** Developed and drafted a submission to the AER on the proposed amendments to the AER's post-tax revenue model (PTRM) and roll forward model (RFM). The proposal focused on a number of suggestions to simplify and increase the usability of the existing models.
2010	**Dampier to Bunbury Natural Gas Pipeline (DBNGP) - Gas Transmission** **Cost of Equity** Co-authored a report that examined four well accepted financial models to estimate the cost of equity for a gas transmission business. The report of estimating the cost of equity of a gas distribution business using the Sharpe Lintner CAPM, Black CAPM, Fama-French three-factor model and a zero beta version of the Fama-French three-factor model.
2009-10	**Jemena - Gas Distribution** **Cost of Equity** Co-authored two reports on the use of the Fama-French three-factor model to estimate the cost of equity for regulated gas distribution business. The report examined whether the Fama-French three-factor model met the dual requirements of the National Gas Code to provide an accurate estimate of the cost of equity and be a well accepted financial model. Using Australian financial data the report also provided a current estimate of the cost of equity for Jemena.
2009	**WA Gas Networks - Gas Distribution** **Cost of Equity** Co-authored a report that examined a range of financial models that could be used to estimate the cost of equity for a gas distribution business. The report of estimating the cost of equity of a gas distribution business using the Sharpe Lintner CAPM, Black CAPM, Fama-French three-factor model and Fama-French two-factor model. The report examined both the domestic and international data.

2009   **CitiPower and Powercor – Victorian Electricity Distribution**
                            Network Reliability Incentive Mechanism (S-factor)
                            Brendan provided advice to CitiPower and Powercor on the proposed
                            changes to the operation of the reliability incentive mechanism. The
                            advice considered the effects of the proposed changes to the operation
                            of the two distribution network service providers. Specifically, how the
                            'S-factors' would be changed and implications this has to the revenue
                            streams of the two businesses. A comparison was also made with the
                            current ESC arrangements to highlight the changes to the mechanism.

2009   **CitiPower and Powercor – Victorian Electricity Distribution**
                            Network Reliability Incentive Mechanism (S-factor)
                            Brendan provided advice to CitiPower and Powercor on the proposed
                            changes to the operation of the reliability incentive mechanism. The
                            advice considered the effects of the new arrangements on the business
                            case for undertaking a series of reliability projects. Specifically, the
                            project estimated the net benefit to the businesses of three reliability
                            programs.

2009   **Jemena and ActewAGL - Gas Distribution**
                            Cost of Equity
                            Co-authored a report on alternative financial models for estimating the
                            cost of equity. The report examined the implication of estimating the
                            cost of equity of a gas distribution business using the Sharpe Lintner
                            CAPM, Black CAPM and Fama-French models. The report examined
                            both the domestic and international data.

2008   **Joint Industry Associations - APIA, ENA and Grid Australia**
                            Weighted Average Cost of Capital
                            Assisted in the drafting of the Joint Industry Associations submission
                            to the Australian Energy Regulator's weighted average cost of capital
                            review. The submission examined the current market evidence of the
                            cost of capital for Australian regulated electricity transmission and
                            distribution businesses.

2008   **Joint Industry Associations - APIA, ENA and Grid Australia**
                            Weighted Average Cost of Capital
                            Expert report for the Joint Industry Associations on the value of
                            imputation credits. The expert report was attached to their submission
                            to the Australian Energy Regulator's weighted average cost of capital
                            review. The report examined the current evidence of the market value
                            of imputation credits (gamma) created by Australian regulated
                            electricity transmission and distribution businesses.

2007-2008   **Smart Meter Working Group, Ministerial Council on Energy –**
                         Assessment of the costs and benefits of a national mandated rollout
                         of smart metering and direct load control
                         Part of a project team that considered the costs and benefits of a
                         national mandated rollout of electricity smart meters. Brendan was
                         primarily responsible for the collection of data and the modelling of
                         the overall costs and benefits of smart metering functions and
                         scenarios. The analysis also considering the likely costs and benefits
                         associated with the likely demand responses from consumers and
                         impacts on vulnerable customers.

2007   **Electricity Transmission Network Owners Forum (ETNOF),**
                         Submission to the AER on the proposed transmission revenue and
                         asset value models
                         Developed and drafted a submission to the AER on the proposed post-
                         tax revenue model (PTRM) and roll forward model (RFM) that would
                         apply to all electricity transmission network service providers
                         (TNSPs). The proposal focused ensuring that the regulatory models
                         gave effect to the AER's regulatory decisions and insures that TNSPs
                         have a reasonable opportunity to recover their efficient costs.

2007   **Victorian Electricity Distribution Business**
                         Review of Smart Meter model
                         Reviewed the smart meter model developed by a Victorian distributor
                         and submitted to the Victorian Essential Service Commission (ESC).
                         The smart meter model supported the business' regulatory proposal
                         that quantified the revenue required to meet the mandated roll out of
                         smart meters in Victoria. The smart meter model the quantified the
                         expected, meter, installation, communications, IT and project
                         management costs associated with the introduction of smart meters.
                         Further, the estimated the expected change in the business' meter
                         reading and other ongoing costs attributed with the introduction of
                         smart meter infrastructure.

2007   **Energy Trade Associations - APIA, ENA and Grid Australia**
                         Weighted Average Cost of Capital
                         Expert reports submitted to the Victorian Essential Services
                         Commission evaluating its draft decision to set the equity beta at 0.7,
                         and its methodology for determining the appropriate real risk free rate
                         of interest, for the purpose of determining the allowed rate of return for
                         gas distribution businesses.

2007   **Babcock and Brown Infrastructure, Qld**
                         Review of Regulatory Modelling
                         Provided advice to Babcock and Brown Infrastructure on the
                         regulatory modelling of revenues and asset values of the Dalrymple
                         Bay Coal Terminal (DBCT). DBCT has undertaken a substantial

capital investment to increase the capacity of the port. Brendan's role was to advise DBCT on variety of issues including the calculation of interest during construction, appropriate finance charges, cost of capital and regulatory revenues which were submitted to the Queensland Competition Authority (QCA).

2007-   **ActewAGL, ACT**
                     Transition to National Electricity Regulation
                     Providing on-going advice to ActewAGL, the ACT electricity distribution network service provider, on its move to the national energy regulation. The advice covers the revenue and asset modelling, the development of a tax asset base, the new incentives for efficient operating and capital expenditure and processes for compliance, monitoring and reporting of its regulatory activities.

2007 - 2008   **Smart Meter Working Group, Ministerial Council on Energy –**
                     Assessment of the costs and benefits of a national mandated rollout of smart metering and direct load control
                     Brendan was a member of NERA team that investigated the costs and benefits of a national mandated rollout of electricity smart meters. Brendan's prime responsibility was to undertake the modelling of the costs and benefits of smart metering. NERA's assignment required an assessment of smart metering functions and scenarios, and also considering the likely demand responses from consumers and impacts on vulnerable customers.

2005-   **TransGrid, NSW**
                     Review of Regulatory Systems
                     Providing strategic advice to TransGrid, the NSW electricity transmission network service provider, on its current regulatory processes. The advice covers TransGrid's internal systems and processes for compliance, monitoring and reporting of its regulatory activities.

2006   **Grid Australia, National**
                     Submission to application by Stanwell to change the national Electricity Rules (Replacement and Reconfiguration investments)
                     Developed and drafted a submission to the AEMC on the appropriateness of the draft Rule change that extended the application of the regulatory test to replacement and reconfiguration investments.

2006   **Grid Australia, National**
                     Submission to application by MCE to change the national Electricity Rules (Regulatory Test)
                     Developed and drafted a submission to the AEMC on the appropriateness of the draft Rule change which changed the

Regulatory Test as it applies to investments made under the market benefits limb.

2006   **Office of the Tasmanian Energy Regulator**
Implications of the pre-tax or post-tax WACC
Provided a report to OTTER on the potential implications of changing from a pre-tax to a post-tax regulatory framework.

2006   **Babcock Brown Infrastructure**
Regulatory Modelling of Dalrymple Bay Coal Terminal
Developed the economic model used to determine revenues at Dalrymple Bay Coal Terminal. This included updating the model for capital expenditure to upgrade capacity at the terminal, account for intra-year cash flows, and the proper formulation of the weighted average cost of capital and inflation.

2006   **Queensland Competition Authority, Queensland**
Review of Regulatory Revenue Models
Advised the QCA on the financial and economic logic of its revenue building block model that projects the required revenue for the Queensland gas distribution businesses and tariffs for the next 5 years.

2006   **Envestra, South Australia**
Review of RAB Roll Forward Approach
Assisted Envestra in responding to the Essential Services Commission of South Australia's consultation paper on Envestra's 2006/07 to 2010/11 gas access proposal. This involved reviewing Envestra's RAB roll forward modelling and the Allen Consulting Group's critique thereof.

2006   **Transpower, New Zealand**
Review of Regulatory Systems
Provided assistance to Transpower, the sole electricity company in New Zealand, in responding to the New Zealand Commerce Commission's announcement of its intention to declare control of Transpower. This involved developing an expert report commenting on the Commission's methodology for analysing whether Transpower's has earned excess profits in the context of New Zealand's "threshold and control" regime.

2006   **Pacific National**
Rail industry structure and efficiency
Assisted with the development of a report which examined options for addressing issues arising in vertically-separated rail industries. This involved examining a number of case study countries including the UK, US and Canada.

2005   **Australian Energy Markets Commission, Australia**
                           Transmission pricing regime
                           Advisor to the AEMC's review of the transmission revenue and pricing
                           rules as required by the new National Electricity Law.

2005   **Queensland Rail, Australia**
                           Weighted Average Cost of Capital
                           Provided a report for Queensland Rail on the appropriate weighted
                           average cost of capital for its regulated below rail activities.

2004-2005   **ETSA Utilities**
                           Review of Regulatory Modelling
                           Advised ETSA Utilities on the financial and economic logic of
                           ESCOSA's regulatory models used to determine the regulatory asset
                           base, the weighted average cost of capital, regulatory revenues and
                           distribution prices.

2003- 2005   **TransGrid, NSW**
                           Review of Regulatory Revenues
                           Assisted TransGrid in relation to its application to the ACCC for the
                           forthcoming regulatory review which focused on asset valuation and
                           roll forward, cost of capital and financial/regulatory modelling.

2004   **Prime Infrastructure, Australia**
                           Weighted Average Cost of Capital
                           Provided a report for Prime Infrastructure on the appropriate weighted
                           average cost of capital for its regulated activities (coal shipping
                           terminal).

2004   **PowerGas, Singapore**
                           Review of Transmission Tariff Model
                           Advised the Singaporean gas transmission network owner on the
                           financial and economic logic of its revenue building block model that
                           projects PowerGas' revenue requirements and tariffs for the next 5
                           years.

2003   **ActewAGL, ACT**
                           Review of Regulatory Revenues
                           Provided strategic advice to ActewAGL in developing cost of capital
                           principles, asset valuation and incentive mechanisms as part of their
                           current pricing reviews for their electricity and water businesses.

2003   **Orion Energy, New Zealand**
                           Threshold and Control Regime in the Electricity Sector
                           Provided advice and assistance in preparing submissions by Orion to
                           the Commerce Commission, in relation to the Commission's proposed

changes to the regulatory regime for electricity lines businesses. Issues addressed included asset valuation, and the form of regulatory control.

2003	**EnergyAustralia, NSW**
	Pricing Strategy Under a Price Cap

Advised EnergyAustralia on IPART's financial modelling of both regulated revenues and the weighted average price cap.

2002-03   **TransGrid, NSW,**
Advice in Relation to the Regulatory Test

Modelled the net present value of a range of investment options aimed at addressing a potential reliability issue in the Western Area of New South Wales. This work was undertaken in the context of the application of the ACCC's "regulatory test" which is intended to ensure only *efficient* investment projects are included in the regulatory asset base.

2002   **Rail Infrastructure Corporation (RIC), Australia**
Review of the Cost of Capital Model

Provided advice to RIC and assisted in drafting RIC's submission to the Australian Competition and Consumer Commission (ACCC) on the appropriate cost of capital. This included building a post-tax revenue model of RIC's revenues in the regulatory period.

2002   **PowerGrid, Singapore**
Review of Transmission Tariff Model

Advised the Singaporean electricity transmission network owner on the financial and economic logic of its revenue building block model that projects PowerGrid's revenue requirements and tariffs for the next 10 years.

2002   **EnergyAustralia, Australia**
Review of IPART's Distribution Tariff Model

Advised EnergyAustralia, a NSW distribution service provider, on the economic logic of the revenue model that projects EnergyAustralia's revenue requirements and tariffs for the 2004-2009 regulatory period.

2002   **Essential Services Commission of South Australia**
Review Model to Estimating Energy Costs

Reviewed and critiqued a model for estimating retail electricity costs for retail customers in South Australia for 2002-2003.

2002   **National Competition Council (NCC), Australia**
Exploitation of Market Power by a Gas Pipeline

Provided a report to the NCC in which we developed a number of tests for whether current transmission prices were evidence of the

exploitation of market power by a gas transmission pipeline. Also provided a separate report that applied each of the tests developed. This analysis was relied on by the NCC in determining whether to recommend the pipeline in question be subject to regulation under the Australian Gas Code.

2002   **Australian Gas and Lighting, Australia**
                    Report on South Australian Retail Tariffs
                    An independent assessment on the cost components of regulated retail tariffs in South Australia that will be used by AGL in the next review.

2002   **New Zealand Telecom, New Zealand**
                    Report on the application of wholesale benchmarks in NZ
                    A report on the application of international benchmarks of wholesale discounts to New Zealand Telecom.

2002   **ENEL, Italy**
                    Survey of Retailer of Last Resort in NSW
                    Provided research into the retailer of last resort provisions in the NSW gas sector of an international review for the Italian incumbent utility.

2002   **ENEL, Italy**
                    Survey of Quality of Service provisions in Victoria and South Australia
                    Provided research into quality of service regulation for electricity distribution businesses in Victoria and South Australia of an international review for the Italian incumbent utility.

2002   **Integral Energy, Australia**
                    Provided Advice on the Cost of Capital for the 2004 – 2008 Distribution Network Review
                    Provided analysis and strategic advice to Integral Energy on the possible methodologies that IPART may use to calculate the cost of capital in the next regulatory period.

2001   **IPART, Australia**
                    Minimum Standards in Regulation of Gas and Electricity Distribution
                    Advised the NSW regulator on the appropriate role of minimum standards in regulatory regimes and how this could be practically implemented in NSW.

2001   **TransGrid, Australia**
                    Advice on ACCC's Powerlink WACC decision
                    Provided a report critically appraising the ACCC's decision regarding Powerlink's weighted average cost of capital (WACC).

Competition Policy

2005
Confidential, Australia
Merger Analysis
Provided expert opinion as well as strategic guidance to the merging firms on the competitive implications of that merger.

2004
Mallesons Stephen Jaques / Sydney Airports Corporation, Australia
Appeal to declare under Part IIIA
Provided strategic and economic advice on aspects of Virgin Blue's appeal for the declaration of airside facilities at Sydney Airport under Part IIIA of the Trade Practices Act. This cumulated in the production of an expert witness statement by Gregory Houston.

2003
Sydney Airports Corporation, Australia
Application to declare under Part IIIA
Expert report to the National Competition Council in connection with the application by Virgin Blue to declare airside facilities at Sydney Airport under Part IIIA of the Trade Practices Act, and the potential impact on competition in the market for air travel to and from Sydney.

2002 - 2003
Blake Dawson Waldron/ Qantas Airways, Australia
Alleged predatory conduct
NERA was commissioned to provide advice in relation to potential allegations of anticompetitive behaviour. Developed a paper examining the economic theory behind predation and the way courts in various jurisdictions determine whether a firm has breached competition law.

2002
Phillips Fox and AWB Limited
Declaration of the Victorian Intra-State Rail Network
Advised law firm Phillips Fox (and AWB Limited) in its preparation for an appeal (in the Australian Competition Tribunal) of the Minister's decision not to declare the Victorian intra-state rail network, pursuant to Part IIIA of the Trade Practices Act. This included assisting in the preparation of testimony relating to pricing arrangements for third party access to the rail network and their likely impact on competition in related markets, including the bulk freight transportation services market.

2002
Singapore Power International (SPI)
Impact of acquisition of a Victorian distributor on competition
Provided analysis to a company interested in acquiring CitiPower (a Victorian electricity distribution/retail business). Including an assessment of the extent to which the acquisition of CitiPower would lead to a 'substantial lessening of competition' in a relevant energy

markets, given the company's existing Australian electricity sector assets. The NERA report was submitted to the ACCC as part of the pre-bid acquisition clearance process.

Other

1999-2000   **Australian Chamber of Commerce and Industry, Australia**
Alienation of Personal Service Income
Involved in analysing the effects of the proposed business tax reform package had on a number of industries which advocated a number of recommendations to the Federal Government. The package also included the provisions to change the definition of personal service income.

1998-2000   **Australian Chamber of Commerce and Industry, Australia**
Various economic policy issues
Provided analysis on economic trends and Government policies to business groups. This covered issues such as industrial relations reform, taxation changes, business initiatives, and fiscal and monetary settings. Also compiled ACCI surveys on business conditions and expectations.

1996   **Australian Bureau of Statistics, Australia**
Productivity Measures in the Public Health Sector
Involved in a team that reported on the current methods used to measure output in the public health sector and analysed alternative methods used internationally. This was in response to the ABS investigating the inclusion of productivity changes in the public health sector.

Simon M. Wheatley

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Blackburn VIC 3130
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Overview

Simon is a consultant and was until 2008 a Professor of Finance at the University of Melbourne. Since 2008, Simon has applied his finance expertise in investment management and consulting outside the university sector. Simon's interests and expertise are in individual portfolio choice theory, testing asset-pricing models and determining the extent to which returns are predictable. Prior to joining the University of Melbourne, Simon taught finance at the Universities of British Columbia, Chicago, New South Wales, Rochester and Washington.

Personal

Nationalities:	U.K. and U.S.
Permanent residency:	Australia

Employment

- Special Consultant, NERA Economic Consulting, 2009-present

- External Consultant, NERA Economic Consulting, 2008-2009

- Quantitative Analyst, Victorian Funds Management Corporation, 2008-2009

- Adjunct, Melbourne Business School, 2008

- Professor, Department of Finance, University of Melbourne, 2001-2008

- Associate Professor, Department of Finance, University of Melbourne, 1999-2001

- Associate Professor, Australian Graduate School of Management, 1994-1999

- Visiting Assistant Professor, Graduate School of Business, University of Chicago, 1993-1994

- Visiting Assistant Professor, Faculty of Commerce, University of British Columbia, 1986

- Assistant Professor, Graduate School of Business, University of Washington, 1984-1993

Education

- Ph.D., University of Rochester, USA, 1986; Major area: Finance; Minor area: Applied statistics; Thesis topic: Some tests of international equity market integration; Dissertation committee: Charles I. Plosser (chairman), Peter Garber, Clifford W. Smith, Rene M. Stulz

- M.A., Economics, Simon Fraser University, Canada, 1979

- M.A., Economics, Aberdeen University, Scotland, 1977

Publicly Available Reports

Prevailing Conditions and the Market Risk Premium: A report for APA Group, Envestra, Multinet & SP AusNet, March 2012,
http://www.aer.gov.au/content/item.phtml?itemId=753605&nodeId=418ee68d5b881d585 15e4f39d9d3aee3&fn=G-5%20NERA%20%20Prevailing%20Conditions%20and%20the%20Market%20Risk%20 Premium%20March%202012.pdf

The Market Risk Premium: A report for CitiPower, Jemena, Powercor, SP AusNet and United Energy, 20 February 2012,
http://www.aer.gov.au/content/item.phtml?itemId=752660&nodeId=fe0280e7e2113c467 dfc4b3b076e1623&fn=Vic%20DNSPs%20(NERA)%20-%2020%20February%202012.pdf

Cost of Equity in the ERA DBNGP Draft Decision: A report for DBNGP, 17 May 2011,
http://www.erawa.com.au/cproot/9669/2/20110620%20-%20DBNGP%20(WA)%20%20-%20Sub%2055%20-%20Att%207%20-%20NERA%20Economic%20Consulting%20Cost%20of%20equity%20in%20the%20dr aft%20decision.pdf

The Market Risk Premium: A report for Multinet Gas and SP AusNet, 29 April 2011,
http://www.aer.gov.au/content/index.phtml/itemId/745782

Cost of Capital for Water Infrastructure Company Report for the Queensland Competition Authority, 28 March 2011,
http://www.qca.org.au/files/W-NERA-EconomicConsulting-FinalReport-WACC-0411.pdf

The Cost of Equity: A report for Orion, 2 September 2010,
http://www.comcom.govt.nz/assets/Pan-Industry/Input-Methodologies/Draft-Reasons-Papers/Draft-Reasons-EDBs/Draft-Determination-X-Sub/Orion-Cross-Submission-Attachment-on-EDBs-and-GPBs-Input-Methodologies-Draft-Determination-and-Reasons-Paper-NERA-Report-2-September-2010.pdf

New Gamma Issues Raised by AER Expert Consultants: A report for JGN, 17 May 2010, http://www.aer.gov.au/content/item.phtml?itemId=736652&nodeId=dea01451551935038 4275dccc6b56018&fn=JGN%20further%20submission%20on%20gamma%20(18%20M ay%202010).pdf

The Required Rate of Return on Equity for a Gas Transmission Pipeline: A Report for DBP, 31 March 2010, http://www.erawa.com.au/cproot/8512/2/20100503%20D29252%20DBNGP%20- %20Submission%208%20-%20Annexure%201%20- %20The%20Required%20Rate%20of%20Return%20on%20Equity%20for%20a%20Gas %20Transmission%20Pipeline.pdf

Jemena Access Arrangement Proposal for the NSW Gas Networks: AER Draft Decision: A report for Jemena, 19 March 2010, http://www.aer.gov.au/content/item.phtml?itemId=735229&nodeId=4dc041cfe6e30a2c2 b91e833cad31191&fn=Appendix%205.1%20-%20NERA%20- %20FAMA%20French%20Report.pdf

Payout Ratio of Regulated Firms: A report for Gilbert + Tobin, 5 January 2010, http://www.aer.gov.au/content/item.phtml?itemId=735236&nodeId=10e87413b13d1da23 cd55faf20a6918d&fn=Appendix%206.3D%20- %20NERA%20(4%20Jan%2010,%20ETSA)%20Payout%20ratio%20of%20regulated%2 0firms.pdf

Review of Da, Guo and Jagannathan Empirical Evidence on the CAPM: A report for Jemena Gas Networks, 21 December 2009, http://www.ipart.nsw.gov.au/files/Submission%20- %20Alternative%20approaches%20to%20the%20determination%20of%20the%20cost% 20of%20equity%20-%20Jemena%20-%20Sandra%20Gamble%20- %2022%20December%202009%20-%20APD%20-%20Website.PDF

The Value of Imputation Credits for a Regulated Gas Distribution Business: A report for WA Gas Networks, 18 August 2009, summarized in: http://www.erawa.com.au/cproot/8357/2/20100215%20WAGN%20- %20Proposed%20Revisions%20to%20the%20AA%20for%20the%20WAGN%20Gas%2 0Distribution%20Systems%20Submission%20-%20Public%20Version.pdf

Cost Of Equity - Fama-French Three-Factor Model Jemena Gas Networks (NSW), 12 August 2009, http://www.aer.gov.au/content/item.phtml?itemId=730699&nodeId=4fcc57398775fe846 85434e0b749d76a&fn=Appendix%209.1%20-%20NERA%20- %20Cost%20of%20equity%20-%20Fama-French%20Model.pdf

Estimates of the Cost of Equity: A report for WAGN, 22 April 2009, summarized in: http://www.erawa.com.au/cproot/8357/2/20100215%20WAGN%20-%20Proposed%20Revisions%20to%20the%20AA%20for%20the%20WAGN%20Gas%20Distribution%20Systems%20Submission%20-%20Public%20Version.pdf

AER's Proposed WACC Statement – Gamma: A report for the Joint Industry Associations, 30 January 2009, http://www.aer.gov.au/content/item.phtml?itemId=726698&nodeId=80cf978278d317e99c34ae1878525573&fn=JIA%20Appendix%20Q%20-%20NERA%20-%20AER's%20proposed%20WACC%20statement-Gamma.pdf

The Value of Imputation Credits: A report for the ENA, Grid Australia and APIA, 11 September 2008, http://www.ena.asn.au/udocs/24092008aersub/Appendix%20K%20-%20The%20value%20of%20imputation%20credits%20-%20NERA.pdf

Consulting Experience

NERA, 2008-present

Lumina Foundation, Indianapolis, 2009

Industry Funds Management, 2010

Academic Publications

Imputation credits and equity returns, (with Paul Lajbcygier), 2012, *Economic Record*, forthcoming.

Do measures of investor sentiment predict returns? (with Robert Neal), 1998, *Journal of Financial and Quantitative Analysis* 33, 523-547.

Adverse selection and bid-ask spreads: Evidence from closed-end funds (with Robert Neal), 1998, *Journal of Financial Markets* 1, 121-149.

Shifts in the interest-rate response to money announcements: What can we say about when they occur? (with V. Vance Roley), 1996, *Journal of Business and Economic Statistics* 14, 135-138.

International investment restrictions and closed-end country fund prices, (with Catherine Bonser-Neal, Greggory Brauer, and Robert Neal), 1990, *Journal of Finance* 45, 523-547 (reprinted in International Capital Markets Volume III, 2003, G. Andrew Karolyi and Rene M. Stulz, editors, Edward Elgar Publishing, Cheltenham, Glos).

A critique of latent variable tests of asset pricing models, 1989, *Journal of Financial Economics* 21, 177-212.

Some tests of international equity market integration, 1988, *Journal of Financial Economics* 21, 177-212 (reprinted in International Capital Markets Volume I, 2003, G. Andrew Karolyi and Rene M. Stulz, editors, Edward Elgar Publishing, Cheltenham, Glos).

Some tests of the consumption-based asset pricing model, 1988, *Journal of Monetary Economics* 22, 193-215.

Working Papers

An evaluation of some alternative models for pricing Australian stocks (with Paul Lajbcygier), 2009.

Intertemporal substitution, small-sample bias, and the behaviour of U.S. household consumption (with Kogulakrishnan Maheswaran and Robert Porter), 2007.

Keeping up with the Joneses, human capital, and the home-equity bias (with En Te Chen), 2003.

Evaluating asset pricing models, 1998.

Time-non-separable preferences or artifact of temporal aggregation? (with Robert Porter), 2002.

Testing asset pricing models with infrequently measured factors, 1989.

Refereeing Experience

Referee for Accounting and Finance, the Australian Journal of Management, Economic Letters, Financial Analysts Journal, Financial Management, Journal of Accounting and Economics, Journal of Business, Journal of Empirical Finance, Journal of Finance, Journal of Financial and Quantitative Analysis, Journal of Financial Economics, Journal of Futures Markets, Journal of International Economics, Journal of International Money and Finance, Journal of Money, Credit, and Banking, Journal of Monetary Economics, Management Science, National Science Foundation, Pacific-Basin Finance Journal, and the Review of Financial Studies.

Program Committee for the Western Finance Association in 1989 and 2000.

Teaching Experience

International Finance, Melbourne Business School, 2008

Corporate Finance, International Finance, Investments, University of Melbourne, 1999-2008

Corporate Finance, International Finance, Investments, Australian Graduate School of Management, 1994-1999

Investments, University of Chicago, 1993-1994

Investments, University of British Columbia, 1986

International Finance, Investments, University of Washington, 1984-1993

Investments, Macroeconomics, Statistics, University of Rochester, 1982

Accounting, 1981, Australian Graduate School of Management, 1981

Teaching Awards

MBA Professor of the Quarter, Summer 1991, University of Washington

Computing Skills

User of SAS since 1980. EViews, Excel, EXP, LaTex, Matlab, Powerpoint, Visual Basic. Familiar with the Australian School of Business, Compustat and CRSP databases. Some familiarity with Bloomberg, FactSet and IRESS.

Board Membership

Anglican Funds Committee, Melbourne, 2008-2011

Honours

Elected a member of Beta Gamma Sigma, June 1986.

Fellowships

Earhart Foundation Award, 1982-1983

University of Rochester Fellowship, 1979-1984

Simon Fraser University Fellowship, 1979

Inner London Education Authority Award, 1973-1977

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