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14 June 2018

Ms Nicola Cusworth
Chair, Economic Regulation Authority
Level 4, Albert Facey House
469 Wellington Street
PERTH WA 6000

Dear Ms Cusworth

RE: Draft decision – *Proposed revisions to Western Power's Fourth Access Arrangement (AA4)*

Thank you for the opportunity to comment on the Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network published on 2 May 2018 (Draft Western Power Decision). This letter outlines a submission from ATCO Australia (ATCO).

Overarching comments

ATCO makes the following overarching comments in relation to the Economic Regulation Authority's (ERA) Draft Western Power Decision. The attached submission elaborates on these observations.

- ATCO supports a price smoothing approach that ensures energy consumers receive efficient price signals in Western Power's next regulatory control period (AA4), and reduces the likelihood of further distortions, or 'price shocks', in subsequent regulatory control periods. This approach would be similar to Option 3 in Attachment 10.8 of Western Power's initial submission to the ERA.
- ATCO supports the retention of the D-factor as a way of helping to deal with future uncertainties and addresses the possible perverse incentives in Western Power's regulatory framework to defer investing in innovative new technologies that are in the long-term interests of customers.
- The proposed reduction in Western Power's market risk premium, relative to other recent decisions for regulated businesses by the ERA, is an area of concern for ATCO. This is especially relevant in a global market for capital where new investment opportunities must compete for investor and financial backing. In the absence of any new evidence that would point to either down-weighting the DGM evidence, or abandoning the Wright estimate, ATCO proposes the ERA:
    - 1) give equal weight to the DGM and historical evidence when deriving its final point estimate of the MRP; and
    - 2) give equal weight to the Ibbotson and Wright estimates when deriving its final point estimate of the historical MRP estimate.
- ATCO supports adopting ATO tax statistics as the best, and most direct, estimate of an upper-bound for a 'utilisation' gamma.

- ATCO supports the unbundling of Western Power's metering services on the basis that it will lay the foundation for greater competition in metering and energy information services, and deliver value for consumers by stimulating the development of new and innovative energy information and management services.

About ATCO

ATCO is a customer-focussed company that develops, builds, owns and operates a range of energy infrastructure assets, supporting residential, business and commercial consumers across Australia. ATCO Australia:

- Owns and maintains the largest gas distribution network in Western Australia, with over 750,000 connections across 14,000kms of natural pipelines and associated infrastructure.
- Also owns and maintains two non-regulated gas distribution networks in Albany and Kalgoorlie.
- Owns and operates two power generation facilities in Australia (a joint-owned facility in Adelaide and a wholly-owned facility in Karratha) with a combined capacity of 266 MW; and
- Manufactures and delivers modular building solutions to a diverse group of customers.

ATCO's Australian operations are part of the worldwide ATCO Group with approximately 7,000 employees and assets of $22 billion. ATCO is engaged in pipelines and liquids (natural gas transmission, distribution and infrastructure development, energy storage, and industrial water solutions); electricity (electricity generation, transmission, and distribution); retail energy; and structures and logistics.

If you have any questions or would like to discuss any of these issues further please contact me or Amy Stanley, General Manager Human Resources & Corporate Affairs.

[redacted]

J.D Patrick Creaghan
Managing Director & Chief Operating Officer

Attachment 1: ATCO Australia submission (including Appendix A and B)
Appendix A: Treatment of DGM evidence
Appendix B: Frontier Economics, The 'utilisation' estimate of gamma, May 2018

ATCO Australia Submission on the Economic Regulation Authority's Draft Western Power Decision

This information in this attachment elaborates on the overarching comments highlighted in the covering letter. As such, it provides comments on:

- revenue and the 'price path'
- the D-factor
- rate of return, specifically the Market Risk Premium and Gamma; and
- metering.

Revenue and the 'price path'

ATCO supports the ERA's position that transferring revenue between services is inconsistent with the requirements of section 6.4 of the Access Code and the Access Code objective.[1]

ATCO agrees that revenue should be recovered from network users within the access arrangement period and not deferred until future regulatory periods. This is consistent with the clear expectation in the regulatory framework that network businesses should seek to align their required revenue with the forward-looking and efficient cost of providing regulated services during the access arrangement period[2] – if revenue is deferred then the business is pushing the burden of cost recovery for current services onto future users of network services.

ATCO appreciates that in proposing to defer revenue Western Power was trying to minimise 'price shock' for customers. However, as noted in ATCO's December 2017 submission in response to the ERA's Issues Paper, there are viable alternatives to Western Power's proposed price path that would address 'price shock' for customers, in this and the next access arrangement period, without compromising economic efficiency objectives. ATCO also noted that Western Power, as presented in Attachment 10.8 of their initial access arrangement submission, had prudently explored some of these options.

The ERA's Draft Western Power Decision also requires Western Power to review the smoothed target revenue to reduce the likelihood of price shocks in the next access arrangement period (AA5).[3]

In Western Power's case, ATCO supports an approach similar to Option 3 in Attachment 10.8 as the best means of addressing 'price shock' in AA4 and reducing the likelihood of price shocks into AA5.

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[1] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, para 114.
[2] See, for example, Section 7.3(a) and 7.5 of the *Electricity Networks Access Code 2004*
[3] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, para 118.

Under this option, there would be a step-up in year one, followed by smaller increases in following years. In ATCO's view, this option provides customers with pricing stability over the longer term, as it minimises the difference between smoothed revenue and target revenue in 2021-22 and sends more effective price signals during AA4 so as to promote the Access Code objective (economically efficient investment in, operation of, and use of the Western Power network).

D-factor

ATCO supports the ERA's decision to retain the D-factor in Western Power's Access Arrangement as it may help Western Power deal with future uncertainties and addresses the possible perverse incentives in Western Power's regulatory framework to defer investing in innovative new technologies that are in the long-term interests of customers.

The D-factor is an existing mechanism in the Access Arrangement that provides for the recovery of operating expenditure incurred by Western Power as a result of deferring a capital expenditure project or demand management initiative. ATCO understands that the ERA considers that the D-factor has been effective over AA3 in enabling Western Power to adopt non-network options without exposing customers to higher costs from inaccurate forecasts of network control service costs.

ATCO observes that the ERA has not approved Western Power's proposal to introduce a new mechanism to allow for the pre-approval of operating costs that could be recovered under the D-factor at the next access arrangement review. ATCO encourages the ERA to consider whether the existing provisions in the Access Code (6.76 - 6.80) adequately provide for the certainty that Western Power are seeking in relation to timeframes and if not, is there another way to provide guidance to Western Power as to the meaning of 'within a reasonable time' in section 6.77 of the Access Code. This would help improve cost certainty and minimise the impact on consumers' electricity bills.

Rate of return

Regulatory certainty and stability are key drivers of investor confidence and therefore, also drive the ability of energy network businesses to provide valuable services to energy consumers over the long term. In this context, it is important that regulators do not make arbitrary, heavy-handed, or opaque adjustments to established approaches to determining the rate of return for energy network businesses. This is especially relevant in a global market for capital where new investment opportunities must compete for investor and financial backing.

ATCO will be providing detailed submissions on the rate of return guideline consultation soon to be undertaken by the ERA and looks forward to working with the ERA on all aspects of the rate of return as part of this process.

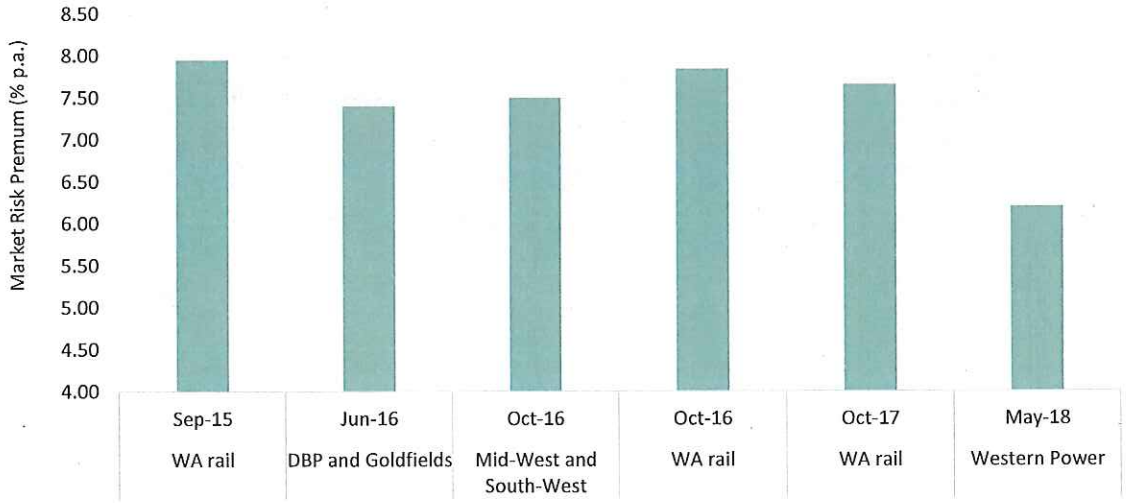
ATCO also notes the ERA is consulting on rate of return issues for railway networks in Western Australia. ATCO's comments in relation to the market risk premium and gamma in this submission are also reflective of our position on the ERA's discussion about these parameters in the recently

published consultation paper on determining the weighted average cost of capital for railway networks.[4]

Market Risk Premium (MRP)

The ERA's Draft Western Power Decision adopts a MRP estimate of 6.20%, which is a noticeable variation from recent decisions on this rate of return parameter by the ERA. As Figure 1 below highlights, the ERA's MRP decisions between September 2015 (when it established its present MRP methodology) and October 2017 have been relatively stable, ranging between 7.40% and 7.95%[5]. The ERA's most recent decision on the MRP — in its October 2017 decision for WA rail networks — was an allowance of 7.68% when expressed using a five-year term for the risk-free rate.[6] However in contrast, seven months later, the ERA has determined a MRP allowance 148 basis points lower for Western Power.

Figure 1: ERA's MRP decisions since 2015



Source: ERA regulatory decisions.
Notes: The ERA's rail decisions use a 10-year term for the risk-free rate, whereas its electricity and gas decisions use a five-year term for the risk-free rate. To improve comparability between decisions, the ERA's estimate of the 10-year risk-free rate was added back to the MRP in each of the rail decisions, and the five-year risk-free rate prevailing at that time subtracted, to obtain the MRP estimates presented in this Figure. The ERA's 2016 Mid-West and South-West decision in relation to gamma was appealed by ATCO. This Figure presents the MRP estimate corresponding to the ERA's remade gamma decision following that appeal.

[4] Economic Regulation Authority, Consultation Paper, Method for Determining the Weighted Average Cost of Capital for Railway Networks, 21 May 2018.
[5] When expressed using a five-year term for the risk-free rate.
[6] The 2017 WA rail decision determined a MRP of 7.20%, assuming a 10-year risk-free rate of 2.49%. This implies a total market return of 9.69%. Deducting from this total market return estimate the five-year risk-free rate of 2.01% prevailing at the time of the 2017 WA rail decision results in a MRP estimate of 7.68%.

The noticeable reduction in the MRP allowance in the ERA's Draft Western Power Decision, relative to the October 2017 WA rail decision, appears to reflect two material changes to the ERA's approach to MRP, namely:

- Dividend Growth Model (DGM) evidence has been down-weighted; and
- No weight has been given to the Wright estimate of the MRP.

In the October 2017 WA rail decision the ERA selected a point estimate from the top of its MRP range, where the upper bound was determined using DGM evidence.[7] That is, the ERA's October 2017 estimate of the MRP was determined by effectively giving 100% weight to the DGM. However, in the Draft Western Power Decision, the ERA appears to have given only 30% weight to DGM evidence (with the remaining 70% weight given to a MRP estimate derived using historical returns data).

In addition, the ERA has given no weight to the Wright estimate of the MRP in the Draft Western Power Decision in evaluating the historical returns data. This contrasts with the consideration given to both the Ibbotson and Wright methods by the ERA in the 2017 WA rail decision[8], and the ERA's conclusion in the 2016 DBP decision that the "the two opposing theoretical interpretations for estimating the MRP (Ibbotson and Wright) cannot be dismissed."[9]

ATCO is of the view that the ERA should build constructively and incrementally on past decisions and analysis, and, where justified, use updated relevant empirical evidence. This is because regulatory certainty and stability are key drivers of investor confidence and underpin the ability of network businesses to provide valuable services to energy consumers over the long term.

In this context, the rationale for ERA's change of MRP methodology in the Draft Western Power Decision is not set out in the draft decision itself, and is only discussed briefly in the ERA's recently published consultation paper on the proposed method of determining the weighted average cost of capital for railway networks.[10]

The evidence cited by the ERA for lowering the weight given to the DGM approach seems to consist primarily of statements made by external advisers to the Australian Energy Regulator (AER) (in various reports from December 2011 to April 2017) and the AER itself (in an April 2017 report), which express concerns about the reliability of the DGM for the purposes of setting a MRP allowance.

These concerns about the DGM approach were known to (and considered by) the ERA in 2013, when it was developing its Rate of Return Guideline, and in its subsequent decisions for rail and energy networks (as described in greater detail in **Appendix A** to this submission).

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[7] Economic Regulation Authority, 2017 Weighted Average Cost of Capital for the Freight and Urban Rail Networks and for Pilbara Railways, para 69.
[8] ibid, para 36.
[9] Economic Regulation Authority, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020, Appendix 4: Rate of Return, para 520.
[10] Economic Regulation Authority, Method for Determining the Weighted Average Cost of Capital for Railway Networks, 21 May 2018.

The DGM approach has a strong theoretical foundation, is commonly used in practice (including by other regulators), and produces a forward-looking estimate of the MRP that is commensurate with the prevailing conditions.

These strengths are reflected in the large weight applied by the ERA to the DGM evidence in decisions since the 2013 Guideline. For example, in the October 2017 WA rail decision, the ERA's final MRP point estimate was derived by giving 100% weight to the DGM evidence. In the June 2016 decision for DBP, the ERA's final MRP estimate was derived by giving nearly 60% weight to the DGM evidence.

ATCO also observes that the theoretical and empirical concerns about the Wright approach cited by the ERA in the Draft Western Power Decision are not new, and were aired in 2013, when the ERA was developing the current Rate of Return Guideline. Moreover, despite these concerns, the ERA has used the Wright approach in its decisions since the 2013 Guideline, most recently in the 2017 WA rail decision.

In ATCO's view, there is no new evidence in the Draft Western Power Decision that would point to either down-weighting the DGM evidence, or to abandoning the Wright estimate.

ATCO suggests that the ERA updates its MRP estimates with the latest data prior to issuing its final decision, which would allow the ERA to assess whether there have been any trend changes in indicators, such as the AA 5-year bond default rate and implied volatility (ASX200 VIX), that may generate a different point estimate for the MRP.

In the absence of any new evidence, ATCO recommends that : 1) equal weight be given to the DGM and historical evidence when deriving its final point estimate of the MRP; and 2) equal weight is given to the Ibbotson and Wright estimates when deriving its final point estimate of the historical MRP estimate.

Gamma

The ERA's Draft Western Power Decision has adopted a gamma of 0.4 and flags that it will further consider new Australian Bureau of Statistics (ABS) data before making a decision on gamma.[11]

The ABS data has been adopted under the equity ownership approach to estimate gamma by providing an upper bound for the proportion of credits that are redeemed. However, ATCO has concerns about the efficacy of the equity ownership approach and the quality of the underlying ABS data used to construct equity ownership estimates of gamma.

In ATCO's view, while the equity ownership approach (at best) captures the effect of non-residents, it does not provide any other reason that credits might not be redeemed. As a result, if any credit is not redeemed for any reason other than it being distributed to a non-resident, the equity ownership estimate will be overstated.

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[11] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, para 362.

One example that highlights the limitations of the equity ownership approach is the 45-day rule. This rule prevents domestic resident investors from redeeming credits that are distributed to them unless they have owned the relevant shares for more than 45 days around the dividend event. As a result, the actual redemption rate of credits will be lower than assumed under the equity ownership approach.

In addition, the ABS data should be used with caution. Indeed, the ABS itself has issued an express warning about the poor quality of the data that is used to construct the equity ownership estimates:

> *The estimated market value of equity issued by some sectors is considered to be of poor quality. In particular, estimates of the market value of the amount issued by private corporate trading enterprises are considered poor because they are largely built up from counterpart and other information obtained from ABS Surveys of Foreign Investment and Balance Sheet Information. This sector covers equity issued by both listed and unlisted private corporate trading enterprises, of which there are over half a million.*
>
> *In terms of the analysis undertaken here, errors in the estimated market value of equity on issue will impact on the accuracy of estimates of the proportion of that equity owned by non-residents.*
>
> *A further concern relates to valuation. While both financial accounts and international investment statistics (from which the rest of the world data are sourced) are on a market value basis in principle, collection and estimation methods differ between the two sets of statistics...Because of the differences in the methodologies used, it is possible that there could be more variability in the market value estimates of equity held by the rest of the world than in the estimated market value of the equity on issue, thus causing some variation in the foreign ownership series derived from these data.*[12]

Given these concerns, ATCO submits that the ERA should apply zero weight to the ABS data in estimating gamma.

ATCO supports the tax statistics approach as the best, and most direct, estimate of an upper-bound for a 'utilisation' gamma and believes this approach should be used to estimate gamma in determining Western Power's rate of return. This position is supported by the **attached** report from Frontier Economics, which ATCO commissioned to set out the best estimate of gamma under a 'utilisation' interpretation of gamma (see Appendix B).

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[12] See the ABS feature article that first explains the foreign ownership calculations at http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/5306.0Feature%20Article150Jun%201992?opendocument&tabname=Summary&prodno=5306.0&issue=Jun%201992&num=&view=.

ATCO understands that in estimating the gamma using ATO tax statistics the only data needed is corporate tax paid and credits redeemed. The reliability of these figures has been confirmed as part of the ENA December 2017 submission to the AER, where Hathaway states that:

> *The Company Tax item is the total company tax collected by the ATO during the relevant period and the Credits Redeemed item is the total amount of credits redeemed via the filing of personal tax returns. These two data items are 100% reliable as they are figures that relate directly to ATO tax collections. There is no reason to question the ATO's records of the amount of corporate and personal tax it has collected.*[13]

Hathaway goes on to conclude that the ATO tax statistics can "clearly"[14] be used to provide a reliable utilisation estimate of gamma. The recent note from the ATO to the AER does not put the corporate tax paid and credits redeemed data into question as it states that it is the ATO's franking account balance (FAB) data that should not be relied upon.[15]

ATCO acknowledges the estimate of gamma using ATO statistics could be affected by non-resident companies paying tax in Australia which do not generate franking credits. However, ATCO submits this effect is likely to be small because any non-resident company paying a material amount of company tax in Australia could simply establish a domestic subsidiary, pay the same amount of tax, but obtain the benefits of imputation credits.

In this context, ATCO submits that gamma can be estimated directly from ATO data as the proportion of tax paid by the average Australian firm that can be used to offset their Australian income tax liabilities.

Under this method, gamma is estimated as the ratio of credits redeemed to credits created for the average Australian firm from ATO data and results in an estimate of gamma of 0.34.

Metering

ATCO supports the ERA's draft decision that Western Power is to unbundle its metering services into separate reference services.[16] Unbundling advanced metering infrastructure and communications services is a critical first step in the direction of greater competition in metering and energy information services. This is a growing market niche for a diverse range of commercial providers, including technology companies and 'behind the meter' specialists, who have the expertise, experience, and financial backing to deliver innovative products and services, such as micro-grids and stand-alone power systems.

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[13] Hathaway, N., 2017, Letter to Energy Networks Australia, December, p. 1.
[14] Ibid p. 2.
[15] Australian Taxation Office, ATO Note to AER, 9 May 2018, Available from: https://www.aer.gov.au/system/files/ATO%20Note%20to%20AER%20regarding%20imputation%20-%209%20May%202018.pdf.
[16] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Required amendment 14

Ultimately, this will deliver benefits and value for energy consumers by stimulating the development and rollout of innovative metering and energy information products and services.

Appendix A: Treatment of DGM evidence

The ERA states in its Draft Western Power Decision that, in the past, the ERA has taken the midpoint between the historical estimate of the MRP and the DGM as the starting point for its evaluation of the MRP,[17] but that given a number of specified concerns about the reliability of the DGM, it should now reduce the weight placed on the DGM.[18] In the Draft Western Power Decision, the ERA used the historical excess returns approach to set the lower bound of its MRP range (5.6%) and DGM evidence to set the upper bound of its MRP range (7.6%).[19] The ERA then selected a point estimate of 6.2%.[20] This means, the ERA has, in its Draft Western Power Decision, placed only 30% weight on DGM evidence when selecting its final point estimate.

The concerns over the reliability of the DGM evidence, which the ERA cites as its reasons for now down-weighting that evidence (relative to the weight the ERA has afforded to the DGM evidence in past decisions) are the following:

- The model is sensitive to assumptions and input values;[21]
- Forecasts of future earnings and dividends are potentially inaccurate over more than two years;[22]
- The DGM is subject to upward bias from the smoothed or sticky nature of dividends;[23]
- Biases in analysts' forecasts can lead to a biased DGM forecast of the MRP;[24]
- There is no clear agreement among experts as to the best form for the DGM, or its input assumptions;[25]
- The DGM is likely to be upwardly biased due to current low interest rates;[26] and

[17] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 158.
[18] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 160.
[19] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraphs 179 and 180.
[20] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 258.
[21] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraphs 148 and 151.
[22] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 151.
[23] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 151.
[24] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 151.
[25] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 155.
[26] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 155.

- Because the DGM solves for the implied required rate of return over an infinite horizon, it may provide a poor estimate of the MRP relevant over the five-year horizon the ERA is concerned with.[27]

However, none of these concerns are new – they have all been raised in the Australian regulatory setting many times and none of them have led the ERA to down-weight the DGM evidence in any of its previous decisions. Similarly, the AER has recently stated that it too has seen no reason to down-weighted the DGM evidence since its 2013 Guideline.[28]

A number of the concerns the ERA cites about the reliability of the DGM were recognised by the ERA in its 2013 Rate of Return Guideline. For example, in its 2013 Guideline materials the ERA:

- Stated that "evidence exists that a systematic bias exists in analyst forecasts of future dividends." However, the ERA stated that it had corrected for these biases when deriving its DGM estimates by applying adjusted forecasts of dividends.[29]
- Noted that "estimating the MRP using DGM is very sensitive to the input assumptions adopted in the model" [30] and consequently the ERA has considered a range of specifications and input assumptions.
- Recognised that "forecasts of dividends, particularly for the near term, tend to be based on analysts' estimates, such as from brokers' reports. The Authority considers that brokers' estimates may have potential to provide relevant information, particularly in terms of the parameters used in modelling, such as the market risk premium. In some cases, brokers' estimates may also provide relevant information for the overall return on equity of the regulated firm. However, particular care is needed in interpreting such information."[31]

Moreover, all of the concerns raised by advisers to the AER, and cited by the ERA, were available to the ERA when it made its 2017 WA rail decision. For example:

- The concern, about the sensitivity of DGM estimates to model assumptions and inputs, is attributed by the ERA[32] to a 2011 report prepared by advisers to the AER, McKenzie and Partington,[33] as well as an April 2017 report by AER advisers Partington and Satchell.[34] Thus, this point has been factored into the ERA's decisions since 2011.

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[27] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 155.
[28] AER, November 2017, APA VTS Final Decision, Attachment 3, p. 3-80.
[29] Economic Regulation Authority, Explanatory Statement for the Rate of Return Guideline, 16 December 2013, Paragraph 730.
[30] Economic Regulation Authority, Explanatory Statement for the Rate of Return Guideline, 16 December 2013, Paragraph 732.
[31] Economic Regulation Authority, Appendices to the Explanatory Statement for the Rate of Return Guideline, 16 December 2013, Paragraph 95.
[32] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 148 and 151.
[33] McKenzie and Partington, Equity market risk premium, December 2011, p. 25.
[34] Partington and Satchell, Report to the AER: Discussion of Estimates of the Return on Equity, April 2017.

- The concerns about the inaccuracy of future earnings and dividend forecasts, the sticky nature of dividends, and biases in analysts' are attributed by the ERA[35] to the April 2017 report by Partington and Satchell, and so were part of the evidence that led to 100% weight being applied to the DGM in the ERA's October 2017 decision.

Notwithstanding that all of these reports were available to the ERA in October 2017, in the WA rail decision, the ERA:

- Determined a MRP range of 6.9% to 7.2%, where the upper bound of this range was determined using DGM evidence; and
- Selected the top of the range, 7.2%, as its point estimate for the MRP – effectively placing 100% weight on the DGM evidence to determine its point estimate in that decision.

In its most recent final decision for an energy network (before the current Draft Western Power Decision), the June 2016 decision for DBP, the ERA:

- Determined a MRP range of 5.4% to 8.8%, where the upper bound of the range was determined using DGM evidence; and
- Selected a point estimate of 7.4% - effectively placing 60% weight on the DGM evidence.

As the Table below shows, every one of the concerns the ERA now cites in order to down-weight the DGM were already considered explicitly in its DBP decision. Yet, in that decision, rather than down-weighting the DGM evidence, the ERA gave 60% of the weight to that evidence when selecting its final point estimate.

[35] Economic Regulation Authority, Draft Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, 2 May 2018, Appendix 5, Paragraph 151.

Table 1: Evidence of ERA recognising concerns about the DGM in June 2016 DBP decision

Draft Western Power Decision (May 2018)	DBP decision (June 2016)
The model is sensitive to assumptions and input values	"The estimates from the DGM are sensitive to input assumptions, particularly the long run growth rate." [Paragraph 551]
Forecasts of future earnings and dividends are fairly inaccurate over more than two year	"Dividend growth expectations are extremely variable due to the continuous arrival of new information in the market. The latest information is therefore the most relevant to the expected return and accordingly the Authority has included estimates that are one year old at most." [Paragraph 541]
The DGM is subject to upward bias from the smoothed or sticky nature of dividend	"DGMs may not fully reflect market conditions if firms follow a stable dividend policy" [Paragraph 552]
Biases in analysts' forecasts can lead to a biased DGM forecast of the MRP	"DGM estimates are recognised to have shortcomings, including that analyst forecasts ... have a tendency to be upwardly biased, as they are based on over-optimistic expectations for target prices and earnings" [Paragraph 552]
There is no clear agreement among experts as to the best form for the DGM, or its input assumptions	"The Authority notes that there is no clear agreement among experts as to the best form for the DGM, or its input assumptions. For that reason, the Authority adopts a wide range, informed by a spectrum of recent studies." [Paragraph 554]
The DGM is likely to be upwardly biased due to current low interest rates	"Overall, the Authority infers from the DGM MRP information before it that the market expectation is that the MRP has moved upwards in recent times due to declines in the risk free rate." [Paragraph 556]
Because the DGM solves for the implied required rate of return over an infinite horizon, it may provide a poor estimate of the MRP relevant over the five-year horizon the ERA is concerned with	"Furthermore, the DGM estimates reported here provide a single discount rate, which equates the present value of the future infinite dividend stream with the observed share price. The estimate therefore looks out beyond the 5 year period for which the Authority is seeking to estimate the MRP. If a lower nominal GDP estimate is expected than assumed – say for the two years beyond the three actual dividend growth rate forecasts incorporated in the model – then the estimates of the DGM should be lower than that reported here. The implication would be that the 5 year forward looking MRP would also be lower." [Paragraph 553]

Source: Economic Regulation Authority, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020, Appendix 4, 30 June 2016

Appendix B: Report from Frontier Economics - The 'utilisation' estimate of gamma

The 'utilisation' estimate of gamma

REPORT PREPARED FOR ATCO GAS AUSTRALIA

May 2018

The 'utilisation' estimate of gamma

Contents

1 Executive summary

1.1 Instructions

1 Frontier Economics has been retained by ATCO Gas Australia to comment on the various approaches that have been proposed to estimate the Gamma parameter within a 'utilisation' framework, whereby "the value of dividend imputation tax credits" is interpreted as the proportion of created credits that are able to be redeemed by shareholders.

1.2 Key findings

2 Our key conclusions in relation to the estimates of gamma adopted by the ERA in its recent decisions are set out below.

3 In its 2013 Rate of Return Guideline, the ERA defined gamma in terms of the market value of imputation credits and sought an estimate that was consistent with that definition. More recently, the ERA has determined that its previous decisions in relation to gamma were estimating the wrong thing – that gamma is not the market value of credits but rather "the proportion of the tax paid at the company level [which] is really a withholding of personal tax."[1]

4 The ERA has also recently concluded that "distributed imputation credits are valuable to the extent that they can be used (or utilised or redeemed) to reduce personal taxes and/or have credits refunded."[2]

5 Consequently, gamma must be estimated in a way that is consistent with the ERA's new definition. This new definition appears to require an estimate of the extent to which taxes paid by the benchmark efficient entity (BEE) can be redeemed to reduce personal taxes. However, this would require the ERA to make an assumption about the structure of the shareholder base of the BEE, which work is yet to be performed and should therefore be undertaken as part of the current Guideline review.

6 Moreover, the ERA's current definition of gamma is inconsistent with any equilibrium model, so there is no guidance from any model to guide how gamma should be estimated. Section 8 of this report lays out a framework via which one can determine how to estimate gamma in a way that is consistent with the ERA's new definition. We conclude that:

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[1] ERA, June 2016, DBP Final Decision, Paragraph 86.

[2] ERA, June 2016, DBP Final Decision, Paragraph 86.

a. If the ERA determines that it seeks an estimate of the proportion of tax paid by the average Australian firm that can be used to reduce personal taxes, the best estimate is the 34% figure from the ATO data. That data directly estimates the ratio of credits redeemed to credits created for the average Australian firm. We examine the merits of the ATO estimate of gamma in Section 3 of this report.

b. If the ERA determines that it seeks an estimate of the proportion of company tax paid by the BEE that can be used to reduce personal taxes, it would have to make an assumption about the structure of the shareholder base of the BEE, which work is yet to be performed and should therefore be undertaken as part of the current Guideline review.

7 We conclude that there are three sources of data that provide evidence that is less relevant to the ERA's new definition of gamma:

a. In Section 4 of this report, we conclude that the 20-companies estimate of the distribution rate should not be used because:

   i. It is an unreliable estimate that should not be relied upon until the discrepancies identified in this report have been addressed;

   ii. It does not provide an estimate of the distribution rate for the BEE because the 20 firms differ materially from the BEE; and

   iii. It assumes that distributed credits immediately flow to shareholders, which is not the case.

b. In Section 5 of this report, we conclude that the equity ownership estimates should not be relied upon because:

   i. They do not allow for the 45-day rule, or any other reason why domestic investors do not redeem credits. Consequently, they are at best an upper bound;

   ii. The source of the equity ownership estimates is data from the Australian Bureau of Statistics (ABS), which has expressed quality warnings about this data;

   iii. The 2017 revision of the ABS estimates are unsettling for many reasons including:

      1. The method for compiling the data has not changed. There is still the same reliance on survey responses, there is still the same mis-match between components of the data, and there are still

the same problems with estimating the market value of equity for some sectors.

2. The historical estimates for some sectors have changed materially in the update. The fact that an historical number can be materially changed almost 20 years after the event is clearly troubling.
3. The revision to the estimates is based on a 'backcasting' exercise whereby estimated splits between domestic and foreign equity from recent data is 'backcasted' to the historical data, replacing the estimates that were made at the time the historical data was collected.
4. The revised estimates result in very little volatility in the estimates for listed equity and more volatility in the estimates for all equity, when the reverse would be expected ex ante.
5. The plausible impact of the GFC that was evident in the 2014 data has now been removed in the 2017 revision. That is the GFC impact has now been removed from the historical record.

c. In Section 6 of this report we explain that dividend drop-off analyses estimate the market value of credits. If gamma is no longer interpreted as the market value of credits, then estimates of the market value of credits would not be relevant.

1.3 Author of report

8 This report has been authored by Professor Stephen Gray, Professor of Finance at the UQ Business School, University of Queensland and Director of Frontier Economics, a specialist economics and corporate finance consultancy. I have Honours degrees in Commerce and Law from the University of Queensland and a PhD in Financial Economics from Stanford University. I teach graduate level courses with a focus on cost of capital issues, I have published widely in high-level academic journals, and I have more than 20 years' experience advising regulators, government agencies and regulated businesses on cost of capital issues. I have published a number of papers that specifically address beta estimation issues. A copy of my curriculum vitae is attached as an appendix to this report.

9 My opinions set out in this report are based on the specialist knowledge acquired from my training and experience set out above. I have been provided with a copy of the Federal Court's Expert Evidence Practice Note GPN-EXPT, which comprises the guidelines for expert witnesses in the Federal Court of Australia. I

have read, understood and complied with the Practice Note and the Harmonised Expert Witness Code of Conduct that is attached to it and agree to be bound by them.

2 Background and summary of ERA approach

2.1 Context

10 We begin by noting that there is broad agreement between the ERA and all experts that gamma (γ) should be estimated as the product of two parameters:

a. The distribution rate (F), which represents the proportion of imputation credits created that are attached to dividends and distributed to shareholders; and

b. A second parameter, theta (θ), which is variously defined as "the value of distributed imputation credits" or as "the utilisation rate."

11 Most of the regulatory debate centres on the appropriate method for estimating theta and, in particular, whether theta should be interpreted as:

a. *The market value of imputation tax credits.* If this interpretation is adopted, estimation methods that are designed to estimate the market value from the market prices of traded securities should be adopted to estimate theta; or

b. *A utilisation rate.*[3] If this interpretation is adopted, estimation methods that are designed to estimate the proportion of credits that are redeemed should be adopted to estimate theta.

12 In a number of reports on gamma that have been submitted to the ERA, we explain why we consider that, within the ERA's regulatory framework, theta should be interpreted as a market value concept, and we continue to hold to this view.

13 The ERA also adopted the market value approach to gamma in its 2013 Rate of Return Guideline, but has since departed from that approach and now adopts a 'utilisation' interpretation of gamma.

14 In this report we have been asked to conduct all of our analysis within the 'utilisation' framework, where gamma is interpreted as the proportion of created credits that are available to be redeemed by shareholders.

2.2 Two approaches to estimating gamma under a utilisation rate interpretation

15 In the regulatory context, two alternative approaches have been developed for the purposes of estimating gamma under a utilisation rate interpretation:

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[3] Or 'redemption proportion'.

a. *The ATO tax statistics approach.* This approach uses aggregate tax statistics data published by the ATO to calculate gamma as the proportion of created credits that are actually redeemed by investors in Australia. Under this approach, gamma is estimated directly as the ratio of total credits redeemed to total credits created, where each component is obtained from official ATO taxation statistics. Under this approach, the 'utilisation' gamma is estimated as:

$$\gamma = \frac{Credits\ redeemed}{Credits\ created}.$$

b. *The equity ownership approach.* Recognising that only some investors in Australia are eligible to redeem imputation tax credits, the equity ownership approach estimates theta as the proportion of domestic investors in the Australian equity market. This requires the additional assumptions that:

   i. Domestic and foreign investors hold identical portfolios of Australian stocks; and

   ii. Every credit distributed to a domestic investor will be redeemed by that investor. Thus, the 45-day Rule, and every other reason why a domestic investor may not redeem credits, is assumed to be irrelevant.

The equity ownership estimate of theta must then be multiplied by an estimate of the distribution rate to obtain an estimate of gamma. Thus, under this approach it is necessary to construct separate estimates of two parameters from two different data sources and to then multiply them together:

$$\gamma = F \times \theta$$
$$= \frac{Credits\ redeemed}{Credits\ distributed} \times \frac{Credits\ distributed}{Credits\ created}.$$

2.3 The ERA approach

2.3.1 The ERA approach to gamma

16 In its recent decisions, the ERA has settled on an estimate of gamma by applying different weights to various sources of data, as summarised in Table 1 below.

Table 1: Summary of ERA data sources used to estimate a 'utilisation' gamma

Data sample	Distribution rate (*F*)	Utilisation rate (theta)	Weight
All equity	Maximum of range from ATO tax statistics.	Current equity ownership proportion for all equity.	"Primary reliance."
	Direct estimate of gamma from ATO tax statistics. No need to separately estimate two parameters.		"Not much weight."
Listed equity only	Primary reliance on estimates for largest 20 companies.	Current equity ownership proportion for listed equity.	"Primary reliance."
	Primary reliance on estimates for largest 20 companies.	Range of dividend drop-off analyses.	"Limited weight."

Source: ERA, 2016, DBP Final Decision, Appendix 5, Table 2, p. 46.

2.3.2 The ERA estimates of the distribution rate

ATO tax statistics – the all equity distribution rate

17 In the first row of Table 1, the ERA estimates a distribution rate for all equity from tax statistics published by the Australian Taxation Office (ATO). The distribution rate is estimated as the ratio of two items:

$$F = \frac{Credits\ distributed}{Credits\ created}.$$

18 Whereas there is a single known figure for 'credits created' (that being equal to total corporate tax paid), the figure for 'credits distributed' must be reverse engineered using one of two approaches:

a. The 'franking account balance' (FAB) approach estimates 'credits distributed' from information about the increase in aggregate franking account balances over the relevant period; and

b. The 'dividend' approach estimates 'credits distributed' from information about corporate dividends paid over the relevant period.

19 The two approaches produce different estimates of the distribution rate – approximately 70% for the FAB method and approximately 50% from the dividend method. The reason for the difference is because the reverse engineering of 'credits distributed' from the ATO data is a difficult task that requires a set of assumptions about how credits might flow through the system as they are

distributed between trusts, corporate structures, and superannuation and managed funds.[4]

20 The ERA notes that the ATO data establishes a range for the distribution rate of 50% to 70%,[5] and then concludes that the upper bound of 70% is sufficiently reliable to be adopted as its estimate of the distribution rate, stating that:

> ...it is generally accepted that the cumulative distribution rate provides a reasonable estimate,[6]

and that:

> On this basis, the Authority considers it reasonable to conclude that the ATO FAB data supports an estimate for the distribution rate across all equity, listed and unlisted, of around 0.7.[7]

21 In the second row of Table 1, no estimate of the distribution rate is required at all. This is because the second approach estimates gamma directly as:

$$\gamma = \frac{Credits\ redeemed}{Credits\ created}.$$

22 This is because 'credits distributed' cancels out as that figure is obtained from the same ATO data in both places it appears in the equation below:

$$\gamma = F \times \theta$$
$$= \frac{Credits\ redeemed}{Credits\ distributed} \times \frac{Credits\ distributed}{Credits\ created} = \frac{Credits\ redeemed}{Credits\ created}.$$

23 Thus, a 'utilisation' gamma can be estimated directly from information about 'credits created' (which is equal to total corporate tax paid) and 'credits redeemed' by shareholders. The ATO obviously has reliable data about the amount of corporate tax paid to them and about the amount of imputation credits redeemed from them, and a direct estimate of gamma is produced by the ratio of those two terms.

20 largest companies – the listed equity distribution rate

24 The ERA adopts an estimate of 80% for the distribution rate in relation to listed equity.[8] This figure is informed by a range of estimates that vary according to the weight applied to the 20 largest listed companies:[9]

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[4] Hathaway, N., 2013, "Franking credit redemption ATO data 1988 to 2011," Capital Research, September.

[5] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraph 188.

[6] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraph 189.

[7] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraph 190.

[8] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraph 195.

[9] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Table 1, p. 44.

a. The estimate for listed companies *excluding* the 20 largest companies is 70%;

b. The estimate based on *only* the largest 20 listed companies is 83%; and

c. Estimates that give some weight to the largest 20 listed companies range between these two figures.

25 The 80% figure adopted by the ERA is close to the top of the relevant range, indicating that material weight has been applied to the largest 20 companies.

26 This figure is used in the third and fourth rows of Table 1 above.

2.3.3 The ERA estimates of the utilisation rate or theta

Equity ownership estimates

27 The 'equity ownership' estimate of theta is constructed as the proportion of domestic equity that is owned by domestic investors. This requires the additional assumptions that:

a. Domestic and foreign investors hold identical portfolios of Australian stocks; and

b. Every credit distributed to a domestic investor will be redeemed by that investor. Thus, the 45-day Rule, and every other reason why a domestic investor may not redeem credits, is assumed to be irrelevant.

28 Under a 'utilisation' interpretation of gamma, the value that investors ascribe to any credits they might redeem is irrelevant – the proportion that are redeemed is all that is required.

29 The ERA's estimate of the domestic ownership proportion of all equity is 59%. This figure is used in the first row of Table 1.

30 The ERA's estimate of the domestic ownership proportion of listed equity is 47%. This figure is used in the third row of Table 1.

Dividend drop-off estimates

31 The ERA also considers dividend drop-off estimates of theta. This approach uses stock market data to estimate the market value of imputation credits – the extent to which investors capitalise the value they ascribe to credits in the stock price.

32 As we explain below, this estimate would appear to be irrelevant to the estimation of gamma under a utilisation interpretation. The 'utilisation' gamma represents the proportion of credits that are redeemed and is entirely independent of the value that investors ascribe to those credits. There is no role at all for 'value' in a 'utilisation' estimate of gamma.

33 Nevertheless, the ERA considers a range of dividend drop-off analyses and concludes that the evidence supports a range of 0.35 to 0.69 for the value of credits – that is, that investors value credits at 35 to 69 cents in the dollar. The ERA then curiously uses this estimate of the market value of credits as an estimate of the proportion of credits that are redeemed in the fourth row of Table 1.

2.3.4 The ERA estimates of gamma

34 The ERA's estimates of gamma are summarised in Table 2 below.

Table 2: Summary of ERA estimates of gamma

Data sample	Method	Distribution rate (*F*)	Utilisation rate (theta)	Gamma
All equity	Equity ownership	0.7	0.59	0.41
	ATO tax statistics	Direct estimate of gamma		0.34
Listed equity only	Equity ownership	0.8	0.47	0.38
	Dividend drop-off	0.8	0.35 to 0.69	0.28 to 0.55

Source: ERA, 2016, DBP Final Decision, Appendix 5, Table 2, p. 46.

35 The ERA then concludes that:

> ...the Authority places most reliance on the equity share ownership approach. It suggests a point estimate for gamma of 0.4.[10]

[10] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraph 211.

3 The reliability of the ATO tax statistics

3.1 Overview

36 In its recent decisions, the ERA has concluded that ATO tax statistics can be used to provide a reliable estimate of the distribution rate (as set out above), but cannot be used to produce a reliable estimate of gamma.

37 For example, the ERA has recently stated that:

> ...the Authority does not place much weight on the [ATO gamma] estimate, or on its ability to inform a point estimate of the utilisation rate, given concerns about the robustness of the taxation data used for estimating the utilisation rate.[11]

38 This is a curious position to take given that the only item about which any questions has been raised affects the distribution rate but *not* the estimate of gamma. Questions have only been raised about how the ATO data might be used to estimate the quantum of credits distributed within a given year; there are no questions about the ATO's records of the amount of corporate tax paid or about the amount of credits that are redeemed from the ATO. The distribution rate requires an estimate of credits distributed:

$$F = \frac{Credits\ distributed}{Credits\ created},$$

whereas, as explained below, gamma does not:

$$\gamma = \frac{Credits\ redeemed}{Credits\ created}.$$

39 That is, the ERA:

a. Places "primary reliance" on the one figure that it considers to be potentially unreliable; and

b. Assigns "not much weight" to the figures that have never been questioned.

3.2 Explanation of issues raised in relation to ATO tax statistics

40 The potential concerns with the ATO data were first identified by Hathaway (2013),[12] however they relate to a data item that is not needed for the 'utilisation'

[11] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraph 212.

[12] Hathaway, N., 2013, "Franking credit redemption ATO data 1988 to 2011," Capital Research, September.

estimate of gamma. Rather, gamma is estimated from data items that are not subject to any concerns at all.

41 The issue is as follows:

a. Each year a certain amount of credits are *created*, some of those are *distributed* to shareholders, and some of those distributed credits are *redeemed* by shareholders.

b. The ATO provides data on the quantum of credits that are *created* each year and on the quantum of credits that are *redeemed* each year. There has never been any dispute about either of these items. These are the only two items that are needed to estimate gamma.

c. The ATO does not provide direct data on the number of credits that are *distributed* each year – so that quantity has to be derived. Two approaches have been proposed:

   i. The franking account balance (FAB) approach – whereby the amount of distributed credits is derived as the sum of all credits created less those that are retained by firms as reported in the firms' franking account balances;[13] and

   ii. The dividend approach – whereby the amount of distributed credits is estimated by tracking dividend payments and making assumptions about the flow of dividends between companies, trusts and life offices.

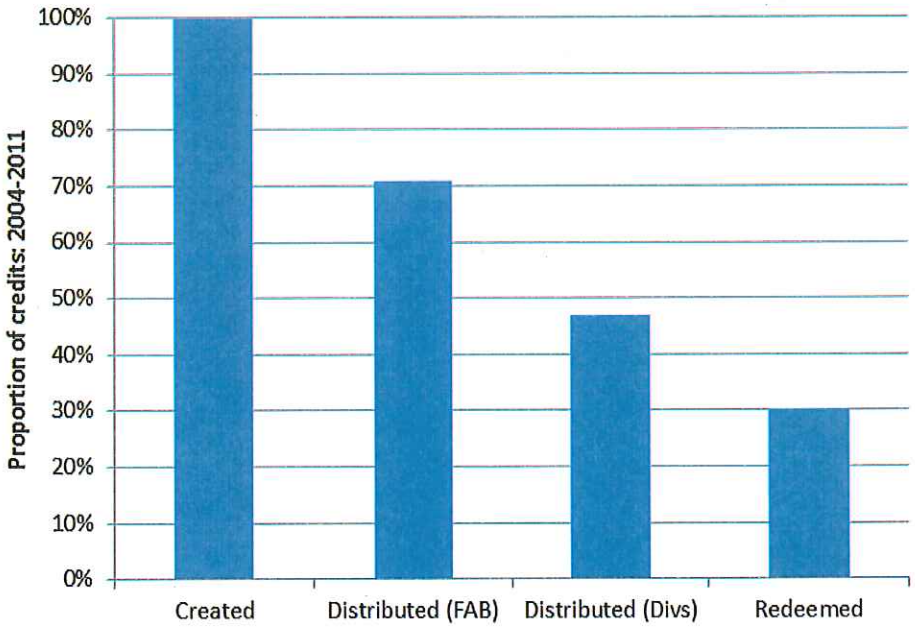
d. The FAB and dividend approaches produce different estimates of the amount of credits that are *distributed* each year.

42 The difference between the FAB and dividend estimates of the amount of credits distributed was first identified by Hathaway (2013).[14] His estimates are summarised in Figure 1 below.

[13] A firm's 'franking account balance' is a record of the face amount of imputation credits the firm has available for distribution.

[14] Hathaway, N., 2013, "Franking credit redemption ATO data 1988 to 2011," Capital Research, September.

Figure 1: Summary of ATO tax statistics



Source: Hathaway (2013), p. 9.

43 Figure 1 shows that the FAB method indicates that 71% of created credits are distributed, whereas the dividend method produces a distribution rate of 47%.

44 Under the "utilisation" interpretation of gamma, the ATO tax statistics can be used to estimate gamma as follows:

$$\gamma = F \times \theta = \frac{\text{Credits Distributed}}{\text{Credits Created}} \times \frac{\text{Credits Redeemed}}{\text{Credits Distributed}}.$$

45 Note that the amount of credits distributed cancels out, so we are left with:

$$\gamma = \frac{\text{Credits Redeemed}}{\text{Credits Created}}.$$

46 In this case, there is no issue with the measurement of either term, so no reason to consider the estimate to be unreliable. Hathaway (2013) recognises this point and reports that the proportion of credits redeemed to credits created is 30%.[15] He notes that Credits Redeemed is $127.6 billion and that Company Tax Paid is $421.5 billion, producing a ratio of 30%. He concludes that:

> This overall approach is reasonable as the tax statistics are unlikely to be in major error for amounts of tax paid and the amounts of tax credits claimed.[16]

[15] Hathaway (2013), Paragraph 99.

[16] Hathaway (2013), Paragraph 100.

47 Moreover, it is clear from Figure 1 above that the same outcome would be obtained whether one adopted the FAB approach:

$$\gamma = F \times \theta = \frac{\text{Credits Distributed}}{\text{Credits Created}} \times \frac{\text{Credits Redeemed}}{\text{Credits Distributed}} = \frac{71}{100} \times \frac{30}{71} = 0.30$$

or whether one adopted the dividend approach:

$$\gamma = F \times \theta = \frac{\text{Credits Distributed}}{\text{Credits Created}} \times \frac{\text{Credits Redeemed}}{\text{Credits Distributed}} = \frac{47}{100} \times \frac{30}{47} = 0.30 .$$

48 In an update to his 2013 report, Hathaway (2014)[17] is very clear about the fact that any uncertainty about the quantum of credits distributed is irrelevant to the estimation of gamma – because it is not needed. Hathaway notes that gamma can be directly estimated as the ratio of credits redeemed to credits created:

> From a net tax payment of $486 billion, the net utilisation of $148 billion represents an overall Australian average *gamma* of 31%.[18]

49 Hathaway (2014) concludes that:

> This overall approach is robust as the tax statistics are unlikely to be in major error for amounts of tax paid and the amounts of franking credits claimed. This approach does not allow us to obtain any estimates for the two factors that comprise gamma but it does give us a solid estimate of gamma.[19]

50 The fact that it is generally accepted that there are two different estimates of the amount of credits distributed does not mean that the ATO data should be abandoned entirely. The 31% figure does not require any estimate of the amount of credits distributed. It is a ratio of redeemed credits to created credits, and there has been no question raised about the reliability of either of these quantities.

51 Whereas the ATO has no direct reason to monitor the number of "Credits Distributed" in a given year, it would be extraordinary to suggest that either:

a. The ATO does not know how much corporate tax was paid to them in a given year, this being the "Credits Created" figure; or that

b. The ATO does not know how many credits were redeemed from them in a given year, this being the "Credits Redeemed" figure.

52 In a more recent report, Hathaway (2017)[20] has been even more explicit, stating that:

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17 Hathaway, N., 2014, "Franking credit redemption ATO data 1988 to 2012," Capital Research, October.

18 Hathaway (2014), p. 46. Note that the effect of including an additional year of data into the analysis increased the estimate of gamma from 0.30 to 0.31.

19 Hathaway (2014), p. 46.

20 Hathaway, N., 2017, Letter to Energy Networks Australia, December.

> The Company Tax item is the total company tax collected by the ATO during the relevant period and the Credits Redeemed item is the total amount of credits redeemed via the filing of personal tax returns. These two data items are 100% reliable as they are figures that relate directly to ATO tax collections. There is no reason to question the ATO's records of the amount of corporate and personal tax it has collected.[21]

53 Hathaway (2017) goes on to conclude that the ATO tax statistics can "clearly"[22] be used to provide a reliable utilisation estimate of gamma.

54 The 31% figure is relevant evidence that is unaffected by any concerns about the estimate of the quantum of distributed credits.

55 In our view, the ATO tax statistics approach produces a direct estimate of the proportion of created credits that are redeemed by shareholders. This is directly relevant evidence that should receive predominant, or at least some, weight when constructing a utilisation estimate of gamma.

3.3 Concerns about the ERA's use of ATO tax statistics

56 As noted above, the ERA has concluded that ATO tax statistics can be used to provide a reliable estimate of the distribution rate, but cannot be used to produce a reliable estimate of gamma.

57 However, the only aspect of the ATO tax data that has been questioned is in relation to the distribution rate, which can only be narrowed down to a range of approximately 50% to 70%.[23] In the first row of Table 2 above, the ERA takes the 70% estimate of the distribution rate from ATO tax statistics and multiplies it by an estimate of the domestic equity ownership proportion from ABS data. The resulting product then receives a weight described as "primary reliance." But this approach requires an estimate of 'credits distributed' from the ATO data – the only aspect of the ATO data that the ERA considers to be potentially unreliable.

58 By contrast, the second row of Table 2 above produces a direct estimate of the 'utilisation' gamma without any need for the 'credits distributed' figure:

$$\gamma = \frac{Credits\ redeemed}{Credits\ created}.$$

59 However, this estimate is said to receive "not much weight."

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[21] Hathaway (2017), p. 1.

[22] Hathaway (2017), p. 2.

[23] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraph 188.

60 It is not clear why the ERA would identify a potential problem with the estimates of the 'credits distributed' figures that are computed from the ATO tax data, but then:

a. Place primary reliance on estimates of gamma that rely on the 'credits distributed' figure; and

b. Assign "not much weight" to the direct estimates of gamma that do not require the 'credits distributed' figure, and which rely only on ATO tax statistics that are known to be reliable.

3.4 Recent AER note in relation to ATO tax statistics

61 The AER has recently published a note summarising some discussions that the AER has had with ATO staff in relation to the reliability of ATO tax statistics.[24] This note raises a number of points, all but one of which relate to explanations for why the 'FAB' and 'dividend' methods provide different estimates for 'Credits Distributed.' That is, they relate to the one element of the tax statistics that is not needed to estimate gamma. These points simply confirm that the reason it is difficult to estimate 'Credits Distributed' from the ATO data is that the ATO has no need for that item. 'Credits Distributed' is an "informational" filed that is not needed for any tax calculation. In this respect, the AER's note adds no new information – we already knew that:

a. There are issues with estimating the distribution rate from ATO data – the estimate can only be narrowed down to a range of 50 to 70%; and

b. The distribution rate is not needed to estimate gamma from the ATO data.

62 The only item in the AER's note that *could* affect the estimation of gamma is Point 4 in that note, which notes that the estimate of gamma could be affected by non-resident companies paying tax in Australia which do not generate franking credits. However, this effect is stated to be "small." Common sense provides an explanation why the effect would be small – any non-resident company paying a material amount of company tax in Australia could simply establish a domestic subsidiary, pay the same amount of tax, but obtain the benefits of imputation credits.

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24 https://www.aer.gov.au/system/files/AER%20-%20Staff%20note%20on%20tax%20data%20-%20March%202018.pdf.

3.5 Updated ATO estimate of gamma

63 The most recent estimate of gamma using the ATO data is 0.34. This estimate is constructed by taking the ratio of total credits redeemed to total credits created from 2004 to 2015 – the latest data available from the ATO.

4 The reliability of the 20 companies approach to estimating the distribution rate

4.1 Overview

64 As explained above, the ERA's estimate of the distribution rate for listed equity relies principally on data for the 20 largest Australian firms. Since the objective is to estimate the distribution rate for the benchmark efficient entity (BEE), the 20-companies estimate will only be appropriate if the 20 companies are similar to the BEE in relevant respects.

65 In its 2013 Rate of Return Guideline, the ERA has defined the BEE as:

> An efficient 'pure-play' regulated gas network business operating within Australia without parental ownership, with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.[25]

66 Importantly, the BEE is defined to operate "within Australia." However, the 20 largest Australian companies have material foreign income, which can be used to distribute credits to shareholders. Since the BEE has zero foreign income, by definition, it is materially different to the sample of the 20 largest firms in relation to a characteristic that is of primary importance to determining the distribution rate.[26] Consequently, the 20 firms approach does not produce an estimate of the distribution rate for the BEE. In this regard, Dr Lally (the proponent of the 20 firms approach) has recently recommended that firms with substantial foreign income are not representative of the BEE and should not be used for that purpose.[27]

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[25] ERA, 2013, Rate of Return Guideline, Paragraph 58.

[26] We note that the 2017 DBP Final Decision (paragraphs 180-183) contains a discussion about a related, but quite separate point stemming from our report *Estimating gamma: Response to the ATCO Gas Draft Decision*, 23 December 2014. An appendix to that report noted that the QCA was the only regulator to have regard to the approach of estimating the distribution rate from a small sample of large listed firms. It also noted that the small sample approach estimates distributed credits as a proportion of Australian corporate tax paid, whereas the QCA had explicitly defined the distribution rate in terms of the proportion of total corporate tax paid. The point is that Australian corporate tax is equal to total corporate tax for the benchmark efficient entity (which has no foreign income, by definition), but not for the large multinational firms that were being used. The DBP Final Decision (Paragraph 182) seems to imply that the submission advocated for the distribution rate to be computed relative to total corporate tax paid. That is not the case. The purpose of that appendix was to demonstrate that Australian corporate tax is equal to total corporate tax for the BEE but not for large multinational firms and, consequently, that large multinational firms are not suitable comparators for estimating the distribution rate for the BEE.

[27] See the joint report of experts from the AER's concurrent evidence sessions at p. 76, available at: https://www.aer.gov.au/system/files/AER%20-

4.2 The objective – what is the ERA seeking to estimate?

67 There appears to be broad agreement among regulators and consultants that the distribution rate is a firm specific parameter. This implies that the relevant task is to estimate an appropriate distribution rate for the BEE.

68 For example, the AER notes that:

> ...the distribution rate is a firm specific parameter.[28]

69 The AER also notes that there is broad agreement that when estimating the distribution rate, we are seeking an estimate of the proportion of credits that would be distributed by the benchmark efficient entity:

> There appears to be agreement between the service providers, SFG and us that the distribution rate is the proportion of imputation credits generated by the benchmark efficient entity that is distributed to investors.[29]

70 Dr Lally, the consultant used by a number of regulators, has also advised that the objective is to estimate the distribution rate for the benchmark regulated firm:

> ...within the Officer (1994) model, the distribution rate is a firm specific parameter rather than a market average parameter.[30]

71 In its recent decisions, the ERA has also stated that:

> ...the distribution rate is the proportion of a firm's imputation credits that are distributed, and therefore is a firm-specific parameter.[31]

4.3 Do the 20 largest companies differ from the BEE in characteristics that are relevant to the distribution rate?

72 There are two corporate characteristics that determine the firm's imputation credit distribution rate:

%20Evidence%20Session%201%20%26%202%20-%20Expert%20Joint%20Report%20-%2021%20April%202018.pdf.

[28] AER, 2017, TransGrid Final Decision, Attachment 4, p. 20.

[29] TransGrid Final Decision, Attachment 4, p. 65.

[30] Lally (2013 AER), p. 41.

[31] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraph 170.

a. The dividend payout rate: Because credits can only be distributed by attaching them to dividends, a higher dividend payout rate will result in a higher credit distribution rate, other things being equal.

b. Foreign profits: Because credits can be attached to dividends that are paid out of foreign profits, a higher proportion of foreign profits will result in a higher credit distribution rate, other things being equal.

73 To see why the point in (b) above arises, consider two firms, both of which generate taxable income of $100, pay $30 of corporate tax, and pay a dividend of $50 out of after-tax profits. If Company A operates solely within Australia, its tax will be paid entirely within Australia and it will therefore create $30 of credits.[32] Since credits can only be distributed by attaching them to dividends in the ratio of 3/7,[33] the total amount of credits that can be distributed is $\frac{3}{7} \times 50 = 21.43$. Thus, the distribution rate for Company A is $\frac{21.43}{30} = 71\%$.

74 Now suppose that Company B operates in Australia and overseas. Suppose this company generates taxable income of $50 and pays $15 corporate tax in Australia and the same overseas. Also suppose that it pays a dividend of $50 – so it is identical to Company A except that half of the profit and half of the corporate tax is outside Australia. Because Company B pays a dividend of $50, it is able to attach credits of $21.43.[34] However, Company B only has $15 of credits because it has only paid $15 of corporate tax in Australia. Therefore all of the credits will be attached to the dividend and the distribution rate will be 100%.

75 Thus, firms that differ materially from the BEE in terms of either of these two characteristics (dividend payout rate, or availability of foreign profits) will be inappropriate for the purpose of estimating the credit distribution rate.

76 The 20 largest Australian companies have (on average) material foreign profits. These companies tend to be very large multinational corporations that earn a substantial proportion of their revenues offshore.

77 We have computed the proportion of revenue generated in Australia for each of the 20 companies in the Lally sample. To do this we have obtained data from the Bloomberg FINANCIAL ANALYSIS tool under the SEGMENT-GEOGRAPHIC tab. For each of the 20 companies, we have computed the

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[32] Since credits are created by the payment of corporate tax within Australia.

[33] Dividend imputation legislation provides that credits are attached to dividends in the ratio of T/(1-T), where T represents the corporate tax rate – currently 30%.

[34] Note that *every* dividend can have credits attached to it, regardless of the source of the dividend.

average proportion of Australian revenues over the last five years.[35] The average proportion across the 20 companies is approximately 59% Australian revenue and 41% foreign revenue. By contrast, the benchmark efficient entity has 100% domestic revenue, by definition. To the extent that these 20 companies are able to use foreign revenues to assist in the distribution of imputation credits, the estimate of the distribution rate will be over-stated.

78 We have also computed the proportion of domestic revenue for the ASX 200 firms that are not included in the Lally sample.[36] The non-20 firms have an average proportion of Australian revenue of over 75%. That is, the proportion of foreign revenues is lower than for the firms in the Lally sample, but the proportion of foreign revenues is still higher than for the benchmark efficient firm, and so expanding the sample to include the entire ASX 200 firms would mitigate, but not eliminate the problem.

79 Further expanding the sample to include all listed companies, or indeed all listed and unlisted companies, would mitigate the problem further. But the resulting estimate would remain an upper bound to the extent that the sample includes *any* firms that are able to use foreign revenues to assist in the distribution of credits.

80 In its recent decisions, the ERA has also recognised that the sample of 20 firms varies materially in terms of the dividend payout rate. For example, over the 2000-2013 period examined by Lally, the large mining firms had low dividend payout rates (as that period coincided with the mining investment boom) while Telstra had a very high payout rate.

81 Consequently, it is impossible for all 20 firms to be appropriate comparators on this dimension – as not all can have a dividend payout ratio that matches the BEE.

82 In summary, the sample of 20 firms has been selected on the basis of size. But size is not a characteristic that has any relevance to the credit distribution rate. The two characteristics that *are* relevant are the proportion of foreign profits and the dividend payout rate, and:

a. The sample of 20 firms differs materially from the BEE in respect of foreign profits – because the 20 firms have material foreign profits and the BEE has zero foreign profits, by definition; and

b. The sample of 20 firms has a wide range of dividend payout rates, so whatever the dividend payout rate for the BEE, it is not possible that all 20 firms would provide an appropriate match.

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[35] Some companies do not report Australian revenues exclusively, but a combination of Australian and New Zealand revenue. In such cases, we (conservatively) include all such revenue as being Australian.

[36] After removing those firms that are based offshore and which pay dividends in a foreign currency, but which are listed on the ASX nonetheless.

83 Consequently, it seems impossible for the sample of the 20 largest companies to provide an appropriate estimate of the credit distribution rate for the BEE.[37]

4.4 Assumption that all distributed credits immediately flow to end shareholders

84 The 20-firms approach implicitly assumes that all credits distributed by each of the 20 firms are immediately available for end shareholders to redeem. However, any credits distributed to other companies or trusts will be retained by those entities until they pay a dividend or make a distribution. We are unaware of any data on the extent to which credits are trapped, or delayed, in these intermediate entities. However, it would be unreasonable to assume that the figure is zero, in which case the 20-firms approach would produce an upper bound for the distribution rate.

85 We note that no such issue arises when using the ATO tax statistics approach, because a distribution rate never has to be estimated – one has direct data on credits created and credits redeemed for each year.

4.5 Problems with the 20-firms figures

86 In addition to the conceptual problems set out above, we have identified a number of questions in relation to the estimates for the 20-firms sample that should be resolved before material weight is placed on them. Those issues, which are set out in the appendix to this report, include:

a. Inconsistencies relating to the year being reported. It appears that for some firms the FAB values are taken from the 2013 annual report and for others they are taken from the 2012 annual report.

b. Potential exchange rate differences. Some firms report in USD and we have been unable to replicate the AUD figures used in in Lally (2004), which does not explain how exchange rate conversions were performed.

c. Change in definition of FAB. In some cases, the Lally figures appear to be based on parent FAB in one case and group FAB in

[37] The 2017 DBP Final Decision observes that the low dividend payout ratios for the mining firms in the sample of 20 constrained their ability to distribute credits, even though those firms had substantial foreign profits (paragraphs 185-186). However, the relevant point is that *for any given dividend policy* more foreign profits will mean a higher credit distribution rate. The fact that different firms have different dividend policies is beside the point. Foreign profits will be of more benefit (in terms of inflating the credit distribution rate) for firms with relatively higher dividend payout rates. But the point is that, for *any* firm with *any* dividend payout rate, foreign profits will result in a higher credit distribution rate for that firm than would be possible without those foreign profits.

another. In some cases, pre-dividend figures seem to have been used and in other cases post-dividend figures are used.

d. Change in company structure: In some cases, the company has undergone a structural change over the 14-year period such that the 2013 firm is fundamentally different from the 2000 firm.

e. Figures inconsistent with annual reports. In a number of cases, the Lally figure differs from the figure in the relevant annual report for no apparent reason.

5 The reliability of the equity ownership estimates

5.1 Equity ownership is an upper bound for the redemption rate

87 The equity ownership approach, based on data compiled by the Australian Bureau of Statistics (ABS), provides an upper bound for the proportion of credits that are redeemed. Whereas the ATO data provides a direct estimate of the proportion of credits that are actually redeemed from the Tax Office, the equity ownership approach (at best) captures the effect of non-residents, but no other reason why credits might not be redeemed. That is, if any credit is not redeemed for any reason other than it being distributed to a non-resident, the equity ownership estimate will be overstated. Consequently, it should be interpreted as an upper bound for the redemption rate.

88 One example is the 45-day rule, which prevents domestic resident investors from redeeming credits that are distributed to them unless they have owned the relevant shares for more than 45 days around the dividend event. The equity ownership estimate implicitly assumes that every credit distributed to every domestic investor will be immediately redeemed, so must be interpreted as an upper bound to the actual redemption rate.

89 By contrast the ATO tax statistics provide a direct estimate of the amount of credits that are *actually* redeemed from the ATO.

5.2 The Australian Bureau of Statistics has expressed concerns about the quality of equity ownership data

90 The ABS has issued an express warning about the quality of the data that is used to construct the equity ownership estimates:

> The estimated market value of equity issued by some sectors is considered to be of poor quality. In particular, estimates of the market value of the amount issued by private corporate trading enterprises are considered poor because they are largely built up from counterpart and other information obtained from ABS Surveys of Foreign Investment and Balance Sheet Information. This sector covers equity issued by both listed and unlisted private corporate trading enterprises, of which there are over half a million.
>
> In terms of the analysis undertaken here, errors in the estimated market value of equity on issue will impact on the accuracy of estimates of the proportion of that equity owned by non-residents.

> A further concern relates to valuation. While both financial accounts and international investment statistics (from which the rest of the world data are sourced) are on a market value basis in principle, collection and estimation methods differ between the two sets of statistics...Because of the differences in the methodologies used, it is possible that there could be more variability in the market value estimates of equity held by the rest of the world than in the estimated market value of the equity on issue, thus causing some variation in the foreign ownership series derived from these data.[38]

91 Thus, even if the equity ownership estimate is to be used as an upper bound for the redemption rate, one would need to take into account the concerns that have been expressed about the quality of that data when determining the weight to be afforded to it.

5.3 Updated equity ownership estimates

92 In its recent Discussion Paper,[39] the AER has noted that the ABS has revised the figures on which the AER's equity ownership estimates are based:

> The September quarter 2017 ABS data has recently been released. We note that the ABS has undertaken some quality assurance work for the historical data through reviews of compilation methods and through source data across the National Accounts. The time series was opened back to 1988 in this review. The Finance and Wealth publication has incorporated the revisions as a result of the historical review.[40]

93 However, material questions remain in relation to the quality of the equity ownership estimates based on this data. The problems that are evident, even in the updated data, include:

a. The method for compiling the data has not changed. There is still the same reliance on survey responses, there is still the same mis-match between components of the data, and there are still the same problems with estimating the market value of equity for some sectors.

b. The historical estimates for some sectors have changed materially in the update. The fact that an historical number can be materially changed almost 20 years after the event is clearly troubling. This is especially so when the change is not based on new data, but rather the application of different assumptions for how the same data should be processed into an estimate.

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[38] See the ABS feature article that first explains the foreign ownership calculations at http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/5306.0Feature%20Article150Jun%201992?opendocument&tabname=Summary&prodno=5306.0&issue=Jun%201992&num=&view=.

[39] AER, March 2018, Discussion Paper: Value of Imputation Credits (AER Gamma Discussion Paper).

[40] AER Gamma Discussion Paper, p. 18.

c. The revision to the estimates is based on a 'backcasting' exercise whereby estimated splits between domestic and foreign equity from recent data is 'backcasted' to the historical data, replacing the estimates that were made at the time the historical data was collected.

d. The revised estimates result in very little volatility in the estimates for listed equity and more volatility in the estimates for all equity, when the reverse would be expected ex ante.

e. The plausible impact of the GFC that was evident in the 2014 data has now been removed in the 2017 revision. That is the GFC impact has now been removed from the historical record.

94 The remainder of this section reviews the changes in the ABS data series 5232.0, and the implications for the measurement of domestic equity ownership, as performed by the AER.

5.3.1 AER approach

95 We follow the approach of the AER to estimate the share of equity owned by eligible investors, as set out in Section A.11 of the 2014 Ausgrid Draft Determination (Ausgrid DD). We note that the ERA now follows the AER approach in relation to gamma. This approach uses data from the Australian National Accounts: Financial Accounts (ABS cat. 5232.0), specifically the listed and unlisted equity ownership series dating back to June 1988, with quarterly observations. The calculation methodology is stated to be consistent with that employed by the ABS in its 2007 feature article.[41] The methodology includes determining the total value of equity outstanding at the end of the period, and determining the share held by the rest of the world. While the ABS further disaggregates foreign ownership shares by sector, the unrefined AER approach does not require or perform this disaggregation, instead taking one minus the foreign share to obtain the domestic ownership share. This procedure is performed for both listed and unlisted equity, and listed equity only.

96 This procedure yields Figures 4-2 and 4-3 of the Ausgrid DD, plotting the combined domestic ownership shares and the listed domestic ownership shares since June 1988.

97 A further refinement is applied to obtain an alternative equity ownership measure, filtering the data to "focus on the types of equity that are deemed to be most relevant to the benchmark entity, and the specific classes of investor that are

[41] Australian Bureau of Statistics, *Feature article: Foreign ownership of equity*, September 2007. Available at: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/5302.0Feature%20Article10Sep%202007?opendocument&tabname=Summary&prodno=5302.0&issue=Sep%202007&num=&view.

expected to either utilise or waste the imputation credits they receive." This is stated to be two specific refinements:

a. Exclude equity in those entities that are wholly owned by the public sector, stated to be equity owned by the central bank, central borrowing authorities, and public non-financial corporations.

b. Define the ownership share based on the classes of investor that are eligible to utilise credits, compared to those classes that may either utilise or waste credits, specifically comparing equity owned by households, pension funds and life insurance corporations to the aforementioned and government (national or state and local) and rest of world.

98 However it should be noted that the description is not entirely accurate. Analysis shows that when applying the two refinements on page 4-55 of the Ausgrid DD, the equity in listed national public non-financial corporations was included. While the listed state and local public non-financial corporations had insufficient equity to be definitive, we assume that these were included as well.[42]

99 Although somewhat contrary to the description, such an approach is consistent with the rationale stated: to "exclude from the calculation equity in entities that are wholly owned by the public sector." Between December 1997 and December 2006 the listed public non-financial corporations were not wholly owned by the public sector. As such, in the rest of this report we include equity in listed public non-financial corporations even if the "filter" is applied.

100 While the foreign ownership data is complete for all classes, this is not the case for all classes of owner. For certain quarters, for example, the values of equity owned by "other depository corporations" and "life insurance corporations" in listed "other private non-financial corporations" (OPNFC) is not presented, yet are included in the total of listed OPNFC equity. The reasons for this are not specified, but one plausible explanation is that the ABS were unable to classify a particular owner definitively, thus while the total is unaffected the individual component series were uncertain.

101 When presenting unfiltered ownership shares, the omission issue is not relevant; only the total and foreign amounts outstanding are relevant. However, this will be an issue in the refined share: "other depository corporations" and "life insurance corporations" are treated differently in determining eligible investors. We take the

[42] The September 2017 series does not separate the two listed public non-financial corporate series, although listed equity in state and local non-financial corporations appears to be minimal.

convention of allocating the ownership to the class that results in the lowest domestic ownership share, although the impact is minimal.[43]

102 The two refinements, applied simultaneously, yield alternative measures of domestic ownership shares, presented in Figures 4-4 and 4-5. These may be more accurately described as eligible ownership shares, giving the share of equity owned by eligible investors, as compared to investors who would waste imputation credits, in sectors deemed by the AER to be relevant. Thus they are used by the AER as a measure of the utilisation rate of imputation credits.

103 In interpreting the four resulting time series, the AER does not apply a formal process to determine the appropriate range and value of the ownership share, to use as a utilisation rate in setting the gamma parameter. Rather, it provides a separate range for combined and listed equity, with little guidance as to which weights, however informally defined, were applied to the alternative time series (unrefined or refined)[44], or even the date ranges that would be more informative for a determination. Rather it is concluded that a reasonable estimate for the rate is:

a. In the range [0.55,0.7] if all[45] equity is considered; and

b. In the range [0.4,0.6] if only listed equity is considered.

5.3.2 2017 ABS revision

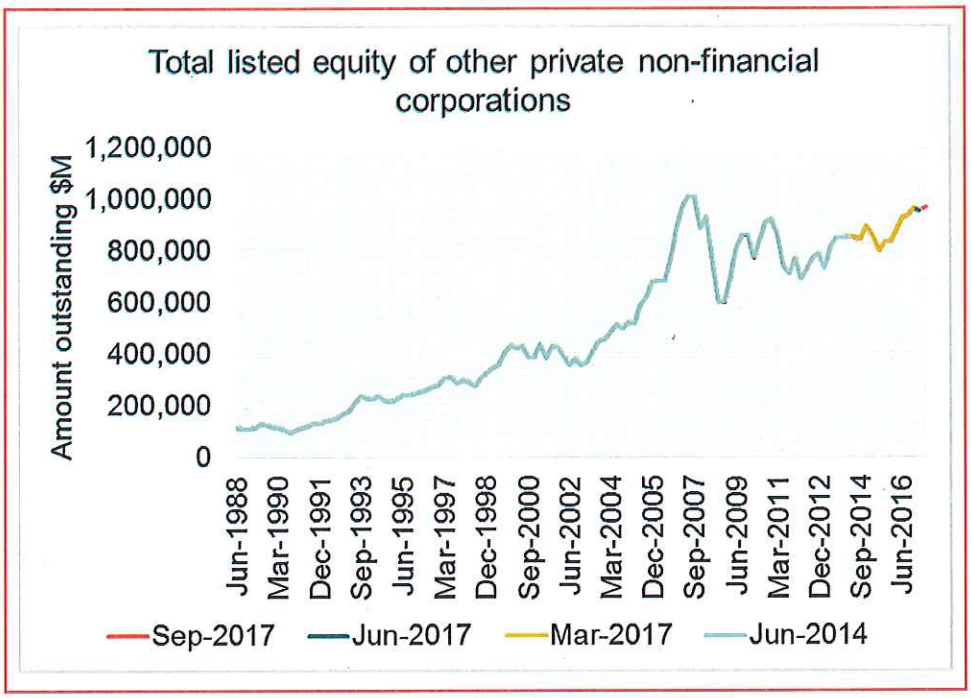
104 In September 2017 the ABS released a highly revised Australian National Accounts (series 5232.0), with revisions to equity ownership, both listed and unlisted, dating back to the origin of the dataset, June 1988. The changes occurred for many of the individual ownership series, though not all were adjusted as a result of the revised methodology. As may be expected, the total listed equity of various classes remained largely invariant across ABS releases. Shown below in Figure 2, the four releases are identical, save for the extended coverage of later releases.

[43] It appears that the ABS either took this approach, or simply assumed these to be zero (both generate the same trend).

[44] It is stated that the evidence in all four figures are considered.

[45] In this context "all" refers to both listed and unlisted equity.

Figure 2: Total listed equity class example



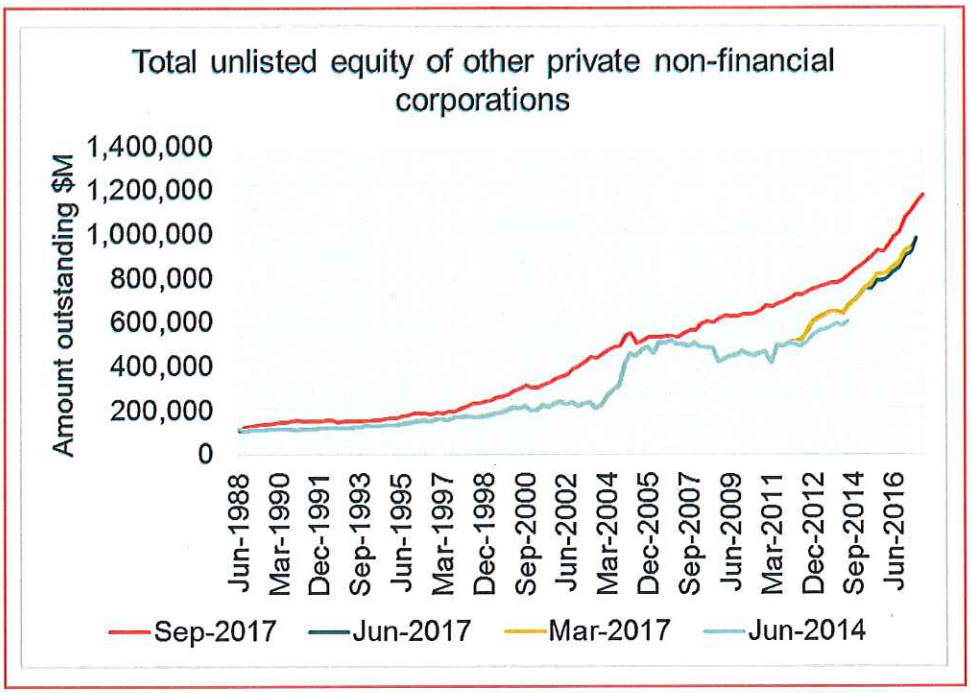
Source: ABS 5232.0.

105 However, unlisted equity totals differ considerably across releases, specifically between those prior to September 2017 and the September 2017 release. In Figure 3 below the revised total equity embedded in unlisted OPNFC deviated considerably from earlier revisions, reaching higher levels than estimated in previous revisions of the data series.

106 As the total equity embedded in various ownership classes may change across release, so can the components of equity. Even the various components of listed equity have changed considerably, as demonstrated in Figure 4, showing that the revised series estimates a considerably lower volume of listed equity in OPNFC owned by the rest of the world (ROW). This is concerning, as this leads to a lower foreign ownership share of this class of equity, a numerically important class in determining utilisation rate as per the AER approach.

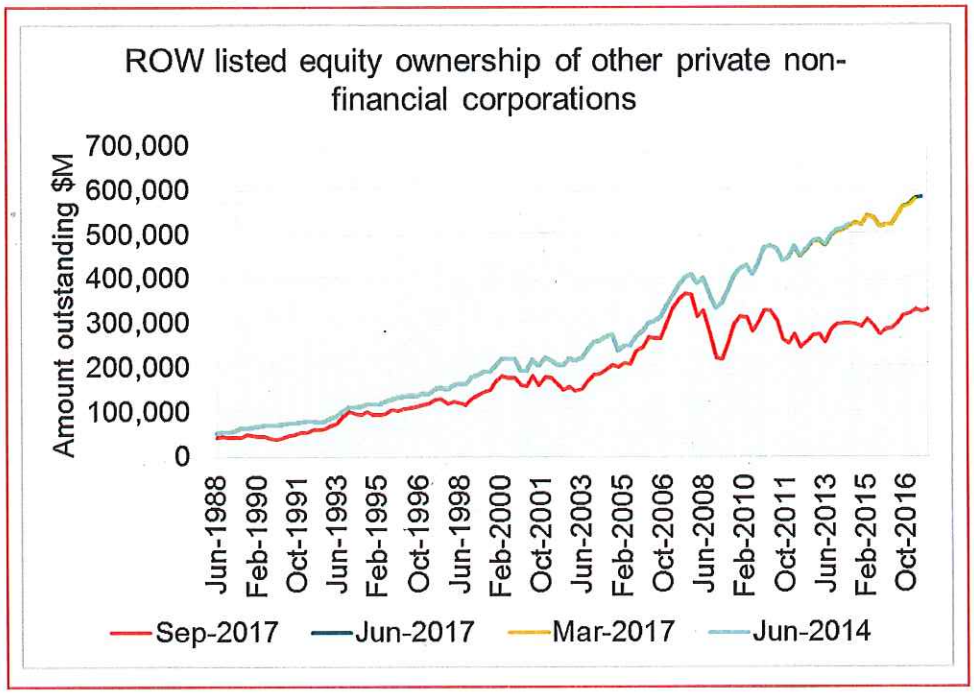
107 Conversely, the unlisted counterpart of OPNFC equity shows a higher share owned by foreign investors, in Figure 5 below.

Figure 3: Total unlisted equity class example



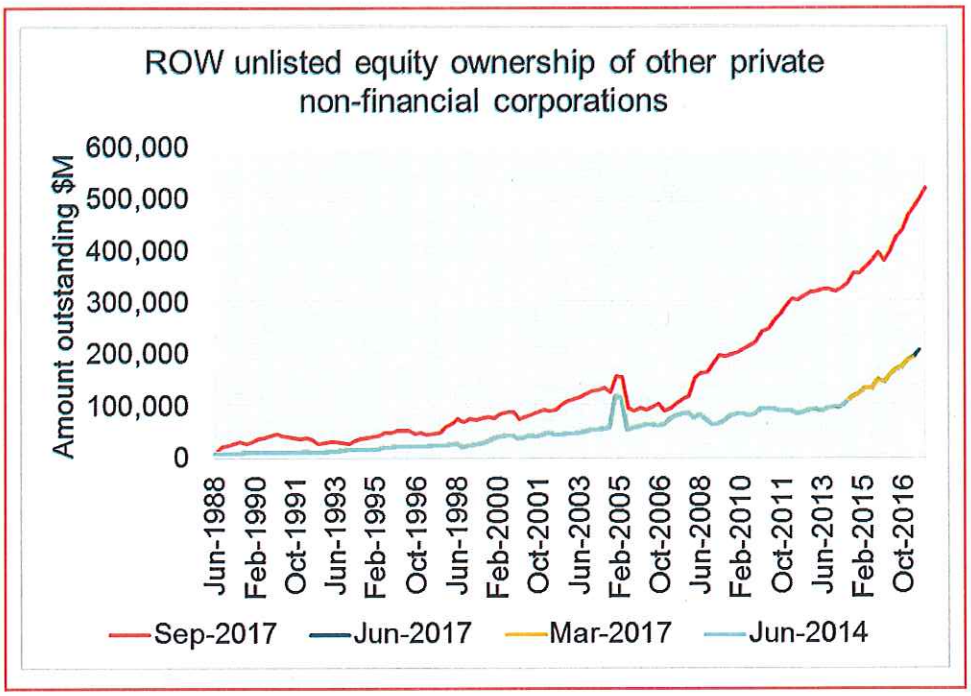
Source: ABS 5232.0

Figure 4: Listed equity class example



Source: ABS 5232.0

Figure 5: Unlisted equity class example

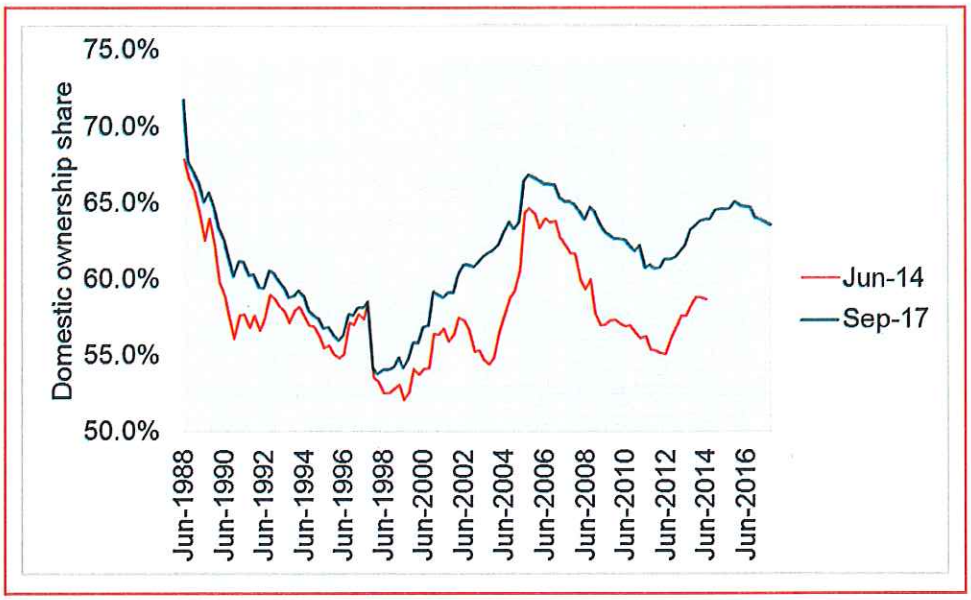


Source: ABS 5232.0

108 The result of the changes in the individual series is that the estimated ownership share series, as in Figures 4-2 to 4-5 of the Ausgrid DD, have changed considerably between the those based on the June 2014 ABS release (used in the Ausgrid DD) and the September 2017 ABS release, proposed to be used by the AER in the March 2018 Gamma Discussion Paper. Figure 6 and Figure 7 below replicate the figures in the Ausgrid DD, the "Jun-14" series, and compare against the ownerships shares obtained using the revised data, the "Sep-17" series.

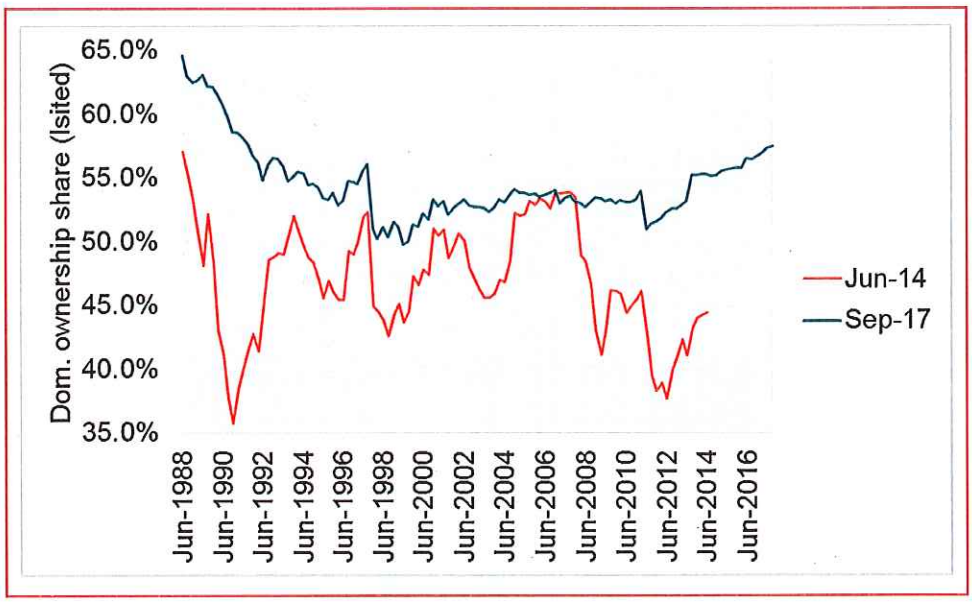
109 The revised series are almost invariably higher across the four approaches to the domestic ownership share, especially for listed equity.

Figure 6: Refined domestic ownership share of listed and unlisted Australia equity



Source: Frontier Economics analysis of ABS 5232.0

Figure 7: Refined domestic ownership share of listed Australia equity



Source: Frontier Economics analysis of ABS 5232.0

Puzzling impact on volatility

110 One concerning aspect of the series revision is not necessarily the substantial increase in the estimated ownership share, but the different patterns over time – particularly the variation/volatility. Listed equity in particular has very low variation in the domestic ownership share over the past 10 years, when estimated using the revised series. In comparison, we may infer that unlisted equity exhibits

considerably greater variation in the estimated domestic ownerships share. If we are to treat these shares as reflective of reality, this raises the question of how the foreign ownership share of unlisted equity is able to vary more than that of listed equity, the converse would be expected ex ante. Perhaps this is a result of a less than reliable methodology for deriving ownership of unlisted equity; with listed equity the total may be known due to the listing of the equity.

Impact of GFC is removed

111 Beyond the puzzling patterns/differences in variation, it is very surprising that ownership of listed equity was apparently not impacted by the global financial crisis, as measured by the September 2017 revision. This contrasts with the original June 2014 revision, which illustrates a clear decrease in the domestic ownership share for all series through the GFC.

Use of 'backcasting'

112 While the ABS statistics are constructed with assistance from specially conducted statistical surveys, yielding variation due to sampling error, the observation that the revision has impacted historical ownerships shares implies a different methodology for interpreting past raw data to obtain the ownership series. It is not entirely clear what the methodology is, how it changed, and why.

113 However, the Technical Note of the September 2017 release of the 5323.0 series offers guidance as to what may have resulted in the considerable changes. Perhaps of primary importance is the ABS Survey of International Investment. This survey provided data of the investments of non-residents in listed and unlisted equity of OPNFC, a major contributor to total equity.[46] The recent data suggested that the current estimates of ROW investment in listed equity of OPNFC were "too high" (as compared to unlisted equity), consequently the split of foreign listed vs unlisted ownership for this class was "backcast back to the mid 2000s", invariably increasing the share of OPNFC equity owned by ROW that is listed, relative to unlisted. This increases the ownership share of domestic investors in listed OPNFC equity (total listed equity in OPNFC is invariant across revisions, see Figure 2); whereas the increase in unlisted OPNFC equity owned ROW can coincide with an increase in unlisted equity (as seen in Figure 3). This yields an increase in the domestic ownership share of listed and unlisted equity, as seen in Figure 6, and a more drastic increase in the domestic ownership share of listed equity, as seen in Figure 7.

114 The Survey of International Investment surveys "approximately 1,000 enterprise groups from a total population of approximately 3,000 which are in scope of the survey", with participants supplying financial information allowing ABS

[46] OPNFC equity accounts for approximately 40-50% of total equity overt the periods covered.

researchers to infer the listed versus unlisted split of ROW investment in OPNFC equity. It is not clear whether the survey is able to reliably determine the listed vs unlisted equity composition of OPNFC equity owned by ROW. Nor is it clear that such a split, if measured accurately in one quarter of the survey, would be valid to apply to historic data through backcasting.

Conclusions on reliability

115 Regarding the reliability of the data provided, the ABS states the following:

> "... despite the described problems, the ABS considers that these statistics are of an acceptable standard for the purposes they are intended to serve."[47]

116 However it is not clear what purposes the ABS envisaged the data series serving, nor what is meant by an "acceptable standard". While this standard may be relative to what could be achieved through more expensive time-consuming methods, in the current context it is more worthwhile to compare the accuracy of gamma estimates obtained using ownership shares to those obtained using alternative methods, for example the SDG dividend drop-off method or ATO tax statistics.

117 Unfortunately, while statistical precision is able to be derived for such alternative methods, the ABS is ultimately unable to quantify the accuracy of the national accounts series:

> "Accuracy remains the main focus of ABS quality control. However, in the case of the national accounts, it is recognised internationally that an objective accuracy measure in the sense of proximity to the 'true value' is impossible to produce."[48]

[47] ABS 5232.0, Sep 2017, Explanatory Notes.

[48] ABS 5232.0, Sep 2017, Quality Declaration.

6 The ERA's new interpretation of theta and implications for estimation

118 Within the context of equilibrium asset pricing models, the distribution rate is a firm-specific parameter and theta is a market-wide parameter. This is because different firms will have different dividend payout policies and will therefore distribute different proportions of the imputation credits that they create. However, there would be a single market value for a distributed credit (theta) as investors would value all credits equally, regardless of the origin of that credit. For example, in the model of Lally and van Zijl (2003),[49] there is a single market-clearing value of distributed credits (theta) that is a weighted-average of the value that each investor assigns to those credits (weighted by wealth and risk aversion).

119 However, the ERA's current 'utilisation' interpretation of gamma is not consistent with any equilibrium asset pricing model. In the AER's recent concurrent evidence sessions, the experts agreed that the AER's approach to theta (which the ERA has followed) is not consistent with any equilibrium asset pricing model. Consequently, there is no model or theory to guide the estimation of theta. Rather, theta is simply defined to be the proportion of credits that can be redeemed.

120 The ERA's current approach to gamma follows the approach set out in the AER's 2013 Guideline, which is as follows:

> We propose that the value of imputation credits within the building block revenue framework is an estimate of the expected proportion of company tax which is returned to investors through utilisation of imputation credits.[50]

121 The AER's definition of gamma, and the basis for it, seems to imply that what is relevant is the proportion of company tax paid by the BEE that will be redeemed against the personal tax obligations of investors in the BEE. Indeed the AER documents this 'cash flow' interpretation of gamma in the 2013 Guideline, as shown in Figure 8 below. The AER demonstrates that it is the ability of investors in the BEE to redeem credits that underpins its new definition of gamma.

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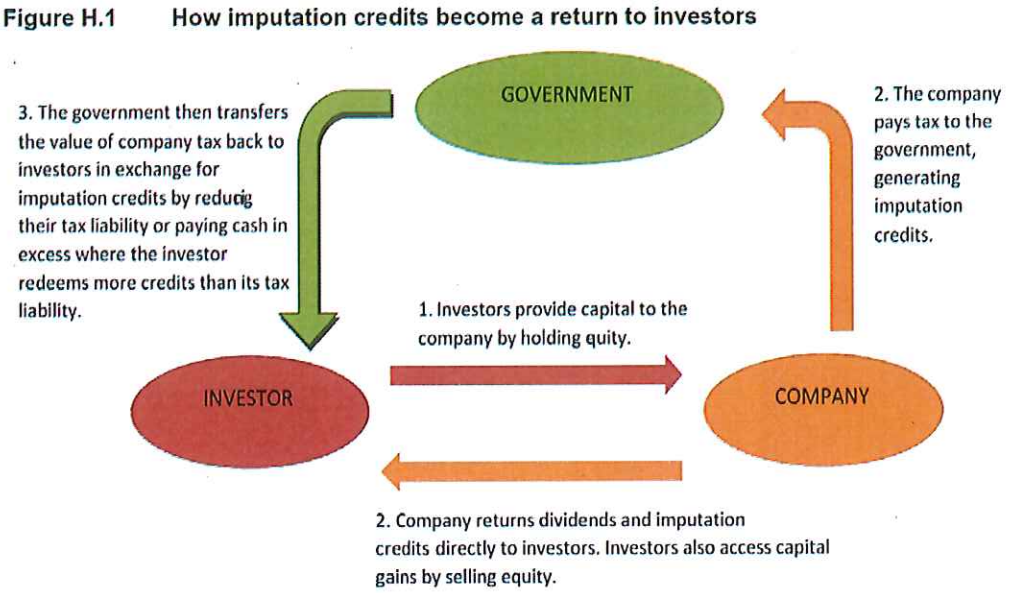
[49] Lally, M. and T. van Zijl, 2003, Capital gains tax and the capital asset pricing model, *Accounting and Finance*, 43, 187-210.

[50] AER, 2013 Rate of Return Guideline, Explanatory Statement, p. 158.

Figure 8: AER 'cash flow' interpretation of gamma



Source: AER, December 2013, Rate of Return Guideline, Explanatory Statement Appendices, Figure H.1, p. 143.

122 In this case, the 'cash flow' or 'utilisation' interpretation of gamma would require information about the equity ownership structure of the BEE.

123 In relation to the basis for the cash flow / utilisation interpretation of gamma , the ERA has stated that:

> It becomes clear, then, that the term 'value of franking credits' and 'proportion of the tax paid at the company level [which] is really a withholding of personal tax' are interchangeable terms for gamma. From the shareholders' point of view 'distributed imputation credits are valuable to the extent that they can be used (or utilised or redeemed) to reduce personal taxes and/or have credits refunded'.[51]

124 That is, under the ERA approach theta is no longer defined as the equilibrium market value of credits, but rather is defined to be the extent to which credits can be redeemed by investors to reduce their personal taxes. Under the 'market value' interpretation, there is a single equilibrium market value in the economy and theta has been estimated in that context previously. However, the ERA has now moved away from that approach and instead follows the AER in defining theta in terms of the proportion of credits that can be redeemed to reduce personal taxes.

125 The basis for the ERA's 'cash flow' or 'utilisation' interpretation appears to be that the corporate tax allowance should be reduced to the extent that the corporate tax will be refunded against personal tax obligations of the investors. This definition, and the basis for it, implies that what is relevant is the proportion of company tax

[51] ERA, June 2016, DBP Final Decision, Paragraph 86.

paid by the BEE that will be redeemed against the personal tax obligations of investors in the BEE. This task requires a stance to be taken as to the ownership structure of the BEE, since resident non-government investors will be able to redeem credits whereas foreign investors and government owners will not.

126 Thus, the cash flow / utilisation interpretation of theta requires information about the equity ownership structure of the BEE. This issue has not yet been addressed by the AER or ERA, so should be considered as part of the current Rate of Return Guideline process. A process for determining how to appropriately estimate gamma under the ERA's new definition is set out in Section 8 below.

7 The use of dividend drop-off analysis

7.1 Relevance of estimates of the market value of credits

127 Dividend drop-off analysis uses stock market data to estimate the market value of imputation credits – the extent to which investors capitalise the value they ascribe to credits in the stock price. Specifically, the change in stock price – before and after the stock pays a dividend – is compared with the amount of the dividend and the associated imputation credit. This technique provides an estimate of the market value of dividends and the market value of imputation credits.

128 The resulting market value estimate would appear to be irrelevant to the estimation of gamma under a utilisation interpretation. The 'utilisation' gamma represents the proportion of credits that are redeemed and is entirely independent of the value that investors ascribe to those credits. There is no role at all for 'value' in a 'utilisation' estimate of gamma. The number of credits redeemed is a different thing entirely to the market value of those credits that is capitalised into the stock price.

129 To understand the difference between the redemption rate and the market value of credits, consider the case where credits with a face value of $100 are distributed to shareholders. First suppose that shareholders value credits at 5 cents in the dollar. Then consider the case where shareholders value credits at 95 cents in the dollar. In both cases, it would be rational for shareholders to redeem the credits because they get some value from them. Thus, the redemption rate would be the same in both cases, even though the market value varies materially.

130 Consequently, our view is that this evidence is not relevant to a 'utilisation' estimate of gamma. Indeed, the entire regulatory debate in relation to gamma in recent years has centred on regulators arguing that gamma should *not* be interpreted in terms of the market value of credits.

7.2 Relative quality of dividend drop-off analyses

131 If, contrary to our conclusion above, dividend drop-off analyses are considered to be relevant, not all dividend drop-off studies should receive equal weight. Some studies have been conducted with great care and have been subject to peer-review and intense scrutiny, whereas others do not even conform to the standard and well-accepted econometric methodology.

132 In this regard, the 2017 DBP Final Decision compares the SFG study (which has been accepted and endorsed by several panels of the Australian Competition

Tribunal) with a study performed by the ERA.[52] In that decision, the ERA notes that the ACT has recently preferred the SFG study to the ERA study, adopting the SFG results in full and giving no weight to the ERA study.[53]

133 The 2017 DBP Final Decision appears to dismiss the ACT's decision on the basis that it has not explained its reasons, for adopting the SFG results in full and giving no weight to the ERA study, in sufficient detail to satisfy the ERA. The ERA goes on to give both studies equal weight. However, the ACT has previously considered the merits of the SFG methodology in detail and concluded that:

> The Tribunal is satisfied that the procedures used to select and filter the data were appropriate and do not give rise to any significant bias in the results obtained from the analysis. Nor was that suggested by the AER.[54]
>
> In respect of the model specification and estimation procedure, the Tribunal is persuaded by SFG's reasoning in reaching its conclusions. Indeed, the careful scrutiny to which SFG's report has been subjected, and SFG's comprehensive response, gives the Tribunal confidence in those conclusions.[55]

134 The Tribunal went on to conclude that the SFG report was:

> ...the best dividend drop-off study currently available for the purpose of estimating gamma in terms of the Rules.[56]

and that:

> No other dividend drop-off study estimate has any claims to be given weight vis-à-vis the SFG report value.[57]

135 Since the most recent Tribunal decisions, the updated version of the SFG dividend drop-off study has been published in the Pacific-Basin Finance Journal.[58] This is an international peer-reviewed journal that is ranked in the 'A' category by the Australian Business Deans Council.[59]

136 In summary, the SFG study has been accepted and endorsed by Tribunals and academic journals and the ERA study has been rejected by all, except for the ERA and its consultants. In our view, there is no reasonable basis for assigning equal

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[52] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraphs 156-167.

[53] ERA, 2016, DBP Final Decision, Appendix 5 – Gamma, Paragraphs 156-167.

[54] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraphs 18-19.

[55] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 22.

[56] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 29.

[57] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 38.

[58] See https://www.sciencedirect.com/science/article/pii/S0927538X17301580?via%3Dihub.

[59] See http://www.abdc.edu.au/master-journal-list.php?title=&issn=&rating=A&for=4&page=2.

weight to these two studies and to the econometric methodologies on which they are based.

7.3 Combining a point estimate

137 If, contrary to our conclusions above, it is decided that dividend drop-off evidence is relevant to the estimation of a 'utilisation' gamma, and that the SFG and ERA studies should receive equal weight, it will be necessary to determine how to combine the SFG and ERA estimates.

138 In its DBP Draft Decision, the ERA notes that its study produces the same estimate as the SFG study when the SFG methodology is used.[60] The ERA goes on to note that when its study employs a different methodology (which is not employed elsewhere in the literature because it is flawed) it obtains different results.

139 In our view, this is a good reason to use the SFG empirical methodology which has been heavily scrutinised and approved by the Tribunal and accepted for publication in a highly-ranked academic journal and to give no weight to the results from the flawed methodology. If that approach is followed, the SFG and ERA studies both confirm a market value theta of 0.35.

140 However, the 2016 DBP Final Decision adopts a range where:

a. The lower bound is the point estimate from employing the SFG methodology; and

b. The upper bound is the maximum confidence interval upper bound from the ERA study.

141 That is, a point estimate has been combined with the highest confidence interval upper bound from among the versions of analysis performed by the ERA.

142 In our view, it is inconsistent to combine a point estimate from one study with the highest confidence interval upper bound from another study. A more appropriate and consistent approach would be to take the 0.35 point estimate from the SFG study and whatever the ERA considers to be the most appropriate point estimate from its own study (after explaining why it considers that estimate to be the most appropriate).

[60] ERA, 2016, DBP Draft Decision, Appendix 5, Paragraph 113.

8 Conclusions on the best 'utilisation' estimate of gamma

143 As we have noted in Section 6 above, for many years gamma has been estimated as the product of a distribution rate (considered to be a firm-specific parameter) and a theta that is defined to be the single market value of distributed credits.

144 However, the ERA's re-definition of gamma since its 2013 Rate of Return Guideline and the recent Federal Court judgment mean that there is considerable uncertainty about the basis for estimating gamma. In particular, in the AER's recent concurrent evidence sessions, the experts agreed that the AER's approach to gamma (which the ERA has followed) is not consistent with any equilibrium asset pricing model.[61] Consequently, there is no model or theory to guide the estimation. Rather, gamma is simply defined to be the proportion of credits that can be redeemed.

145 The basis for the ERA's 'redemption' interpretation appears to be that the corporate tax allowance should be reduced to the extent that the corporate tax will be refunded against personal tax obligations of the investors. This definition, and the basis for it, seems to imply that what is relevant is the proportion of company tax paid by the BEE that will be redeemed against the personal tax obligations of investors in the BEE.

146 Thus, the 'redemption' interpretation of gamma would require information about the equity ownership structure of the BEE and neither the AER nor ERA have yet made any determination about the extent to which they consider that the shareholders of the BEE would be eligible to redeem credits.

147 In our view, gamma should be estimated in a way that is consistent with its interpretation/definition. When gamma was defined to be the market value of credits, it was straightforward to estimate it using market prices (in the same way that all other WACC parameters are estimated). However, the ERA now applies a different interpretation/definition of gamma, so the estimate must now be made in a way that is consistent with this new interpretation.

148 The process set out below can be followed to ensure that the estimate of gamma is consistent with the ERA's new interpretation/definition of gamma:

a. Step 1: Determine whether and explain why:

[61] See the joint report of experts at pp. 69-71, available at https://www.acr.gov.au/system/files/AER%20-%20Evidence%20Session%201%20%26%202%20-%20Expert%20Joint%20Report%20-%2021%20April%202018.pdf.

i. Gamma is based on a market-clearing weighted-average utilisation rate, as would be the case under an equilibrium asset pricing model; or

ii. Gamma is the 'proportion of the tax paid at the company level which can be used (or utilised or redeemed) to reduce personal taxes' – the proportion of company tax paid by the BEE that is returned to investors by the utilisation of imputation credits.

b. Step 2: If (in Step 1) the ERA determines that gamma *is* derived from an equilibrium asset pricing model, the relevant model should be identified in order to determine how the weighted-average utilisation calculation should be performed.

   However, if (in Step 1) the ERA determines that its interpretation of gamma is *not* consistent with any equilibrium asset pricing model, the concept of the weighted-average utilisation rate is irrelevant.

c. Step 3: If (in Step 1) gamma is considered to be the 'proportion of the tax paid at the company level which can be used (or utilised or redeemed) to reduce personal taxes,' the ERA should determine whether and explain why:

   i. It seeks to estimate the proportion of company tax paid by the BEE that can be used by the shareholders of the BEE to reduce their personal taxes; or

   ii. It seeks to estimate the proportion of tax paid by the average Australian firm that can be used to reduce personal taxes for the average Australian investor.

d. Step 4: If (in Step 3) the ERA determines that it seeks an estimate of the proportion of tax paid by the average Australian firm that can be used to reduce personal taxes, the best estimate is the 34% figure from the ATO data. That data directly estimates the ratio of credits redeemed to credits created for the average Australian firm.

e. Step 5: If (in Step 3) the ERA determines that it seeks an estimate of the proportion of company tax paid by the BEE that can be used by the shareholders of the BEE to reduce *their* personal taxes, the ERA would need to make an assumption about the structure of the shareholder base of the BEE. Since that work is yet to be performed, it should be undertaken as part of the current Guideline process.

149 Under the cash flow / utilisation definition of gamma, there would appear to be no basis for multiplying (a) the quantum of credits distributed by the BEE to

shareholders of the BEE, and (b) the proportion of credits that can be redeemed by some *other* group of shareholders.

9 Appendix: Estimation issues with the 20-firms approach

9.1 Overview

150 The 20-firms estimate that is used in the UT5 Draft Decision is taken from an appendix to Lally (2014),[62] which is reproduced below in Figure 9.

Figure 9: Table 2 from Lally (2014)

Table 2: Distribution Rates for Companies and the Market

Company	B_{2000}	B_{2013}	*DIV*	*DIST*	*TAX*	*DIST RATE*
CBA (Parent)	450	742	35,496	15,212	15,504	0.98
BHP (Group)	0	11,308	46,794	20,054	31,362	0.64
Westpac (Parent)	257	1247	34,964	14,984	15,974	0.94
ANZ (Group)	0	265	29,750	12,750	13,015	0.98
NAB (Group)	0	1035	31,291	13,410	14,445	0.93
Telstra (Group)	74	0	45,255	19,395	19,321	1.00
Woolworths (Group)	417	1943	11,621	4,980	6,506	0.77
Wesfarmers (Group)	0	243	12,602	5,400	5,643	0.96
CSL (Group)	0	0	377	161	161	1.00
Woodside (Group)	173	3,260	8,034	3,443	6,530	0.53
Rio Tinto (Group)	2,215	7,434	4,388	1,880	5,219	0.36
Westfield (Group)	25	55	950	407	437	0.93
MacQuarie (Group)	133	297	1,915	821	985	0.83
Origin Energy (Group)	0	0	3,229	1,384	1,384	1.00
Suncorp (Group)	136	551	6,899	2,957	3,372	0.88
QBE Ins (Group)	-8	83	1,533	657	748	0.88
Brambles (Group)	188	78	2,946	1,263	1,153	1.10
Santos (Group)	360	993	3,082	1,321	1,954	0.68
AMP (Group)	80	191	4,248	1,821	1,932	0.94
Amcor (Group)	0	0	1,480	634	634	1.00
Total				122,934	146,279	0.84

Source: Lally (2014), Appendix, p. 40.

151 The approach that is adopted is as follows:

[62] Lally, M., 2014, *Review of submissions to the QCA on the MRP, risk-free rate and gamma*, 12 March.

a. The firm's franking account balance (FAB) is observed in 2000 and 2013. Any increase in the FAB is due to credits that have been created over that period, but not distributed.

b. Total dividends paid over the 2000 to 2013 period are collated, together with information about the proportion of those dividends that are franked. This information is used to produce an estimate of the quantum of credits distributed. For example, for every $100 of fully-franked dividends paid, $43 of credits will be distributed;[63]

c. The distribution rate is then computed as:[64]

$$\frac{Credits\ distributed}{Credits\ distributed + Credits\ retained} = \frac{Step\ b}{Step\ b + Step\ a}.$$

152 We have been unable to replicate the figures set out in the table above and have identified a number of questions in relation to those figures, as set out in the sections that follow. Our view is that these issues should be resolved before any material weight is applied to the figures above.

153 One general problem that we have had in seeking to replicate the above figures is the lack of detail about how those results were constructed. For example, it is not clear whether financial years or calendar years are used for franking account balances and/or dividends, there appear to be some inconsistencies between whether group or parent FABs are used, whether FABs are measured before or after dividends, what is done when dividends are paid in foreign currencies, and what is done when firms are fundamentally restructured such that the 2013 firm is materially different from the 2000 firm.

9.2 Issues with Franking Account Balance figures

154 In attempting to replicate the figures in the FAB columns above, we sourced information from the relevant annual reports for the 20 companies. This process identified a range of issues, which fall into the following categories:

a. Inconsistencies relating to the year being reported. It appears that for some firms the FAB values are taken from the 2013 annual report and for others they are taken from the 2012 annual report.

b. Potential exchange rate differences. Some firms report in USD and we have been unable to replicate the AUD figures used in the table

[63] In general, the amount of credits distributed will be given by $Dividends\ Paid \times Proportion\ Franked \times \frac{Corporate\ tax\ rate}{1-Corporate\ tax\ rate}$, where the corporate tax rate is 30%.

[64] The denominator in the formula below is referred to as "Tax" in the Lally table.

above. Lally (2004) does not explain how exchange rate conversions were performed.

c. Change in definition of FAB. In some cases, the Lally figures appear to be based on parent FAB in one case and group FAB in another. In some cases, pre-dividend figures seem to have been used and in other cases post-dividend figures are used.

d. Change in company structure: In some cases, the company has undergone a structural change over the 14-year period such that the 2013 firm is fundamentally different from the 2000 firm.

e. Figures inconsistent with annual reports. In a number of cases, the Lally figure differs from the figure in the relevant annual report for no apparent reason.

9.2.1 Inconsistencies relating to the year being reported

155 In our analysis, we have used the 2000 and 2013 annual reports for all firms, whether their financial year ends on June 30 or December 31, and we have paired that with whatever dividends have been paid between the 2000 and 2013 financial years. Table 3 documents cases where the 2013 Lally figures are inconsistent with the relevant 2013 annual report.

Table 3: Inconsistencies relating to the year being reported

Company	Lally value for 2013 ($m)	FAB value found in 2013 annual report ($m)	Reference
QBE Insurance	83	272	QBE Insurance Group (2013), page 165
National Australia Bank Limited	1,035	1,047	National Australia Bank Limited, (2013), page 94
Westfield Group	55	82	Westfield Group (2013), page 77
AMP	191	196	AMP Limited (2013), page 74

Source: Annual reports and Lally (2014).

9.2.2 Potential exchange rate differences

156 Several FABs were reported in their respective annual reports in USD, requiring a conversion to AUD. In all instances where we found an annual report which reported in USD, we were unable to reconcile the FAB figure with the Lally estimate. In these instances, we applied the approach of using the exchange rate set out in the annual report itself. These cases are summarised in Table 4 below.

Table 4: Potential exchange rate differences

Company	Lally ($m)	USD value from annual report ($m)	Exchange rate used ($A1 = USD)	Frontier Economics' value in AUD ($m)	Reference
BHP Billiton Limited	11,308	11,340	1.03	11,010	BHP Billiton Limited (2013), pages 222 and 209 for USD value and exchange rate respectively
Woodside	3,260	2,545	1.03[65]	2,471	Woodside (2013), page 102
Brambles	78	71.8	1.0304	70	Brambles (2013), pages 81 and 43 for USD value and exchange rate respectively

Source: Annual reports and Lally (2014).

9.2.3 Change in definition of FAB

157 We have identified one case where the Lally figures appear to use a different definition of the FAB in 2000 and 2013, shown in Table 5 below. Westpac reports Adjusted and unadjusted FAB figures and the Lally calculations appear to be based on different definitions for 2000 and 2013. In addition, the Lally figures appear to have neglected to include the negative sign on the 2000 FAB figure.

[65] Woodside do not explicitly mention an exchange rate between AUD and USD. In lieu of them explicitly quoting an exchange rate, we have used the same exchange rate that BHP Billiton used.

Table 5: Instances where there has been a change in FAB definition

Company	Year	FAB definition used by Lally	Lally ($m)	Frontier Economics ($m)	Reference
Westpac	2000	Adjusted franking account balance at the end of financial year	257	-257	Westpac (2000), page 55
	2013	Adjusted franking account balance as at year end		585	Westpac Group (2013), page 149
		Franking account balance as at year end	1,247		

Source: Annual reports and Lally (2014)

9.2.4 Change in company structure

158 We identified two instances where the companies being analysed had materially changed their structure over the 14 year period being considered. In these cases, the 2000 and 2013 companies are materially different such that it would be inappropriate to compare their FABs.

Table 6: Instances where there has been a company restructure

Company	Comment
Westfield Group	On 25 June 2004 the members of the Parent Company, Westfield Trust ("WTF") and Westfield America Trust ("WAT") voted in favour of combining the three entities by way of stapling their securities ("the Merger") to form the Westfield Group." (Westfield, 2004 page 9). This is problematic in this context for two reasons: 1) Westfield Group as it existed in 2013 did not exist in 2000. 2) Because the Westfield Group did not exist in 2000, there is no explicit FAB data for 2000 for a "Westfield Group." It is unclear what values Lally has used for the FAB value in 2000.
Macquarie Group	"The establishment of Macquarie Group Limited as a NOHC was completed on 13 November 2007." Macquarie (2008, page 7). This is problematic because no FAB data exists prior to 2008 for Macquarie Group. It appears that Lally has used the FAB data from Macquarie's 2008 report for the 2000 value.

Source: Annual reports and Lally (2014)

9.2.5 Other inconsistencies with annual report figures

159 In a number of cases, the Lally figures appear to be inconsistent with the figures from the relevant annual report, as summarised in Table 7 below.

Table 7: Inconsistencies with annual report figures

Company	Year	Lally figure ($m)	Annual report figure ($m)	Reference
BHP Billiton	2000	0	24	BHP Billiton Limited (2000), page 130
CSL Limited	2000	0	64.9	CSL Limited (n.d), page 13
RIO Tinto	2000	2,215	0	Rio Tinto (2000), page 80
Brambles	2000	188	-11.6	Brambles Industries Limited (2000), page 39
AMP Limited	2000	80	82	AMP Limited (2000), page 15
AMC	2000	0	9.6	AMCOR (2000), page 10
CSL	2013	0	None reported	CSL Limited (2013)
Telstra	2013	0	-85	Telstra (2013), page 94
Rio Tinto	2013	7,434	14,740[66]	Rio Tinto (2013), page 142

Source: Annual reports and Lally (2014)

9.3 Issues with dividend figures

160 We have obtained the relevant dividend data from Morningstar, which in turn sources it from annual reports. In general, the Morningstar dividend figures are materially different from those adopted by Lally (2014), as summarised in Table 8 below.

161 The material differences between the Lally and Morningstar figures led us to conduct an audit of the Morningstar figures whereby we have compared the Morningstar figures with the source data in the relevant annual report. We checked a random sample of 40 firm-year figures and found no discrepancies with any of them.

[66] This is the Australian dollar value of the FAB. Rio Tinto report on page 142 a value of US$14,298. Rio Tinto provide a table on page 52 of the same report which details the average AUD to USD exchange rate for 2013, which is 1AUD = 0.97USD and we use this value to convert from USD to AUD.

Table 8: Comparison of dividend data over 2000 to 2013 financial years

Company	Lally	Morningstar	% Difference from Lally
CBA	35,496	34,064	-4%
BHP	46,794	47,602	2%
WBC	34,964	30,647	-12%
ANZ	29,750	21,506	-28%
NAB	31,291	31,615	1%
TLS	45,255	49,630	10%
WOW	11,621	8,979	-23%
WES	12,602	11,747	-7%
CSL	377	2,924	676%
WPL	8,034	8,487	6%
RIO	4,388	28,213	543%
ORG	3,229	3,233	0%
QBE	1,533	6,239	307%
SUN	6,899	5,937	-14%
BXB	2,946	4,867	65%
STO	3,082	3,016	-2%
AMP	4,248	6,131	44%
AMC	1,480	4,254	187%

Source: Lally (2014) and Morningstar. We have removed Macquarie Group and Westfield from the table as major corporate transactions mean that there is no single consistent entity over the whole period.

Table 8 makes it abundantly clear that there are marked differences between the values Lally presents and those that the Morningstar database suggest. The difference in results is counterintuitive, as Lally (2013) again indicates that he too has gathered dividend data from the respective annual reports. Frontier has spot checked several pieces of Morningstar data and believe that they too take their dividend data directly from the annual report – again raising the question as to why these results are so different.

Appendix: Estimation issues with the 20-firms approach

Final

9.4 Miscellaneous errors

162 Throughout the process of replicating the Lally table, we identified that the tax figure for Rio Tinto appears to be calculated incorrectly (using Lally's own FAB and dividend data).

163 Given that tax is calculated as:

$$TAX = DIST + B_{2013} - B_{2000} \quad (1)$$

we insert the relevant figures from the Lally table as follows:

$$TAX = 1{,}880 + 7{,}434 - 2{,}215 = 7099 \quad (2)$$

164 However, the Lally table reports a TAX figure of 5,219. This has a material effect on the distribution rate for Rio, which changes from 36% to 26%.

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