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28 September 2018

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

Dear Ms Cusworth

Re: Draft Rate of Return Guidelines (2018)

Thank you for the opportunity to comment on the draft Rate of Return Guidelines published on 29 June 2018. This letter outlines a submission from ATCO Australia (ATCO).

As an owner and operator of energy and logistics infrastructure in Australia for over 55 years, ATCO is proud of its ongoing commitment to supporting the communities in which we operate. ATCO is a long-term investor with a clear vision of delivering customer value through sustainable growth, continuous investment, improvement and innovation.

The disruption of energy markets has highlighted the importance of consistent policy settings, regulatory certainty and appropriate investment signals to ensure that customers continue to receive safe, affordable and reliable energy.

Based on the assumption of an appropriate return for the risk of delivering natural gas to householders, ATCO has chosen to reinvest all of its equity (in lieu of paying dividends) from the Western Australian gas distribution network back into the respective capital works programs, within an increasingly competitive operating environment. We are a prudent, strategic and financially responsible operator and have demonstrated this financial stewardship during our ownership period.

Within this context, ATCO is concerned that the perceived focus of economic regulators on tightening and/or removing risk margins will have the unintended consequence of curtailing innovation and growth in parts of the energy supply chain that are critical to delivering long term value to consumers.

Overarching comments

ATCO makes the following overarching comments in relation to the Economic Regulation Authority's (ERA) draft Rate of Return Guidelines (2018). The attached submission elaborates on these observations:

- On debt risk premium, ATCO believes the Guidelines should be modified to include sufficient detail to allow for the mechanistic application of the ERA's revised bond yield approach to calculate the debt risk premium.
- On market risk premium, ATCO's view is that the point estimate for the market risk premium is best estimated as the mid-point between the historical market risk premium estimate and the forward-looking market risk premium estimate.

- On gamma, ATCO submits that gamma should be estimated directly from ATO data resulting in an estimate of gamma of 0.34. This approach produces stable estimates over time, is transparent and repeatable, uses publicly available data that is easy to access, provides a direct estimate from a single source of data, does not require the separate estimation of the distribution rate, and is internally consistent. ATCO's position is supported by a report from Frontier Economics attached to this submission.

ATCO would like the opportunity to comment on the ERA's draft decision on market risk premium before the publication of the final Guidelines. The draft Guidelines did not set out the ERA's draft decision under a binding instrument for market risk premium, instead the ERA's Explanatory Statement is seeking comments on a range of options to determine the market risk premium. Providing an opportunity to comment on the ERA's draft decision for market risk premium will allow stakeholders to provide alternative points of view on whether the ERA's position on market risk premium meets the National Gas Objective and the Revenue and Pricing Principles.

About ATCO

ATCO is a customer-focussed global company that develops, builds, owns and operates a range of energy infrastructure assets, supporting residential, business and commercial consumers. ATCO has been proudly operating in Australia and providing employment opportunities for more than half a century. In Australia, ATCO:

- owns and maintains two non-regulated gas distribution networks in Albany and Kalgoorlie, together with the largest (Mid-West and South-West) gas distribution network in Western Australia, servicing over 750,000 connections through more than 14,000 km of natural gas pipelines and associated infrastructure;
- owns and operates two power generation facilities (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 businesses 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 Matthew Cronin, General Manager Strategy & Regulation.

Yours sincerely

[redacted]

J.D. Patrick Creaghan
Managing Director & Chief Operating Officer

Attachment 1: ATCO Australia submission

Attachment 2: Frontier Economics - The 'utilisation' estimate of gamma

Attachment 3: Capital Research Memorandum

ATTACHMENT 1: ATCO SUBMISSION

DRAFT RATE OF RETURN GUIDELINES

PUBLIC

28 September 2018

An appropriate citation for this paper is:

Attachment 1: ATCO Submission

Our Ref: 97129845

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Table of Contents

1. Introduction

1. ATCO welcomes the opportunity to provide views on the Economic Regulation Authority's (ERA) draft Rate of Return Guidelines and Explanatory Statement, which were published on 29 June 2018.
2. Overall, ATCO supports an incremental approach in this review of the Guidelines in order to provide regulatory stability and to meet the various objectives under the National Gas Law and National Gas Rules. Regulatory certainty and stability are key drivers of investor confidence, which drives the ability of gas distribution businesses to provide valuable services to energy consumers over the long term.
3. ATCO recognises that the Guidelines will be applied on a binding basis and will be in place for 4 years. ATCO's focus is on ensuring that the final Guidelines are clear, conceptually and empirically sound, and recognise the need to have sustainable energy network businesses if the long-term interests of customers are to be promoted.
4. This document details ATCO's submission on the draft Guidelines. ATCO's position on the draft Guidelines is summarised in the following table:

Table 1.1: Summary of ATCO's position

PARAMETER	ACCEPTED BY ATCO	SUMMARY OF ATCO'S POSITION
The benchmark efficient entity	✓	ATCO accepts the draft Guidelines
Gearing	✓	ATCO accepts the draft Guidelines
Inflation	✓	ATCO accepts the draft Guidelines
RETURN ON DEBT		
Risk-free rate of return	✓	ATCO accepts the draft Guidelines
Benchmark credit rating	✓	ATCO accepts the draft Guidelines
Debt risk premium	✓	ATCO accepts the draft Guidelines but notes that the Guidelines need to be modified to include sufficient detail to allow for a mechanistic calculation
Debt and equity raising costs	✓	ATCO accepts the draft Guidelines
RETURN ON EQUITY		
Risk-free rate of return	✓	ATCO accepts the draft Guidelines
Market risk premium	-	ATCO details its preferred method to determine the market risk premium in section 7.3
Equity beta	✓	ATCO accepts the draft Guidelines
Gamma	-	ATCO details its preferred method to determine gamma in section 8

5. As summarised in the Table above, ATCO submits that there are strong grounds to modify the proposed approach in the draft Guidelines in relation to the market risk premium and gamma. In summary ATCO's position on these parameters is as follows:

- **Market risk premium** – ATCO submits that the market risk premium should be determined mechanistically by applying equal weight to the dividend growth model and arithmetic mean of the historical excess returns to derive the point estimate of the market risk premium. We submit that this approach:
  - Has regard to all relevant data, both historical and forward looking. Both the current Rules and the proposed binding guideline legislative amendments include these criteria.
  - Has regard to prevailing conditions in the market for equity funds. Both the current Rules and the proposed legislative amendments include these criteria.
  - Gives rise to the best possible empirical estimate of the market risk premium, ensuring the resulting estimate contributes to the National Gas Objective to the greatest degree, as required both by the current Rules and under the proposed legislative amendments
- **Gamma** - ATCO supports adopting ATO tax statistics as the best, and most direct, estimate of an 'utilisation rate' gamma. The resulting estimate of gamma for the Guidelines would be 0.34. As with market risk premium, we consider this approach gives rise to the best estimate of gamma and will contribute to the National Gas Objective to the greatest degree.

6. ATCO notes that the Guidelines will also need to be modified to include sufficient detail to allow for the mechanistic application of the ERA's revised bond yield approach to calculate the debt risk premium by the service provider.

2. Binding rate of return guidelines

7. The ERA says it has prepared the draft Rate of Return Guidelines (the Guidelines) and associated Explanatory Statement to apply equally to the current framework and the proposed binding rate of return framework, if implemented.[1]

8. ATCO agrees that this is a sensible approach and expects the ERA will issue the final Guidelines once the necessary legislative changes to implement the binding Rate of Return Guidelines have been gazetted. The *Statutes Amendment (National Energy Laws) (Binding Rate of Return Instrument) Bill 2018* was introduced into the South Australian Parliament on 2 August 2018. Transitional provisions proposed to be included in WA will mean that the Guidelines produced from the current review are expected to become the first binding rate of return instrument in Australia under the new legislation.

9. In making the binding Guidelines (and in any event under the existing Rules), the ERA will be required to satisfy itself that the Guidelines will, or is most likely to, contribute to the achievement of the National Gas Objective to the greatest degree.[2] While the Guidelines and Explanatory Statement acknowledge the importance of the objective, the ERA does not explain how it has, or proposes to, satisfy itself that this test has been met.

10. ATCO considers that in order to satisfy itself that the Guideline will, or is most likely to contribute to the achievement of the National Gas Objective to the greatest degree, the ERA must ensure that the best empirical estimate of each parameter is estimated. This is because the best estimates of each parameter in combination will result in a return commensurate with the regulatory and commercial risks in providing reference services, and provide the service provider with a reasonable opportunity to recover at least its efficient costs, thereby promoting efficient investment.

11. ATCO has previously received advice from HoustonKemp on the economic role of the National Gas Objective (NGO). They summarised the role as:

> *To summarise, the NGO is structured so as to encapsulate all three dimensions of efficiency that are familiar to economists, i.e. productive, allocative and dynamic. As a matter of principle, efficiency can be assessed in both static (at a particular point in time) and dynamic terms (over the future course of time). However, by its reference to the 'long term' interests of consumers, the NGO is structured so as to clarify that the balance of emphasis is to be given to the long term, dynamic dimension of efficiency.*[3]

12. Under the existing Rules the Guidelines must promote overall efficiency, provide a reasonable opportunity to recover at least the efficient costs in providing reference services and allow for a return commensurate with the regulatory and commercial risks in providing reference services.[4] This is also true under the proposed binding guideline legislation, where the ERA must explain how it has had regard to the following:

    1. The revenue and pricing principles.

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1 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 42

2 Proposed new section 30D of the National Gas Law, as set out in the *Statutes Amendment (National Energy Laws)(Binding Rate of Return Instrument) Bill 2018*, as introduced into the South Australian Parliament on 2 August 2018

3 HoustonKemp, Economic Review of the ERA's Draft Decision, 27 November 2014, pg 6

4 Section 23 and 24 of the National Gas Law

2. Estimation methods, financial models, market data and other relevant evidence.
3. Prevailing conditions in the market for equity funds.

13. These are not new considerations and reflect matters the ERA must have regard to under the current Rules. However for the reasons set out in this submission, in a number of respects it is not clear how these matters have been taken into account in the draft Guidelines or why some matters have not been given sufficient weight.

14. The binding Guideline legislation also requires that the Guideline must state the way to calculate the rate of return and provide for a methodology to apply automatically without the exercise of any discretion by the regulator. In a number of respects, the draft Guidelines do not meet this requirement. In particular:

1. The Guidelines and associated Explanatory Statement do not include the detail of the six-step process that is required to determine the debt risk premium under the Revised Bond Yield Approach. The ERA has previously described the Bloomberg functions and the necessary formula for any stakeholder to obtain the required data and independently perform the relevant return on debt calculations in Excel. This detail is currently contained in Appendix 8 (pages 686 – 714) of the ERA's Final Decision for ATCO dated 10 September 2015. ATCO's view is that a similar level of detail is required in the Guidelines to enable the debt risk premium to be determined mechanistically in future, under a binding rate of return framework. ATCO expands on this point further in section 6.4.
2. In the Guidelines the ERA proposes that under the current regulatory framework it would estimate the market risk premium through the use of the historic market risk premium, the divided growth model and other conditioning variables, using regulatory discretion to arrive at a point estimate. The ERA acknowledges this approach would not comply with the binding guideline requirements. The ERA says that in the event the binding rate of return framework is introduced, it seeks stakeholder comment on three options:
    a) Initial regulatory discretion and then fixed for the period.
    b) A mechanical approach that applies a fixed weight to historic market premiums and the dividend growth model.
    c) Historic approach using solely the historic market risk premium estimate.
3. The Guidelines do not currently allow the market risk premium estimate to be derived automatically. For the reasons set out in section 7, ATCO considers that the appropriate approach, that meets the binding guideline legislation (and the current Rule requirements) and the approach that will contribute to the National Gas Objective to the greatest degree, is the ERA's second option above.

3. Benchmark efficient entity

15. The ERA has changed the definition of the benchmark efficient entity in the draft Rate of Return Guidelines. The definition adopted in the draft Guidelines is:

> *An efficient 'pure-play' 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.*[5]

16. ATCO accepts that the draft Guidelines need to establish a conceptual definition for the benchmark efficient entity because the conceptual definition recognises the regulatory and commercial risks, consistent with the revenue and pricing principles.[6]

17. ATCO observes that the ERA's intent has been to adopt this definition consistently across the draft Guidelines when gathering evidence from actual 'comparator' entities, which resemble the conceptual entity, as a means to inform the benchmark parameters for the return on equity and the return on debt.

18. Over time, the degree of risk faced by a 'pure play' gas distribution business may increase relative to a pure play electricity networks due to the increasing contestability of gas connection points and appliances.

19. ATCO has made some observations on the ERA's application of the benchmark efficient entity to the benchmark credit rating (section 6.3) and to gamma (distribution rate in section 8.2 and selecting a gamma that best contributes to the National Gas Objective in section 8.5).

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5 Economic Regulation Authority, Draft Rate of Return Guidelines (2018), 29 June 2018, Para 67

6 Section 24(5) of the National Gas Law

4. Gearing

20. Gearing refers to the proportions of a regulated business's assets assumed to be financed by debt and equity. The draft Guidelines specifies a benchmark gearing level of 55 per cent debt and fixes the value until the next review of the Guidelines.

21. ATCO accepts the gearing level proposed in the draft Guidelines because it allows for the recovery of efficient costs, consistent with the revenue and pricing principles.[7]

[7] Section 24(2) of the National Gas Law

5. Inflation

22. The draft Guidelines specify that the estimate of the expected inflation rate will be determined mechanistically using the Treasury bond implied inflation approach.

23. The ERA's application of the Treasury bond implied inflation approach uses:

- the observed yields of 5-year Commonwealth Government Securities (which reflect a market-based estimate of the nominal risk-free rate) and 5-year indexed Treasury bonds (which incorporate a market based estimate of a real risk-free rate)
- the Fisher equation to estimate the expected inflation rate from the observed yields
- a 20 trading day observation period that is consistent with the estimate of the risk-free rate

24. ATCO accepts the use of the Treasury bond implied inflation approach to estimate the expected inflation rate because ATCO is of the view that market expectations provide the best estimates of expected inflation for the regulatory period. The Treasury bond implied inflation approach allows for the recovery of efficient costs, consistent with the revenue and pricing principles.[8]

[8] Section 24(2) of the National Gas Law

6. Return on debt

Draft Rate of Return Guideline

The return on debt estimate is based on the hybrid trailing average approach. This method:

- adopts the 5-year bank bill swap rate, set on the day; and
- uses a 10-year trailing average for the debt risk premium, which is updated annually so that each year a new year's debt risk premium is estimated and the oldest estimate in the 10-year series is removed.

The on-the-day estimate of the risk-free rate will be based on the observed yield of a 5-year term bank bill swap rate, averaged over a 20-day period just prior to the regulatory period. The 20-day period will be nominated by the service provider in advance of the ERA's Final Decision. The 5-year term reflects the present value principle that the term of debt should match the length of the regulatory period, which is 5 years.

The on-the-day debt risk premium will be derived from the yield of an observed sample of bonds, with a term of 10 years, issued by comparator firms with similar credit ratings as the benchmark efficient entity. The ERA proposes to calculate the debt risk premium based on a 10-year hybrid trailing average, which will be updated annually.

An annual allowance will be provided for debt raising and hedging costs. The annual allowances for these elements will be set once, at the start of the regulatory period.

ATCO's response:

- The Guidelines should include sufficient detail to allow for the mechanistic application of the ERA's revised bond yield approach to calculate the debt risk premium
- The Guidelines should specify that the bond sample will be expanded to the BBB-/BBB/BBB+ credit band if there are too few bonds matching the BBB+ credit rating to reliably estimate the debt risk premium

6.1 Method

25. Under the draft Guidelines the return on debt estimate is based on the hybrid trailing average approach. This method:
    - adopts the 5-year bank bill swap rate, set on the day; and
    - uses a 10-year trailing average for the debt risk premium, which is updated annually so that each year a new year's debt risk premium is estimated and the oldest estimate in the 10-year series is removed.
26. Under the draft Guidelines the on-the-day estimate of the risk-free rate will be based on the observed yield of a 5-year term bank bill swap rate, averaged over a 20-day period just prior to the regulatory period. The 20-day period will be nominated by the service provider in advance of the ERA's Final Decision.
27. The on-the-day debt risk premium will be derived from the yield of an observed sample of bonds, with a term of 10 years, issued by comparator firms with similar credit ratings as the benchmark efficient entity.

The ERA proposes to calculate the debt risk premium based on a 10-year hybrid trailing average, which will be updated annually.

28. An annual allowance will be provided for debt raising and hedging costs. The annual allowances for these elements will be set once, at the start of the regulatory period.

29. ATCO accepts the overall method to estimate the return on debt adopted by the draft Guidelines on the basis it is consistent with the method adopted in ATCO's AA4 Final Decision and therefore promotes regulatory certainty and stability. Regulatory certainty and stability are important because they promote efficient investment in, and efficient operation and use of, natural gas services by the service provider for the long term interests of consumers of natural gas. The method was adapted in the AA4 Final Decision as it was an efficient approach because it:

- **minimises differences** – The ERA accepted that it is desirable that a firm be able to 'minimise differences' to its return on debt[9]. This can be achieved under the trailing average approach to estimating the DRP as it can be replicated exactly by the firm.[10]
- **NPV=0** - trailing average approaches can achieve the present value condition exactly at any point in time.[11]

30. These factors remain true.

6.2 Risk-free rate

31. Under the draft Guidelines, the risk-free rate will be determined mechanistically based on the observed yield of a 5-year term bank bill swap rate, averaged over a 20-day period just prior to the regulatory period. The 20-day period will be nominated by the service provider in advance of the ERA's Final Decision.

32. ATCO accepts the draft Guidelines' method to mechanistically estimate the risk-free rate on the basis that it is consistent with regulatory practice and the method adopted in ATCO's AA4 Final Decision and therefore promotes regulatory certainty and stability.

6.3 Benchmark credit rating

33. The draft Guidelines adopt a benchmark credit rating of BBB+. This is a change from the previous Guidelines where the BBB-/BBB/BBB+ credit band was adopted.

34. ATCO understands from the draft Guidelines and Explanatory Statement that the ERA's application of the revised bond yield approach will adopt bonds with a BBB+ credit rating only.[12] However, Appendix 2 of the Explanatory Statement is ambiguous in how the BBB+ credit rating will be applied as it makes reference to the BBB+ credit rating 'band'.[13] ATCO's interpretation is that the intent of the draft Guidelines is that the revised bond yield approach will adopt bonds with a BBB+ credit rating only. This ambiguity must be avoided in the final Guidelines.

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9 Economic Regulation Authority, Final Decision on Proposed Revisions to the Access Arrangement for the MWSGDS, 10 September 2015, para 1488

10 Ibid, para 1528

11 Ibid, para 1529

12 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Paras 350 & 358

13 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Appendix 2, Para 4

35. ATCO understands that the ERA's application of the BBB+ credit rating will be forward-looking and will apply to each year's debt risk premium from 2019. The current BBB-/BBB/BBB+ credit band will continue to be adopted to compute each year's debt risk premium to 2019.[14] ATCO supports this approach as it avoids retrospective regulatory action, promotes regulatory certainty and stability and recognises that regulated businesses have locked in debt financing based on an understanding of the way in which the debt risk premium would be calculated under the hybrid trailing average method adopted in the ERA's Final Decision for ATCO dated 10 September 2015.

36. ATCO accepts the draft Guidelines' benchmark credit rating of BBB+ because it allows for the recovery of efficient costs, consistent with the revenue and pricing principles.[15] However, ATCO makes the following observations:

- ATCO's understanding of the ERA's analysis of the median credit rating is that it takes into account the definition of the benchmark efficient entity. Sample 3 in the analysis is the best actual 'comparator' of the benchmark efficient entity as it best resembles the benchmark efficient entity. This is because it excludes firms with government ownership and parent control. ATCO observes that the median credit rating of this sample, albeit small, supports maintaining the current BBB-/BBB/BBB+ credit band as it has remained unchanged at BBB since 2013, as highlighted in Table 6.1 below. The BBB+ credit rating is only supported by the data that includes firms with government ownership or parent control (Sample 1) or parent control (Sample 2).

Table 6.1: Economic Regulation Authority's median credit rating approach results

	2013	2014	2015	2016	2017	NUMBER OF FIRMS
Sample 1 – All firms	BBB	BBB+	BBB+	BBB+	BBB+	13
Sample 2 – excluding government ownership	BBB	BBB+	BBB+	BBB+	BBB+	7
Sample 3 – excluding government ownership and parent control	**BBB**	**BBB**	**BBB**	**BBB**	**BBB**	**1**

Source: ERA Analysis, Table 9 Draft Explanatory Statement

- ATCO notes that the draft Guidelines do not state whether a minimum number of bonds matching the credit rating are required to estimate the debt risk premium reliably or what would the ERA's response would be if the minimum numbers of bonds could not be met. Table 6.2 demonstrates that the number of bonds in the sample has reduced as a result of the adoption of the BBB+ credit rating. ATCO's view is that bond sample should be expanded to the BBB-/BBB/BBB+ credit band in circumstances in which the number of BBB+ bonds is insufficient to reliably estimate the debt risk premium.

Table 6.2: Number of bonds that qualify under the ERA's revised bond yield approach

	NUMBER OF BONDS	BONDS WITH 8-13 YR RESIDUAL MATURITY	NUMBER OF QUALIFYING BONDS IN BBB-/BBB/BBB+ BAND	NUMBER OF QUALIFYING BONDS WITH BBB+ CREDIT RATING
BBB+	46	7	**21**	**7**

[14] Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Appendix 2, Para 4

[15] Section 24(2) of the National Gas Law

	NUMBER OF BONDS	BONDS WITH 8-13 YR RESIDUAL MATURITY	NUMBER OF QUALIFYING BONDS IN BBB-/BBB/BBB+ BAND	NUMBER OF QUALIFYING BONDS WITH BBB+ CREDIT RATING
BBB	39	9		
BBB-	21	5		

Source: ATCO analysis

6.4 Debt risk premium

37. The draft Guidelines mechanistically estimate the debt risk premium through the application of a 10-year trailing average with each year's debt risk premium determined through the application of the ERA's revised bond yield approach.

38. ATCO accepts the draft Guidelines method to mechanistically estimate the debt risk premium but considers the Guidelines can be improved by including additional information to mechanistically calculate the debt risk premium. ATCO accepts that this method allows for the recovery of efficient costs, consistent with the revenue and pricing principles.[16]

39. The draft Guidelines do not provide sufficient detail to allow the calculation of the debt risk premium to occur automatically without the exercise of any discretion under a binding rate of return framework. This means that no stakeholder can anticipate the return on debt allowance that would be delivered by the Guidelines. This undercuts one of the key objectives of a binding rate of return framework—namely, to enhance regulatory certainty.

40. The ERA has previously described the Bloomberg functions and the necessary formula for any stakeholder to obtain the required data and independently perform the relevant return on debt calculations in Excel. This detail is currently contained in Appendix 8 (pages 686 – 714) of the ERA's Final Decision for ATCO dated 10 September 2015. The draft Guidelines also do not contain the necessary process to convert foreign currency yields into Australian dollar equivalents but instead makes reference to Appendix 5 of the ERA's Final Decision for ATCO dated 10 September 2015.

41. In order to allow for the mechanistic estimation of the debt risk premium the Guidelines need to incorporate additional information. ATCO's view is that additional information is required over and above that provided in Appendix 5 and Appendix 8 (pages 686 – 714) of the ERA's Final Decision for ATCO dated 10 September 2015.

ATCO considers that the following information should be included in the Guidelines:

1. Any pre-requisites required to calculate the debt risk premium, including any software or subscription requirements. For example
   a) the required Bloomberg packages/subscriptions
   b) the required settings for the Bloomberg terminal and
   c) the required version of excel and any add-in packages

[16] Section 24(2) of the National Gas Law

2. Definitions of the roles of the ERA and service providers in the annual calculation process. For example, the ERA's Final Decision for ATCO dated 10 September 2015[17] sets out the roles of the ERA and ATCO in the annual process
3. The detailed criteria of the bonds to include in the calculation of the debt risk premium must be specified in the Guidelines.
    a) The Guidelines should be explicit about the number of bonds required in order to derive a reliable estimate of the debt risk premium in any given year
    b) The Guidelines should remove any ambiguity in how the ERA will apply the BBB+ credit rating to the bonds sample and what will occur if the minimum numbers of BBB+ bonds required to estimate the debt risk premium reliably are not available (discussed in section 6.3 above)
    c) The Guidelines must include all of the information detailed in Table 13 of the Explanatory Statement (for example the Consolidate criteria is currently missing) and must specify what is to occur if no bonds match the criteria or a reliable estimate of the debt risk premium is not available. In the event that no bonds match the criteria, ATCO submits that the ERA should use the RBA's Aggregate Measures of Australian Corporate Bond Spreads and Yields data for the BBB band credit rating.[18]
4. The detailed step by step process and formulas required to convert foreign currency yields into Australian dollar equivalents. Appendix 5 from the ERA's Final Decision for ATCO dated 10 September 2015 is an example of the minimum level of detail required in the Guidelines.
5. The detailed step by step process and formulas required to calculate the debt risk premium, including identifying whether any specific steps are required to occur on a particular day and at a particular time. Appendix 8 from the ERA's Final Decision for ATCO dated 10 September 2015 is an example of the minimum level of detail required in the Guidelines.
6. Publishing an Excel spreadsheet that can be used to calculate the debt risk premium in accordance with the mechanistic method detailed in the Guidelines.

6.5 Debt and equity raising costs

42. The draft Guidelines provide an annual allowance for:
    - debt raising of 0.100% per annum; and
    - hedging costs of 0.114% per annum.
43. ATCO accepts the debt raising and hedging costs proposed in the draft Guidelines because it allows for the recovery of efficient costs, consistent with the revenue and pricing principles, and as such contributing of the National Gas Objective.[19]

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17 ERA, Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems, 10 September 2015, para 1767

18 ERA, Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems, 10 September 2015, Table 157

19 Section 24(2) of the National Gas Law

7. Return on equity

7.1 Method

44. Under the draft Guidelines the return on equity estimate is determined using the Sharpe-Lintner CAPM model. This method determines a single point estimate for the return on equity by applying the following equation:

$$R_i = R_f + \beta_i(R_m - R_f)$$

where

R_i is the required rate of return on equity for the asset, firm or industry in question;
R_f is the risk-free rate;
β_i is the equity beta that describes how a particular portfolio i will follow the market;[20] and
$(R_m - R_f)$ is the market risk premium.

45. ATCO accepts the overall method to estimate the return on equity adopted by the draft Guidelines on the basis that it is consistent with the method adopted in the ERA's Final Decision for ATCO dated 10 September 2015 and therefore promotes regulatory certainty and stability.

7.2 Risk-free rate

46. Under the draft Guidelines the risk-free rate will be determined mechanistically based on the observed yield of a 5-year term Commonwealth Government Security, averaged over a 20-day period just prior to the regulatory period. The 20-day period will be nominated by the service provider in advance of the ERA's Final Decision.

47. ATCO accepts the draft Guidelines' method to mechanistically estimate the risk-free rate because it is consistent with the method adopted in the ERA's Final Decision for ATCO dated 10 September 2015 and therefore promotes regulatory certainty and stability.

48. ATCO makes the following observations on the term and averaging period adopted to mechanistically estimate the risk-free rate.

5-year term

49. ATCO observes that in adopting a 5-year term the draft Guidelines have stepped away from the theoretical underpinnings of the Sharpe-Lintner CAPM model by preferring to achieve the NPV=0 principle.[21] The theory underpinning the Sharpe-Lintner CAPM is based on the risk-free rate being the pure rate of interest that an investor can earn by lending at the pure rate or borrowing at the pure interest rate for a riskless asset.[22] The concept underpinning the Sharpe-Lintner CAPM is that an investor can optimise returns, for a given level of risk, by holding the optimal amount of investments in riskless savings

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20 The equity beta is defined as $\beta_i = cov(R_i, R_m)/var(R_m)$.

21 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 76

22 Sharpe, William F., Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk, The Journal of Finance, Vol. 19, No. 3 (Sep., 1964), pg 431-433

deposits or the optimal amount of borrowing (at the risk-free rate).[23] This theory provides no support for linking the term of the risk-free rate to the length of the regulatory period. The traditional textbook application of the Sharpe-Lintner CAPM model adopts long-dated government bonds to estimate the risk-free rate.[24]

20-day averaging period

50. Under the Guidelines the averaging period for the risk-free rate should produce the best estimate of the required return on equity taking into account the preference for overall stability in estimates of the return on equity.

51. ATCO observes that providing the regulated business with the option to allow for an averaging period from 20 up to 60 business days may reduce the volatility in the estimation of the risk-free rate but still allow the risk-free rate to track quite closely to the 20 day averaging period currently proposed.[25]

52. Furthermore, ATCO notes the importance of allowing each regulated business to set its own averaging period.

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23 Lintner, John, The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets, The Review of Economics and Statistics, Vol. 47, No. 1 (Feb., 1965), pg 17

24 Berk, J & DeMarzo, P, Corporate Finance, 3rd edition, 2014, Pearson, pg 404-406

Brailsford, T., Heaney, R. & Bilson, C, Investments - Concepts and Applications, 2nd edition, 2004, pg 179

Peirson, G., Brown, R., Easton, S. & Howard, P., Business Finance, 8th edition, 2003, pg 460

25 Australian Energy Regulator, Discussion paper: Market Risk Premium, risk-free rate averaging period and automatic application of the rate of return, Figure 13

7.3 Market risk premium

Draft Rate of Return Guideline

The ERA's current approach derives a point estimate for the market risk premium by developing a range and then using regulatory judgment to arrive at a point estimate.

In order to comply with a binding Guideline framework, the ERA is considering, and seeking stakeholder comment on, three options to determine the market risk premium for the binding Guidelines. These options remove regulatory discretion over the period that the binding instrument is in place.

These options include:

1. initial regulatory discretion and then fixed for the period;
2. a mechanistic approach; and
3. an historical approach.

ATCO's response:

- ATCO supports the Guidelines applying a mechanistic approach to determine the market risk premium in the interests of promoting regulatory certainty and confidence and in order to comply with the binding Guideline framework requirements.
- ATCO submits that the mechanistic approach should give equal weight to the dividend growth model and arithmetic mean of the historical excess returns to derive the point estimate of the market risk premium.

53. Under the draft Guidelines the ERA is seeking stakeholder views on how to determine the market risk premium (MRP) allowance.

54. The market risk premium represents the return over and above the risk-free rate that an equity investor would require in compensation for the risk of investing in a fully diversified portfolio. As the market risk premium is a forward looking estimate which cannot be observed directly, it needs to be estimated.

55. In response to the draft Guidelines ATCO's view is that the market risk premium is best estimated by:

    1. Deriving an estimate of the historical market risk premium from the arithmetic average of the historical excess returns.
    2. Deriving an estimate of the forward-looking market risk premium from dividend growth model estimates.
    3. Determining mechanistically the point estimate for the market risk premium as the mid-point between the historical market risk premium estimate and the forward-looking market risk premium estimate.

    This reflects the ERA's option 2, with an equal weighting applied.

56. The following sections discuss each of these points in turn.

57. In developing this proposal, we have had regard to the draft Guidelines, the existing requirements under the National Gas Rules, as well as the proposed changes to the National Gas Law to give effect to a binding

guideline.[26] Relevantly, the common requirements of both the current rate of return framework (National Gas Rule 87 and section 28 of the National Gas Law) and the proposed legislative amendments are to:

1. Ensure the rate of return (and the binding Guideline) will, or is most likely to, contribute to the achievement of the National Gas Objective to the greatest degree.[27]
2. Have regard to[28]:
   a) The revenue and pricing principles
   b) Estimation methods, financial models, market data and other evidence relevant to making the instrument.
   c) Prevailing conditions in the market for equity funds
   d) Interrelationships between financial parameters.

7.3.1 Determining the historical market risk premium

58. Under the draft Guidelines the ERA has derived the historical market risk premium from the average realised return that stocks have earned in excess of the five-year government bond rate using the Ibbotson method.

59. The Explanatory Statement recognises that the historical approach is not a forward-looking estimate of the market risk premium but contributes to investors' forward expectation.[29] ATCO accepts that the historical market risk premium is one piece of relevant evidence that should receive material weight, but not determinative weight above all other evidence. This is illustrated by the following comment attributed to Stephen Gray as part of the recent expert evidence sessions:

> *"The reason for this is best illustrated in the context of the GFC - the HER approach suggested that the cost of equity capital fell dramatically during the peak of the GFC. Clearly, such an approach should not be the determinative method for setting the allowed return on equity"*[30]

Arithmetic mean is the correct mechanism to estimate the historical excess returns

60. The draft Guidelines have adopted both the arithmetic and geometric means to derive the historical estimate of the market risk premium.[31]

61. Dr Lally has considered whether an arithmetic or geometric mean should be applied to the historical data. He evaluates whether each form of average is consistent with the NPV=0 principle and concludes that:

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26 As set out in the *Statutes Amendment (National Energy Laws)(Binding Rate of Return Instrument) Bill 2018,* as introduced into the South Australian Parliament on 2 August 2018.

27 *Statutes Amendment (National Energy Laws)(Binding Rate of Return Instrument) Bill 2018,* proposed new section 30D(3).

28 *Statutes Amendment (National Energy Laws)(Binding Rate of Return Instrument) Bill 2018,* as introduced into the South Australian Parliament on 2 August 2018., proposed new section 30A, definition of explanatory information which requires the regulator to explain how it has regard to these factors. See also proposed new 30D(5).

29 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 524

30 CEPA, Expert Joint Report, 21 April 2018, pg 59

31 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 526

> *The geometric mean fails this test whilst the arithmetic mean will satisfy it if annual returns are independent and drawn from the same distribution. So, if historical average returns are used, they should be arithmetic rather than geometric.*[32]

62. In the AER's second concurrent evidence session, a number of experts explained that the AER uses the historical excess returns data to estimate the expected market risk premium in a setting where no compounding of returns occurs, and that this mathematically requires the arithmetic mean. The experts explained that this is not a matter of opinion, but is the subject of a mathematical proof.[33]

63. Dr Lally has derived a mathematical proof that confirms that the arithmetic mean should be applied.[34]

64. Subsequent to the Concurrent Evidence Sessions, the AER commissioned a report from Partington and Satchell to opine on matters including the use of geometric means.[35] Partington and Satchell present no mathematical proof and do not consider the mathematical proof presented by Lally or any of the other mathematical proofs of why the arithmetic mean must be used to estimate expected returns. Rather, Partington and Satchell simply assert that investors may consider compound returns if they have long investment horizons. But there are two fundamental problems with this view that are apparent from the mathematical proofs that have been presented:

- The mathematical proofs already incorporate arbitrarily long time horizons. For example, the Lally proof is easily generalizable to N periods. The idea is to demonstrate that the arithmetic mean must be used to ensure that the present value of the allowed cash flows, over the life of the asset, is equal to the initial RAB.
- When investors consider compound returns or geometric means, it is for a different purpose. It is entirely appropriate for an investor to use the geometric mean as an estimate of the compound annual return that has been received over a particular historical period. But it is entirely inappropriate to use it as an estimate of the expected return over the forthcoming year.[36]

65. Investors may well consider geometric means when estimating the compound return that has been earned over some historical period. But, mathematically, the arithmetic mean must be used to estimate the expected return over a forthcoming period.

66. On the basis of the above points, ATCO submits that the draft Guidelines incorrectly adopts the geometric mean and the Guidelines should instead base the estimate of the historical market risk premium on the arithmetic mean. The adoption of the arithmetic mean is consistent with the application of the 'present value principle' in other aspects of the Guidelines and gives rise to the best empirical estimate of the historical market risk premium.

67. The draft Guidelines presents estimates of the historical market risk premium using different averaging periods, as shown in Table 7.1 below. The ERA's estimates range from 6.11% to 6.82% (if only the BHM estimates are used) or 6.75% (if equal weight is given to the BHM and NERA estimates). Based on the ERA's analysis, the most conservative estimate of the historical market risk premium at the time of publication of the draft Guidelines (using arithmetic averages) would be 6.11%.

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32 Lally, M., Review of the AER's Methodology for the Risk-free Rate and the Market Risk Premium, 4 March 2013, p. 40.

33 Energy Networks Australia, AER Rate of Return Guideline - Submission to the AER, September 2018, p. 113

34 Lally, M., The Cost of Equity and the Market Risk Premium, 25 July 2012, p. 31-32

35 Partington, G. and S. Satchell, May 2018, Report to the AER: Allowed rate of return 2018 Guideline Review.

36 Energy Networks Australia, AER Rate of Return Guideline - Submission to the AER, September 2018, p. 115]

Table 7.1: Estimates of the arithmetic historical excess returns

	BHM	NERA	AVERAGE
1883-2017	6.82%	6.47%	6.65%
1937-2017	6.24%	6.29%	6.27%
1958-2017	6.75%	6.75%	6.75%
1980-2017	6.53%	6.53%	6.53%
1988-2017	6.11%	6.11%	**6.11%**
2000-2017	6.13%	6.13%	6.13%

Source: Table 15 Draft Guidelines

7.3.2 Determining the forward-looking estimate

68. Under the draft Guidelines the ERA has estimated the forward-looking estimate of the market risk premium from the dividend growth model (DGM). The DGM method examines the forecast future dividends of businesses and estimates the return on equity that makes these dividends consistent with the market valuation of those businesses. The draft Guidelines estimate the DGM market risk premium to be 7.6%.[37]

69. The DGM has a number of important strengths:

- it has a theoretical foundation accepted by experts and regulators;
- it is commonly used in practice (including by other regulators); and
- it produces a forward-looking estimate of the market risk premium that is commensurate with prevailing conditions.

70. The draft Guidelines state that the ERA intends to place less reliance on the DGM to estimate the market risk premium, relative to the historical market risk premium.[38]

71. Table 7.2 demonstrates that the ERA has placed material weight on DGM estimates since its 2013 Rate of Return Guidelines and prior to the release of the draft Guidelines.

Table 7.2: DGM weightings in ERA Final Decisions since 2013

DECISION	DATE	MRP RANGE	MRP POINT ESTIMATE	IMPLIED DGM WEIGHTING
ATCO	Sep-15	5.40% - 8.80%	7.50%	**62%**[39]
Goldfields Gas Pipeline	Jun-16	5.40% - 8.80%	7.40%	**59%**
DBP	Jun-16	5.40% - 8.80%	7.40%	**59%**
WA Rail	Oct-17	6.90% - 7.20%	7.20%	**100%**
Water Inquiry	Nov-17	5.40% - 8.80%	6.90%	**44%**
Western Power	Sep-18	5.70% - 7.60%	6.00%	**16%**

[37] Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 617

[38] Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 527

[39] Economic Regulation Authority, Revised decision of the Economic Regulation Authority's access arrangement for the Mid-West and South-West Gas Distribution Systems, 25 October 2016, para 57

Source: ATCO analysis

72. ATCO is very concerned that the draft Guidelines now propose to down-weight the DGM relative to historical excess returns. This is a material change to the estimation of the market risk premium and seriously undermines regulatory stability and certainty. In ATCO's view, the ERA's proposal to place less reliance on the DGM will mean that service providers will no longer be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in providing reference services because the market risk premium estimate will not incorporate the prevailing conditions in the market for equity funds over the forthcoming period. This is inconsistent with the revenue and pricing principles, which the ERA must have regard to in deriving the rate of return.

73. The ERA is also required by both the current Rate of Return Rules and the proposed amendments to the National Gas Law discussed above to have regard to:

1. All relevant estimation methods – The DGM has been accepted by the ERA in the past and there is no new evidence to suggest it is not relevant evidence. In ATCO's views estimating the market risk premium must include applying material weight to the DGM estimates;
2. Prevailing conditions in the market for equity funds - The DGM estimates of the market risk premium are the only truly forward looking estimates that give an indication of prevailing conditions in the market for equity funds.

74. The evidence cited in the draft Guidelines for lowering the weight given to the DGM approach consist primarily of statements made by Partington and Satchell in an April 2017 report to the Australian Energy Regulator, which express concerns about the reliability of the DGM for the purposes of setting a market risk premium allowance.

75. These concerns about the DGM approach were known to (and considered by) the ERA in 2013, when it was developing its 2013 Guidelines, and in its subsequent decisions for rail and energy networks.

76. 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;
- The DGM is subject to upward bias from the smoothed or sticky nature of dividends;
- Biases in analysts' forecasts can lead to a biased DGM forecast of the market risk premium;
- There is no clear agreement among experts as to the best form for the DGM, or its input assumptions;
- Forecasts of future earnings and dividends are potentially inaccurate over more than two years;
- The DGM is likely to be upwardly biased due to current low interest rates; and
- Because the DGM solves for the implied required rate of return over an infinite horizon, it may provide a poor estimate of the market risk premium relevant over the five-year horizon the ERA is concerned with.

77. 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. In fact, in some decisions since these concerns were raised, the ERA attached materially more weight to the DGM than it did to historical excess returns, as shown in Table 7.2. It is unclear to ATCO why the ERA considers that less weight should now be afforded to DGM evidence than historical excess returns, when it has adduced no new evidence about the reliability of the DGM.

78. A number of the concerns the ERA cites about the reliability of the DGM were recognised and addressed by the ERA in its 2013 Guidelines. For example, in its 2013 Guidelines 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.[40]
- Noted that "estimating the market risk premium using DGM is very sensitive to the input assumptions adopted in the model" [41] 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."[42]

79. Moreover, all of the concerns raised by Partington and Satchell, 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[43] to a 2011 report prepared by advisers to the AER, McKenzie and Partington,[44] as well as an April 2017 report by AER advisers Partington and Satchell.[45] Thus, this point has been factored into the ERA's decisions since 2011.
- 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[46] 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.

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

- Determined a market risk premium 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 market risk premium – effectively placing 100% weight on the DGM evidence (and no weight on historical excess returns) to determine its point estimate in that decision.

81. In its June 2016 decision for DBP, the ERA:

- Determined a market risk premium range of 5.4% to 8.8%, where the upper bound of the range was determined using DGM evidence; and

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40 Economic Regulation Authority, Explanatory Statement for the Rate of Return Guideline, 16 December 2013, Paragraph 730.

41 Economic Regulation Authority, Explanatory Statement for the Rate of Return Guideline, 16 December 2013, Paragraph 732.

42 Economic Regulation Authority, Appendices to the Explanatory Statement for the Rate of Return Guideline, 16 December 2013, Paragraph 95.

43 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.

44 McKenzie and Partington, Equity market risk premium, December 2011, p. 25.

45 Partington and Satchell, Report to the AER: Discussion of Estimates of the Return on Equity, April 2017.

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

- Selected a point estimate of 7.4% - effectively placing 59% weight on the DGM evidence.

82. As Table 7.3 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 59% of the weight to that evidence when selecting its final point estimate.

Table 7.3: Evidence of ERA recognising concerns about the DGM in June 2016 DBP decision

DRAFT RATE OF RETURN GUIDELINE(JUNE 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 years	"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

83. In its draft decision for Western Power dated 2 May 2018, the ERA applied essentially the same approach to estimating the market risk premium as it did in the DBP decision, but arriving at a point estimate of 6.2 percent, from within a range of 5.6 percent to 7.6 percent (the upper bound based on its dividend growth model estimate). However, in its recent final decision for Western Power dated 20 September 2018, the ERA determined a market risk premium point estimate of 6.0 percent despite there being no material new evidence. In fact, the ERA's historical market risk premium of 5.7 percent is an increase on the draft decision estimate of 5.6 percent. In the Western Power final decision dated 20 September 2018, the ERA no longer sets out clearly the range from which its point estimate for the market risk premium is derived.

It appears the dividend growth model estimate no longer forms the upper bound of any range (although the estimate appears to remain at 7.6 percent) and the ERA now places even less weight on the dividend growth model estimate because it says that it has diminished confidence in the model. However, the only real new piece of information that appears to have caused this result is that the AER does not propose to use the dividend growth model to directly inform its market risk premium estimate.[47] The ERA otherwise appears to accept ATCO's submission that some of its concerns with the dividend growth model are not new, but says that new information, submissions and further advice have "better raised" these weaknesses[48]. ATCO's position is that this is not a sufficient reason to now place practically no weight on the dividend growth model as it effectively ignores a relevant estimation method and results in an estimate that does not incorporate the prevailing conditions in the market for equity funds for the forthcoming period.

84. ATCO considers that the draft Guidelines concerns around the weaknesses of the form of the DGM can be addressed as follows:

- **Best form of the dividend growth model –** the Guidelines should adopt the two-stage dividend growth model preferred by the ERA[49]
- **Input assumptions –** the Guidelines should adopt a point estimate of 4.6% for the long-term growth rate of nominal dividends per share based on the analysis by Dr Lally preferred by the ERA[50]

85. ATCO submits that the Guidelines must place material weight on the DGM estimate as there is no new evidence to suggest it is not relevant evidence that can be relied upon, with other evidence, to derive an estimate of the market risk premium. Placing material weight on the DGM estimates recognises that the market risk premium is a forward-looking estimate and is necessary in order for service providers to be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in providing reference services. This is because otherwise the resulting return on equity will not be sufficient to cover the return required by equity investors over the forthcoming period.

86. ATCO considers that the evidence of the weights adopted by the ERA in past determinations suggest that a 50% weight could reasonably be applied to the DGM estimate in the Guidelines. This will result in the Guidelines placing material weight but less reliance on the DGM than in the majority of the ERA's decisions since 2013.

87. Applying a 50% weight would result in a market risk premium estimate that has regard to all relevant estimates, the prevailing conditions in equity markets and accordingly gives rise to the best empirical estimate of the market risk premium, necessary for the achievement of the National Gas Objective. As these requirements exist in the current rate of return framework and the new binding guideline framework, this approach is consistent with both.

7.3.3 MRP under a binding guideline

88. In the event that a binding rate of return framework is introduced, the ERA is considering, and seeking stakeholder comment, on three options to determine the market risk premium for the binding instrument. These options include:

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47 Economic Regulation Authority, Western Power Final Decision – Appendix 5 Return on Regulated Asset Base September 2018, paragraph 355.

48 Ibid at paragraph 358.

49 Economic Regulation Authority, Explanatory Statement for the Rate of Return Guideline, 16 December 2013, Paragraph 611.

50 Economic Regulation Authority, Explanatory Statement for the Rate of Return Guideline, 16 December 2013, Paragraph 612-614.

1. initial regulatory discretion and then fixed for the period – it appears that this approach would result in the ERA using its current approach (eg in the Western Power final decision dated 20 September 2018 noted above), using discretion to choose a point estimate which is fixed for the period of the Guideline;
2. a mechanistic approach - applying a fixed weight to the historic market risk premium and the DGM; and
3. a historical approach – relying solely on historical market risk premium estimates.

89. ATCO supports option 2, the ERA applying a mechanistic approach to estimating the market risk premium at each determination. As the ERA notes, a binding rate of return legislation would require the removal of regulatory discretion.[51] Under these circumstances, ATCO considers that it would be appropriate to assign fixed, pre-specified weights to the historical excess returns and to the dividend growth model, when determining a final point estimate for the market risk premium.

90. Under a mechanistic approach to estimating the market risk premium, weightings must be applied to the two approaches for estimating the market risk premium—historical excess returns and the dividend growth model— as they have their own strengths and weaknesses.

- The Ibbotson approach to estimating historical excess returns is relatively simple to implement and is well-accepted by practitioners, including some regulators. However, average historical excess returns are unlikely to reflect the prevailing market conditions for funds unless prevailing market conditions happen to correspond to 'average' or 'normal' market conditions. Historical average excess returns would be a suitable method for estimating the market risk premium if the objective was to estimate the return required by equity investors over the very long-run (e.g., 100+ years). However, that is not the regulatory task. The regulatory task is to estimate a rate of return that reflects the prevailing conditions in the market for equity funds.
- The dividend growth model is more likely to reflect prevailing market conditions than the Ibbotson approach. However, the ERA has expressed concerns about some of the limitations of the dividend growth model approach.

91. Given that neither of these approaches is ideal, and that both likely have useful and relevant information to contribute to a robust estimate of the market risk premium, ATCO submits that the Guidelines must give equal weight to both approaches. In other words, ATCO considers that the Guidelines should mechanistically determine the market risk premium as the mid-point between the arithmetic mean of the historical excess returns and the dividend growth model estimates through the following formula:

$$MRP = \frac{HER_{arithmetic} + DGM}{2}$$

where

MRP is the market risk premium point estimate;
$HER_{arithmetic}$ is the estimate of the market risk premium derived using the arithmetic mean of historical excess returns; and
DGM is the dividend growth model estimate of the market risk premium.

92. The benefit of this approach is that it equally acknowledges both the historical excess returns and the dividend growth model as relevant evidence. A market risk premium estimated in this way will allow reference tariffs to provide a return commensurate with the regulatory and commercial risks involved in providing reference services as it gives appropriate material weight to estimates of a forward-looking return that is commensurate with the prevailing conditions in financial markets.

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[51] Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 659

93. The above approach to estimating the market risk premium can be applied automatically without the exercise of discretion, as required by the proposed legislative changes to give effect to a binding Rate of Return Guideline.

94. Based on the information available at the time of publication of the draft Guidelines, the mechanistic calculation of the market risk premium using the approach presented above results in an estimate of 6.9%.

95. In contrast, option 1, which is essentially the ERA's current approach fixed over the period of the Guidelines, if currently applied appears to result in very little weight being given to the DGM (as per the recent Western Power decision). For the reasons set out above, this approach would not have adequate regard to all the evidence and fail to give prevailing estimates a sufficient role. The ERA has not made clear how it would apply option 1 in order to meet the binding Guideline framework. In order to ensure procedural fairness, if this approach was to be pursued a further round of consultation prior to the final Guideline would be necessary.

96. Option 3 relies entirely on the historic market risk premium estimate. This approach gives no weight to the DGM evidence, contrary to the requirement under the new binding guideline framework to have regard to all the relevant evidence as well as prevailing conditions in equity markets. Reliance on this single piece of historic information would not give rise to the best estimate and therefore is not capable of contributing to the achievement of the National Gas Objective to the greatest degree and should not be used.

7.3.4 Considerations in estimating a market risk premium that best contributes to the NGO

97. In order to promote the National Gas Objective ATCO, as a service provider, must have a reasonable opportunity that costs efficiently incurred – including a return on its capital costs – will be recovered over the life of the investment.[52]

98. ATCO submits that there are five factors to consider when selecting an approach to estimating a market risk premium that best contributes to the National Gas Objective:

1. Stability of estimates over time

a) ATCO's proposed method of applying a 50% weighting to the historical excess returns and 50% weighting to the dividend growth model will provide for stability in the estimates of the market risk premium over time.

b) Including an estimate of the historical market risk premium based on the a most conservative estimate will result in a stable estimate of the historical excess returns as this dataset is not expected to vary significantly over time

c) Including the dividend growth model estimate of the market risk premium, with a 50% weighting, will dampen the effect of any movement in the forward looking estimate.

d) The alternate approaches proposed by the ERA are more likely to produce volatile estimates of the market risk premium when the guideline is periodically updated compared to re-estimating at each determination. This would be inconsistent with the principles of regulatory certainty and stability. Regulatory certainty and stability are important because they promote efficient investment in, and efficient operation and use of, natural gas services by the service provider for the long term interests of consumers of natural gas.

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52 HoustonKemp, Economic Review of the ERA's Draft Decision, 27 November 2014, pg 7

2. Transparency and repeatability of approach

a) The process to estimate market risk premium should be transparent and repeatable by all stakeholders.

b) The method proposed by ATCO is a relatively simple process that is transparent, well understood, and repeatable.

3. Use of publicly available data sources and the minimum number of variables

a) The estimate of market risk premium should be based on publically available information. The method proposed by ATCO adopts data that is well understood and includes the minimum number of variables that are needed to reliably estimate the market risk premium.

b) Applying an equal weighting to the historical excess returns and the dividend growth model reduces the overall estimation error in the estimate of market risk premium.

4. Internal consistency

a) The estimate of market risk premium should be estimated in an internally consistent manner.

b) The market risk premium is a forward looking estimate which cannot be observed directly, it needs to be estimated As the purpose of the Sharpe-Lintner CAPM is to estimate the expected return, in order to be consistent the market risk premium must include the expectations of the market through the application of a material weight to the dividend growth model.

c) Applying material weight to the dividend growth model will result in an estimate of the market risk premium that is commensurate with the prevailing conditions in financial markets.

5. Best estimate

a) If the estimate of the market risk premium is consistent with the above principles, it will give rise to the best possible estimate, provide the service provider with the opportunity to recover at least efficient costs, ensure confidence and stability, thereby contributing to the achievement of the National Gas Objective by encouraging efficient investment.

99. ATCO considers that its proposed method to estimate the market risk premium and the weighting proposed by ATCO best meets the National Gas Objective compared to the two other alternate methods proposed by the ERA.

100. Applying any other method, or any lesser weight than proposed by ATCO to the dividend growth model, in estimating the market risk premium will not promote efficient investment in network infrastructure, in terms of dynamic efficiency and allocative efficiency, which will not be in the long term interests of consumers of natural gas.

7.4 Equity beta

101. The draft Rate of Return Guidelines specifies a value of 0.7 of the equity beta fixed over the period of the Guidelines.

102. ATCO understands that the estimate of the equity beta has been determined using the methods set out in Henry's advice to the Australian Competition and Consumer Commission in 2009 to define the equity beta estimation approach. The ERA has used data for firms meeting its criteria for a benchmark efficient

firm, which are publicly traded and have available data. The four available sample companies are APA Group, DUET Group, SP AusNet and Spark Infrastructure.[53]

103. ATCO notes that the ERA's estimate of beta may be conservative because:

- if DUET Group were omitted, or given less weight (because it is the only firm that is no longer listed, and therefore contributes no new information on the prevailing conditions in the market for equity funds) then the beta estimate would increase materially;
- if the ERA were to expand the set of comparator firms beyond the current four domestic comparators, the estimate of beta would increase; and
- If the ERA were to give any weight to the low-beta bias problem,[54] which the ERA had regard to in the 2013 Guidelines, the beta estimate would increase.

104. Over time the degree of risk faced by a 'pure play' gas distribution business may increase relative to a pure play electricity networks due to the increasing contestability of gas connection points and appliances. ATCO considers that in the future this may manifest in a different beta for gas distribution networks relative to gas transmission and electricity networks.

105. ATCO accepts the draft Guidelines estimate of the equity beta on the basis that it was estimated consistent with the method adopted in ATCO's AA4 Final Decision and therefore promotes regulatory certainty and stability. It will also will allow reference tariffs to provide a return commensurate with the regulatory and commercial risks involved in providing reference services, consistent with the revenue and pricing principles and necessary in order to contribute to the National Gas Objective to the greatest degree.[55]

53 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 690-692

54 The 'low-beta bias' problem relates to the well documented phenomenon that econometric estimates of the Sharpe-Lintner Capital Asset Pricing Model tend to be understated for stocks with beta estimates less than the market average of 1.

55 Section 24(5) of the National Gas Law

8. Gamma

Draft Rate of Return Guideline

The ERA determines gamma through the Monkhouse formula as the product of the distribution rate and utilisation rate. The distribution rate and utilisation rate are separately estimated.

In estimating the distribution rate, the ERA relies on Dr Lally's estimate of 0.83 for the distribution rate from financial reports of the 20 largest ASX-listed firms.

In estimating the utilisation rate, the ERA relies on the equity ownership approach to determine the percentage of domestic investors in the Australian equity market. The utilisation rate is estimated for all Australian equity from the National Accounts of the Australian Bureau of Statistics (ABS). The ERA considers that an utilisation rate of 0.60 is appropriate.

The ERA estimates gamma as the product of the distribution rate and the utilisation rate to provide a gamma of 0.5.

This gamma value will be fixed over the period of the guidelines.

ATCO's response:

The appropriate value of gamma is 0.34 determined using ATO tax statistics. The ATO tax statistics approach and the 0.34 estimate best contribute to the National Gas Objective.

8.1 Method

106. Under the draft Guidelines gamma has been estimated by applying the Monkhouse formula, as follows:

$$gamma = distribution\ rate \times utilisation\ rate$$

where

the distribution rate has been estimated from 20 listed firms by Dr Lally; and

the utilisation rate has been estimate based on the equity share ownership approach.

107. In contrast to the 2013 Guidelines, the draft Guidelines do not rely on dividend drop off studies or tax statistics to estimate gamma.

108. The draft Guidelines estimates gamma at 0.5, calculated as the product of a distribution rate of 0.83 (Dr Lally's estimate based on the 20 largest ASX listed firms) and an utilisation rate of 0.60 (using the equity share ownership approach).

109. ATCO does not consider the ERA's estimate under the draft Guidelines gives rise to the best estimate of gamma because:

1. The distribution rate of 0.83 does not reflect an estimate consistent with the benchmark efficient entity and there are several unresolved issues with the estimates provided by Dr Lally.
2. In respect of the equity ownership estimate of 0.60, the data upon which this estimate is based (ABS data) is subject to quality warnings by the ABS and is subject to several discrepancies.
3. It is an internally inconsistent approach that involves estimating the proportion of credits that are distributed to one group of shareholders and the proportion that are redeemed by an entirely different group of shareholders. This is inconsistent with the 'cash flow' interpretation of gamma.

110. Estimating gamma using different and inconsistent approaches and data for the two components does not result in an appropriate or best estimate of gamma consistent with the National Gas Objective and the Revenue and Pricing Principles. ATCO's position on each of the components of gamma is detailed in sections 8.2 and 8.3.

111. ATCO considers the Guidelines can be improved by instead determining the estimate of gamma from aggregate tax statistics data published by the ATO. This method calculates gamma directly 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:

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

112. This approach has three benefits:

- It obviates the need to estimate separately the distribution rate and the utilisation rate, thereby simplifying the estimation process considerably;
- It avoids significant matters of contention that surround the estimation of these individual parameters; and
- By making use of ATO tax statistics data, it provides a direct estimate of gamma that reflects the actual behaviour of investors eligible to redeem tax credits in Australia.

113. The use of aggregate tax statistics data published by the ATO is discussed further in section 8.4.

8.2 Distribution rate

114. Under the draft Guidelines the distribution rate has been estimated using the equity ownership approach for listed equity from Dr Lally. The draft Guidelines have adopted an estimate of the distribution rate of 0.83 from the 20 largest ASX-listed firms.[56] The draft Guidelines recognise that the distribution rate is a firm-specific parameter but favours the use of market-wide data to estimate this parameter.[57]

115. In contrast, under the previous Guidelines distribution rates were estimated using tax statistics data for all equity.

116. ATCO understands that the estimates of the distribution rate from the 20 largest ASX-listed firms are based primarily on the change in the franking account balance (FAB) over a period, as reported by each firm. The approach is based on a comparison of credits distributed (as attached to dividends) with the change in the reported franking account balance (FAB) over the relevant period. Given that the ATO has stated that the integrity of the franking account balance label can be considered low[58] the approach to estimating the distribution rate adopted in the draft Guidelines is seriously undermined. The attached Frontier Economics report highlights three problems with the use of this FAB data:

- The ATO queries the veracity of the FAB information reported by companies because it has no effect on tax paid, and it does not appear in the financial accounts of a company – it is only an 'information field' reported as a note;

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56 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 854-855

57 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 835, 841

58 ATO, ATO note to the AER regarding imputation, 9 May 2018

- The ATO has highlighted the 'dynamic nature' of the imputation system so that events in one year can have an effect on the FAB in another year. For example, Frontier provide examples of AGL and AusNet Services recording large tax refunds that reduce the FAB, but which are recorded as distributions to shareholders under the Dr Lally method; and
- The FAB method implies that every reduction in the FAB involves a distribution of credits to shareholders, but this is not the case. The Frontier report cites the BHP dividend equalisation scheme as a material example in this regard.

117. In addition, ATCO considers that the 20 largest ASX-listed firms are not relevant 'comparator' entities for the benchmark efficient entity. The 20 largest ASX-listed firms are not representative of the benchmark efficient entity. The sample of 20 firms used by the ERA to estimate the distribution rate has been selected simply on the basis of size. However, size is not a characteristic that is relevant to the credit distribution rate of the benchmark efficient entity. The two characteristics that are relevant are the proportion of foreign profits and the dividend payout rate:

- The sample of 20 firms differs materially from the benchmark efficient entity in respect of foreign profits, because the 20 firms have material foreign profits and the benchmark efficient entity is assumed to operate wholly within Australia, so has no foreign profits, by definition; and
- As the ERA itself has recognised in recent decisions, the sample of 20 firms has a wide range of dividend payout rates. Hence, whatever the dividend payout rate for the benchmark efficient entity, it is not possible that all 20 firms would provide an appropriate match.

118. ATCO submits that the Guidelines do not need to separately estimate a distribution rate and should instead adopt the ATO tax statistics method to directly estimate gamma. This approach would provide a direct estimate of gamma that is consistent with the ERA's 'cash flow' interpretation of gamma.

119. We note that the ERA's Final Decision for Western Power dated 20 September 2018 includes a further new report from Dr Lally, said to be in response to ATCO's submissions in that process and the Frontier Economics report.[59] The new report was published on 20 September 2018, only a little over a week before this submission is due to be filed. Accordingly ATCO has not had sufficient time to consider and respond to the new report. We assume the ERA will seek to rely on the new report from Dr Lally in the Guideline review. Further consultation in respect of these matters should be provided for if there is to be confidence and transparency in the final Guideline.

8.3 Utilisation rate (theta)

120. Under the draft Guidelines the utilisation rate has been estimated only using the equity ownership approach from Australian Bureau of Statistics (ABS) data, and using only data for all equity. The draft Guidelines have adopted an estimate of the utilisation rate of 60% favoured by Dr Lally.[60] The draft Guidelines adopt a market-wide estimate using data for all equity and disregarding data for listed equity.

121. In contrast, under the previous Guidelines the utilisation rate was estimated using dividend drop off studies methods.

122. ATCO has concerns about the reliability of the equity ownership approach and the quality of the underlying ABS data used to construct equity ownership estimates of gamma.

[59] Dr Martin Lally: *"Review of Frontier's Gamma Submissions"* 7 September 2018.

[60] Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 878.

123. In ATCO's view, while the equity ownership approach (at best) captures the effect of non-residents, it does not reflect the many other reasons why tax credits might not be redeemed by investors in Australia. As a result, if credits are not redeemed for any reason other than it being distributed to a non-resident, the equity ownership estimate will overstate the utilisation rate.

124. 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 because some domestic investors that receive tax credits will be prevented from redeeming those credits by the 45-day rule.

125. 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.*[61]

126. The draft Guidelines place sole reliance on the equity ownership approach to estimate the utilisation rate.[62] Given the data quality concerns, ATCO submits that the Guidelines should not adopt the estimate of the utilisation rate from ABS data to estimate gamma. ATCO submits further that the Guidelines do not require an estimate of the utilisation rate in order to estimate the value of gamma. Rather, gamma may be estimated directly and reliably (without estimating the utilisation rate) using the ATO tax statistics.

127. ATCO acknowledges that the ERA requires an estimate of the utilisation rate as a component of the process for estimating the market risk premium. This can be done with the ATO tax statistics using the

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61 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=.

62 Economic Regulation Authority, Draft Explanatory Statement for the Rate of Return Guidelines (2018), 29 June 2018, Para 896 &911

'dividend' method for estimating the distribution rate.[63] The ATO has indicated that the 'dividend' method is preferred to the 'FAB' method for estimating the distribution rate. Thus, gamma can be estimated without having to separately estimate the distribution and utilisation rates, and where a distribution rate is required (for the market risk premium), the same data source can be used for that purpose, employing the ATO's preferred method.

8.4 ATO tax statistics

128. ATCO supports the tax statistics approach as the best, and most direct, method for estimating a 'utilisation' gamma. ATCO submits that this approach be should be used to estimate gamma in the Guidelines.

129. ATCO's position is supported by the attached report from Frontier Economics, which ATCO commissioned to set out the best estimate of gamma under an 'utilisation' interpretation of gamma.

130. ATCO understands that in estimating 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's 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. [64]*

131. Hathaway goes on to conclude that the ATO tax statistics can "clearly" be used to provide a reliable utilisation estimate of gamma.[65]

132. ATCO understands that in response to an ATO note published by the Australian Energy Regulator on 9 May 2018, Hathaway has subsequently considered if the new material commissioned by the Australian Energy Regulator has led him to change his view. In June 2018, Hathaway confirmed that a utilisation gamma can be estimated as the ratio of credits redeemed to credits created from ATO tax statistics.[66] (For ease of reference copies of the notes prepared by Dr Hathaway for the ENA are also attached to this submission at Attachment 3).

133. ATCO submits that the ATO's concerns with the use of tax statistics in time series analysis for gamma are not a relevant factor for disregarding the use of the ATO tax statistics. Hathaway has noted that similar concerns exist for nearly all finance and economic data.[67] The ATO are the primary source of the imputation tax statistics and there is no other source of the data.

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63 Two methods have been proposed for estimating the distribution rate from the ATO tax statistics data base. The 'dividend' approach estimates credits distributed from information about corporate dividends paid over the relevant period and the 'franking account balance' or 'FAB' approach is based on changes in the aggregate franking account balance over the relevant period. The FAB approach is regarded as producing less reliable estimates, so the dividend approach should be used when estimating the distribution rate.

64 Hathaway, N., Capital Research Memorandum, 12 December 2017, pg 1, Available from: https://www.aer.gov.au/system/files/Energy%20Networks%20Association%20-%20submission%20on%20rate%20of%20return%20issues%20paper%20-%2012%20December%202017%20-%20Attachment%20C%20-%20Letter%20-%20Dr%20Neville%20Hathaway%20-%20Tax%20Statistics.pdf

65 Hathaway, N., Capital Research Memorandum, 12 December 2017, pg 2

66 Hathaway, N., Capital Research Memorandum, 28 June 2018, Available from: https://www.aer.gov.au/system/files/ENA%20-%20Capital%20Research%20Memorandum%20-%2028%20June%202018.pdf

67 Ibid as page 6

134. The draft Guidelines do not consider this new material in the assessment of the ATO tax statistics due to the timing of the release of the draft Guidelines and the publication of this new information. ATCO submits that this is relevant information that should be considered by the ERA before the Guidelines are finalised.

135. ATCO accepts that there are two minor issues in relation to the credits created field because some tax paid does not create imputation credits due to it being paid by non-resident companies and because the ATO reports tax 'owed' and some taxpayers may default on that obligation. However, Hathaway's June 2018 memorandum confirms that these two issues are very minor and immaterial.

8.5 Considerations in selecting a gamma that best contributes to the NGO

136. ATCO submits that there are five factors to consider when selecting an approach to estimating a gamma that best contributes to the National Gas Objective:

1. Stability of estimates over time

a) It is highly unlikely that the true gamma changes materially over short periods of time. Consequently, an estimation approach that produces materially different estimates over short periods is unlikely to be appropriate.

b) An approach that produces volatile estimates of gamma would also be inconsistent with the principles of regulatory certainty and stability. Regulatory certainty and stability are important because they promote efficient investment in, and efficient operation and use of, natural gas services by the service provider for the long term interests of consumers of natural gas.

c) The ATO tax statistics approach produces stable direct estimates of gamma over time.

d) The Dr Lally 20 firms estimate varies materially depending on the time period adopted for the analysis:

i) 2000 – 2013 – distribution rate = 83%

ii) 2000 – 2017 – distribution rate = 88%

and this variation is further compounded when the distribution rate is multiplied by an equity ownership estimate that also varies very materially over time, and which has been backwardly revised by the ABS.

e) Dr Lally's assessment of the movement in the energy network businesses franking account balances varies dramatically depending on the start and end years selected.

2. Transparency and repeatability of approach

a) The process to estimate gamma should be transparent and repeatable by all stakeholders.

b) The analysis of the top 20 firms and the energy network businesses franking account balances is a complex process, requiring assumptions and expert judgement.

c) The ATO estimate is a relatively simple process that is transparent, well understood, and repeatable.

3. Use of publicly available data sources and the minimum number of variables

a) The estimate of gamma should be based on publically available information.

b) Direct estimates should be preferred to estimates that require more separate parameters to be estimated because every additional parameter is affected by further estimation error.

c) The fewer variables that are needed to estimate gamma reduces the overall estimation error in the estimate of gamma.

4. Internal consistency

a) The estimate of gamma should be estimated in an internally consistent manner.

b) Under the 'cash flow' approach, gamma is the proportion of credits created by the benchmark efficient entity that are redeemed by its shareholders. However, the draft Guidelines propose that the distribution rate should be estimated with reference to one group of shareholders (20 large firms) and the utilisation rate should be estimated with reference of a different group of shareholders (all equity, including unlisted firms).

5. Best estimate

If the estimate of gamma is consistent with the above principles, it will give rise to the best possible estimate of gamma, will provide the service provider with the opportunity to recover at least efficient costs, and provide confidence and regulatory stability, thereby contributing to the achievement of the National Gas Objective by encouraging efficient investment.

137. ATCO submits that the internal consistency principle is particularly important under the 'cash flow' interpretation to gamma. The attached Frontier Economics report notes that the 'cash flow' or 'utilisation' interpretation of gamma seeks to determine how much of the corporate tax paid by the benchmark efficient entity will be returned to its shareholders via the redemption of imputation credits. This interpretation requires consistent estimation of the distribution rate and the utilisation rate. That is, some proportion of credits will be distributed to the benchmark efficient entity shareholders, who will then redeem some of those credits. The corporate tax allowance is then reduced by the amount of credits that are redeemed back by the benchmark efficient entity shareholders.

138. Under the 'cash flow' interpretation of gamma it would make little sense to take the proportion of credits distributed to the benchmark efficient entity shareholders and to pair that with the proportion of credits redeemed by some *other* group of shareholders. Estimating the proportion of credits that are distributed to one group of shareholders and the proportion that are redeemed by an entirely different group of shareholders is inconsistent with the 'cash flow' interpretation of gamma.

139. ATCO notes that the 'cash flow' interpretation of gamma is materially different from the 'market value' interpretation that the ERA adopted in its 2013 Guideline. Under the 'market value' interpretation, theta is interpreted as the equilibrium market value of a credit. This is a market wide parameter, because the equilibrium market value is independent of which firm provided it. By contrast, the 'cash flow' interpretation of gamma that the ERA now proposes seeks to estimate the proportion of credits created by the benchmark efficient entity that will be redeemed by its shareholders. This requires that the distribution rate and the utilisation rate must both be estimated with regard to the same benchmark efficient entity.

140. The attached Frontier Economics report notes that the cash flow interpretation of gamma can be implemented either by:

- Using the 'all equity' sample to proxy for the benchmark efficient entity, in which case gamma can be estimated directly from ATO tax statistics as the ratio of credits redeemed to credits created. This approach produces an estimate of gamma of 0.34; or

- Using the listed equity sample to proxy for the benchmark efficient entity, in which case gamma can be estimated as the product of a distribution rate (estimated using the Dr Lally 20-firms approach or some other approach using a broader sample of listed equity) and the equity ownership approach for listed equity. This approach produces an estimate of 0.39[68], which we consider to be an upper bound on the value of gamma. The 20-firms estimate for listed equity is an upper bound because the FAB can fall for reasons other than the distribution of credits to shareholders. The equity ownership estimate for listed equity is an upper bound because resident investors do not (and cannot) redeem all of the credits that they receive.

141. Thus, for listed equity, the evidence supports a gamma range of 0.34 to 0.39.[69]

142. ATCO submits that gamma should not be estimated using the listed equity sample as a proxy for the benchmark efficient entity and therefore the 0.39 upper bound should be discounted. The 20 largest ASX-listed firms are not representative of the benchmark efficient entity. The sample of 20 firms have simply been selected on the basis of size. However, size is not a characteristic that is a relevant factor for the benchmark efficient entity. Characteristics that are relevant include the proportion of foreign profits and the dividend payout rate:

- The sample of 20 firms differs materially from the benchmark efficient entity in respect of foreign profits, because the 20 firms have material foreign profits and the benchmark efficient entity is assumed to operate wholly within Australia, so has no foreign profits, by definition; and
- As the ERA itself has recognised in recent decisions, the sample of 20 firms has a wide range of dividend payout rates. Hence, whatever the dividend payout rate for the benchmark efficient entity, it is not possible that all 20 firms would provide an appropriate match.

143. Estimating gamma using listed equity would not allow investors to recover the cost of corporate income tax and does not best meet the National Gas Objective. This approach will not promote efficient investment in network infrastructure, in terms of dynamic efficiency and allocative efficiency, which will not be in the long term interests of consumers of natural gas.

144. ATCO submits that gamma should be estimated directly from ATO data. This approach produces stable estimates over time, it is transparent and repeatable, it uses publicly available data that is easy to access, it provides a direct estimate from a single source of data, it does not require the separate estimation of the distribution rate, and is internally consistent. This approach is consistent with all of the principles set out above for the following reasons:

- The ATO method is least subject to estimation error and further does not rely on a particular data set or point of view relating to a specific item of research not easily able to be replicated by those affected by the value chosen
- The distribution rate, nor the utilisation rate, the subject of differing estimates depending on the study used, do not have to be estimated
- The data used, imputation credits created and imputation credits redeemed can be directly observed
- Although the ATO has warned about the use of franking account balance data the same issue does not apply to credits created and redeemed.

145. ATCO considers that this approach best meets the National Gas Objective.

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68 This is based on pairing the Lally 83% distribution rate with the equity ownership utilisation rate estimate of 47% for listed equity, producing a gamma of 0.39.

69 Frontier Economics, The 'utilisation' estimate of gamma, August 2018, Para 167

146. ATCO considers that this approach also allows for the ERA to estimate the utilisation rate for the purposes of estimating the market risk premium using the 'dividend' method, employing the ATO's preferred method.

147. Under the ATO tax statistics method, gamma is estimated directly 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. ATCO considers that the Guidelines should adopt this value and fix it until the next review of the Guidelines.

8.6 Dealing with a possible change in tax law

148. ATCO is mindful that the federal Labor Party has announced proposed changes to the imputation tax system if elected. As we understand it, the proposed changes would have the effect of making the equity ownership approach inappropriate to use to estimate gamma, because the changes will result in certain equity holders no longer being able to utilise imputation credits.[70]

149. ATCO's proposed access undertaking submitted on 31 August 2018 already has in place a reference tariff variation mechanism which includes change in law provisions[71]. However, the final Guideline is expected to be binding. ATCO submits that the final Guidelines should set out how the estimate of gamma will be changed if the equity ownership approach becomes inappropriate due to the proposed change in tax law. This will need to be done in a way that complies with the proposed binding Guideline legislation, with no exercise of any discretion by the ERA at a later time and have the effect of applying automatically on the change in law occurring, and if necessary utilising the tariff variation mechanism to implement.

[70] http://www.billshorten.com.au/a_fairer_tax_system_dividend_imputation_reform_tuesday_13_march_2018

[71] Annexure B to ATCO's Access Arrangement Revision Proposal submitted on 31 August 2018.

9. Independent Panel Review

150. The ERA has commissioned an independent panel to prepare a report on its first Rate of Return instrument. The independent panel has been asked to review the ERA's draft Guidelines and "*report on whether they are supported by sound reasoning and are capable of achieving the National Gas Objective*".

151. At the time of lodging this submission, the Independent Panel's report has not been published. The independent panel process is said to give the ERA the benefit of an independent review, and provide stakeholders with further confidence that the ERA's findings are robust. In order to provide procedural fairness, stakeholders should be given an opportunity to comment on the Independent Panel's report prior to the ERA making its final Guidelines and we would encourage the ERA to provide that opportunity as soon as that is possible.

ATTACHMENT 2: THE 'UTILISATION' ESTIMATE OF GAMMA

FRONTIER ECONOMICS

EIM# 97444633

PUBLIC

28 September 2018

The ‘utilisation’ estimate of gamma

REPORT PREPARED FOR ATCO GAS AUSTRALIA

August 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' or 'cash flow' 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, and the approach laid out in the Draft Rate of Return Guideline, 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 (i.e., the amount investors would pay to purchase an imputation credit) and sought an estimate that was consistent with that definition. This approach was adopted because, under the regulatory model, the return to shareholders is reduced by the estimated "value" of imputation credits. If a credit is worth $X to shareholders, the allowed return can be reduced by $X.

4 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] This 'cash flow' or 'utilisation' interpretation of gamma seeks to determine how much of the corporate tax paid by the BEE will be returned to its shareholders via the redemption of imputation credits. In my view, this interpretation requires consistent estimation of the distribution rate and the utilisation rate. That is, some proportion of credits will be distributed to the BEE shareholders, who will then redeem some of those credits. The corporate tax allowance is then reduced by the amount of credits that are redeemed back by the BEE shareholders.

5 Under the 'cash flow' interpretation of gamma it would make little sense to take the proportion of credits distributed to the BEE shareholders and to pair that with the proportion of credits redeemed by some *other* group of shareholders.

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

6 The ERA's Draft Guideline concludes that listed equity represents the most suitable estimate of the BEE.[2] Consequently, it would follow that the 'cash flow' estimate of gamma would be based on the proportion of credits distributed to and redeemed by shareholders in listed firms. This would involve pairing the Lally 83% distribution rate[3] with the equity ownership estimate of 47% for listed equity, producing a gamma of 0.39.[4]

7 Alternatively, one may reach the conclusion that the BEE is better represented by all equity. For example, the Draft Guideline specifically notes that "some regulated businesses are unlisted."[5] In this case, the best estimate of gamma would be the direct estimate of 0.34 from tax statistics. This approach has the great benefit of not requiring any estimate of the contentious distribution rate because it can be computed directly from 'credits created' and 'credits redeemed.'

8 That is, under the cash flow approach, to gamma, one seeks to estimate how much of the corporate tax paid by the BEE will be returned to its shareholders via the redemption of imputation credits – so that the corporate tax allowance can be reduced by that amount. This requires a decision to be made about what group best represents the shareholders of the BEE, such that the proportion of tax redeemed by that group can be estimated in an internally consistent manner.

9 I also conclude that there are material concerns about some of the evidence that the ERA has relied upon:

a. In Section 4 of this report, I 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 0 of this report, I conclude that the equity ownership estimates should not be relied upon because:

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[2] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, Paragraphs, 852 – 854.

[3] If the ERA maintains confidence in that estimate in spite of the issues set out in Section 4 of this report. Alternatively a lower estimate could be adopted, as set out in Section 2.3.2.

[4] Or less, if a lower estimate of the distribution rate is used.

[5] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, Paragraphs, 875.

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 I 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

10 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.

11 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

12 I 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."

13 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*. This is an estimate of the amount shareholders would be prepared to pay to purchase a credit. 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*.[6] This is an estimate of the proportion of corporate tax paid that is returned to the shareholders via the redemption of credits. 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.

14 Whereas the market value approach seeks to estimate the amount that investors would be prepared to pay to purchase an imputation credit, the 'utilisation' or 'cash flow' approach seeks to estimate the proportion of credits that will be utilised or redeemed.

15 The AER developed the 'utilisation/cash flow' approach to gamma in its 2013 Guideline materials, stating that:

> 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.[7]

16 In the AER's recent concurrent evidence sessions, the experts agreed that the AER's approach to gamma is not consistent with any equilibrium asset pricing

[6] Or 'redemption proportion.'

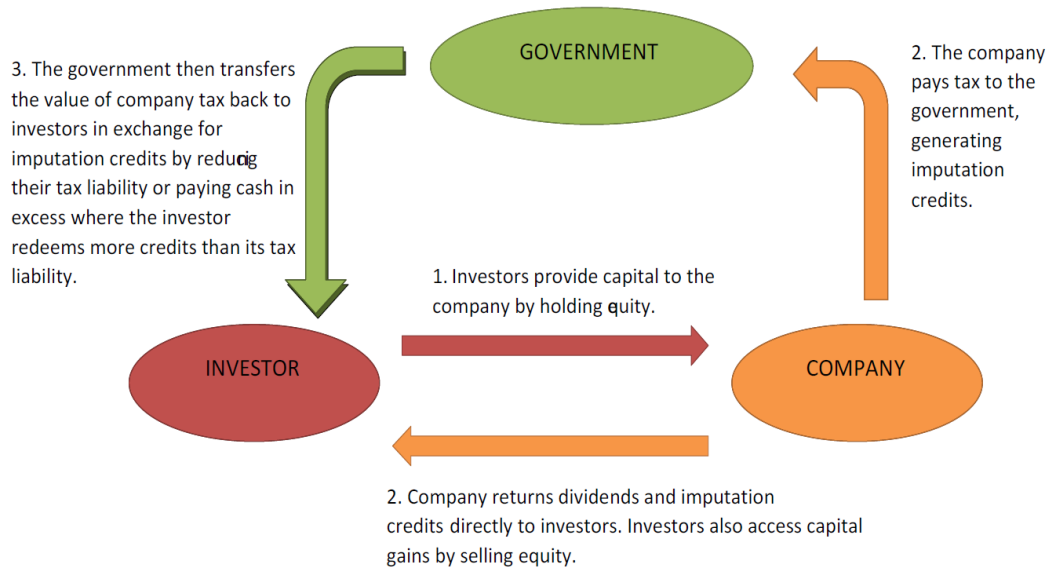
[7] AER, December 2013, Rate of Return Guideline: Explanatory Statement, *Accounting and Finance* 52(1), p. 158.

model.[8] Consequently, there is no model or theory to guide the estimation. Rather, gamma is simply defined to be the proportion of company tax which is returned to investors through the utilisation of imputation credits.

17 Under the AER's definition of gamma, which the ERA now follows, what is relevant is the proportion of company tax paid by the BEE that will be redeemed against the personal tax obligations of its shareholders. The AER documents this 'cash flow' interpretation of gamma in the 2013 Guideline, as shown in Figure 1 below. The AER demonstrates that it is the ability of shareholders in the BEE to redeem credits that underpins its cash flow definition of gamma. In particular, the figure shows that what is relevant is the utilisation of credits by the same investor that provides capital to the regulated firm.

Figure 1: AER 'cash flow' interpretation of gamma

Figure H.1 How imputation credits become a return to investors



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

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

19 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' or 'cash flow' interpretation of gamma, falling in line with the AER on this point.

[8] Joint Experts' Report, Proposition 7.02, pp. 69-70.

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

2.2 Two approaches to estimating gamma under a utilisation rate interpretation

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

a. *The ATO tax statistics approach.* This approach uses aggregate tax statistics data published by the ATO to calculate gamma directly 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 to estimating gamma

2.3.1 The ERA's approach prior to the 2018 Draft Guideline

22 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

23 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:

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

24 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.

25 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.[9]

26 The ERA notes that the ATO data establishes a range for the distribution rate of 50% to 70%,[10] 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,[11]

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.[12]

27 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:

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

28 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:

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

29 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.

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

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

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

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

20 largest companies – the listed equity distribution rate

30 The ERA adopts an estimate of 80% for the distribution rate in relation to listed equity.[13] This figure is informed by a range of estimates that vary according to the weight applied to the 20 largest listed companies:[14]

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.

31 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.

32 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

33 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.

34 Under a 'utilisation' or 'cash flow' 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.

35 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.

36 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.

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

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

Dividend drop-off estimates

37 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.

38 As I explain below, this estimate would appear to be irrelevant to the estimation of gamma under a utilisation interpretation. The 'utilisation' or 'cash flow' 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.

39 Nevertheless, in its recent decisions 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 that are distributed to them 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's recent estimates of gamma

40 The ERA's recent 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.

41 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.[15]

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

2.3.5 The ERA's approach in the 2018 Draft Guideline

42 In its Draft Guideline, the ERA proposes to estimate gamma as follows:

a. The distribution rate is set to 83%, based on the Lally 20 firms approach; and

b. The utilisation rate is set to 60%, based on the equity ownership estimate for all equity (including unlisted equity); such that

c. The product of these two estimates produces a gamma of 0.5.

43 The changes from the ERA's current approach to gamma are:

a. The ERA now disregards all evidence from the official tax statistics published by the Australian Taxation Office;

b. When estimating the distribution rate, the ERA now disregards all evidence from all but 20 firms;

c. The ERA now disregards the equity ownership evidence for listed firms;

d. The ERA now disregards dividend drop-off evidence; and

e. The ERA no longer pairs distribution rate and utilisation rate estimates for the same class of firms (i.e., taking both from listed equity or both from all equity).

44 Relative to its current approach, the ERA's proposed approach is to take:

a. The highest of all available estimates of the distribution rate (estimated with reference to 20 listed firms); and

b. The highest of all available estimates of the utilisation rate (estimated with reference to all listed and unlisted firms).

3 The reliability of the ATO tax statistics

3.1 Overview

45 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.

46 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.[16]

47 This is a curious position to take given that the only item about which any questions have 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:

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

48 In its Draft Guideline, the ERA now concludes that the ATO tax statistics should be disregarded entirely due to concerns about the reliability of the 'credits distributed' estimate – even though that figure that is not needed to estimate gamma.[17]

3.2 Explanation of issues raised in relation to ATO tax statistics

49 The potential concerns with the ATO data were first identified by Hathaway (2013),[18] however they relate to a data item that is not needed for the 'utilisation'

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

[17] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, pp. 159-161.

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

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

50 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 is no material concern 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;[19] 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.

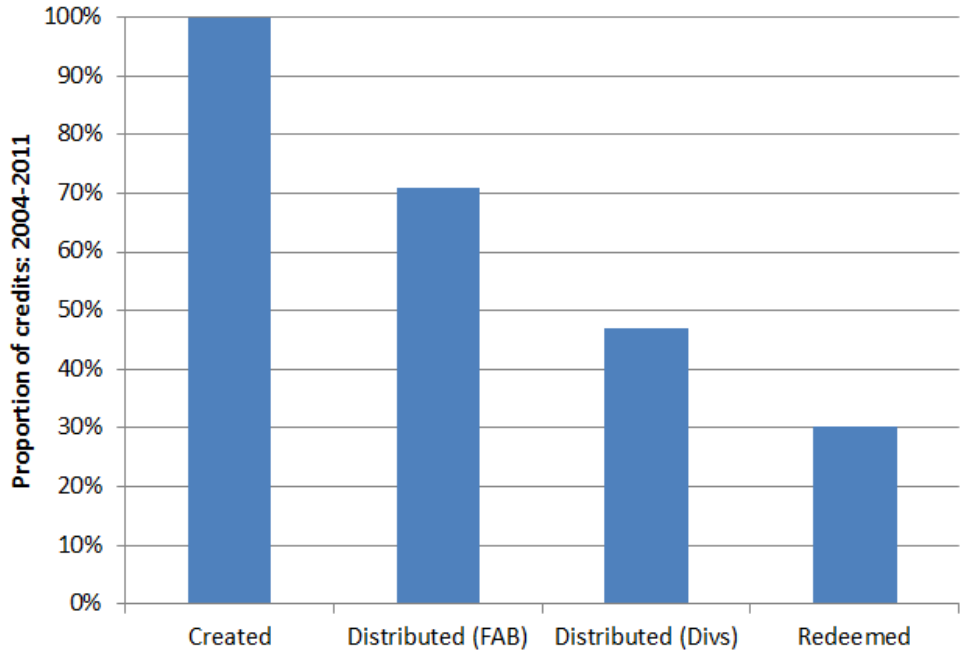
d. The FAB and dividend approaches produce different estimates of the amount of credits that are *distributed* each year.

51 The difference between the FAB and dividend estimates of the amount of credits distributed was first identified by Hathaway (2013).[20] His estimates are summarised in Figure 2 below.

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

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

Figure 2: Summary of ATO tax statistics



Source: Hathaway (2013), p. 9.

52 Figure 2 shows that the FAB method indicates that 71% of created credits are distributed, whereas the dividend method produces a distribution rate of 47%.

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

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

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

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

55 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%.[21] 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.[22]

[21] Hathaway (2013), Paragraph 99.

[22] Hathaway (2013), Paragraph 100.

56 Moreover, it is clear from Figure 2 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:

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

57 In an update to his 2013 report, Hathaway (2014)[23] 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%.[24]

58 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.[25]

59 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.

60 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.

61 In a more recent report, Hathaway (2017)[26] has been even more explicit, stating that:

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

[24] 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.

[25] Hathaway (2014), p. 46.

[26] 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.[27]

62 Hathaway (2017) goes on to conclude that the ATO tax statistics can "clearly"[28] be used to provide a reliable utilisation estimate of gamma.

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

64 In my 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 Recent AER note in relation to ATO tax statistics

65 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.[29] 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" field 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.

66 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

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

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

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

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. In subsequent work (see below), this issue has been found to be immaterial.

3.4 Recent meetings with ATO staff

67 In its Draft Guideline, the ERA notes that the conclusion of the ATO note commissioned by the AER was that:

> The ATO would not recommend using taxation statistics data as the basis for a detailed macro analysis of Australia's imputation system.[30]

68 The AER arranged a meeting on 21 June 2018, which I attended, to provide an opportunity for ATO staff to explain what the above quote means. In that meeting, ATO staff explained that their concerns related primarily to the problems with the FAB data. It has now been generally agreed that the FAB data should not be used and that the dividend data should be used to estimate 'credits distributed.' That is, there is agreement that the problematic FAB data should not be used for any purpose.

69 The ATO note also identifies that the question they were asked to address relates specifically to the franking account balance:

> The AER has sought input from the ATO regarding the use of Taxation Statistics data **to reconstruct the franking account balance**.[31]

and the ATO is clear in its answer to this question:

> It would be difficult to use this data to **reconstruct franking accounts**.[32]

70 Having reached agreement that the FAB data should not be used, the relevant question is simply whether the ATO has reliable data on:

a. Credits created, by the payment of corporate tax to the ATO; and

b. Credits redeemed from the ATO by shareholders,

as these are the only two quantities required to estimate gamma.

71 No question has been raised in relation to the data on 'credits redeemed' from the ATO. The only questions that have been raised in relation to 'credits created' by the payment of corporate tax to the ATO are:

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[30] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, Paragraph 848.

[31] ATO note of 9 May 2018, p.1, emphasis added.

[32] ATO note of 9 May 2018, p.1, emphasis added.

a. Some foreign companies pay corporate tax in Australia which does not give rise to the creation of credits; and

b. The ATO data relates to tax payable rather than tax paid, so would be overstated to the extent that companies default on their tax obligations.

72 Hathaway (2018) has investigated both of these issues and concludes that they are both immaterial.

73 In relation to foreign companies, Hathaway (2018) concludes that:

> Not only does the data for non-residents 'appear to be small at first glance' [as acknowledged by the AER] but it *is* small and not material…the effect of the non-resident data only changes the second decimal place of the gamma estimate. It is clearly not material in the overall scheme of gamma estimates.[33]

74 In relation to the difference between tax payable and tax paid, Hathaway (2018) notes that the vast majority (85%) of company tax is collected progressively throughout the year. Thus, even if 5% of the remaining tax payable was never recovered (which is an implausibly high figure for defaults on tax obligations) this would mean that tax payable and tax paid differed by only 0.75%, which has no material impact on the estimate of gamma.

3.5 Concerns with the ERA's approach to ATO tax statistics

75 In my view, there are a number of material concerns with the approach to ATO tax statistics in the ERA's Draft Guideline:

a. The Draft Guideline relies materially on the analysis of Hathaway (2013), but ignores the updated analysis of Hathaway (2017) and Hathaway (2018);

b. The Draft Guideline quotes from the ATO note of 9 May 2018, but does not recognise that the ATO was asked to address questions about franking account balances, which data is not required to estimate gamma;

c. The Draft Guideline does not recognise that the ATO data on 'credits created' and 'credits redeemed,' which is all that is needed to estimate gamma, is reliable and that neither of these quantities requires any FAB data at all; and

[33] Hathaway (2018), p. 5. Available at https://www.aer.gov.au/system/files/ENA%20-%20Capital%20Research%20Memorandum%20-%2028%20June%202018.pdf.

d. The current evidence demonstrates that the 'dividend' approach produces a reliable estimate of the distribution rate, but that there are problems with the FAB data reported to the ATO such that it should not be used. That is, there is a reliable approach and an unreliable approach that each produce different estimates. The conclusion that this undermines the credibility of both figures, and the implication that it also undermines *all* data produced by the ATO is unfounded.

3.6 Updated ATO estimate of gamma

76 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

Problems with FAB data

77 The ERA's Draft Guideline proposes to place 100% reliance on the Lally 20-firms estimate of the distribution rate. The Lally estimates are derived from franking account balances – a comparison of the change in FABs over a period to dividends paid over the corresponding period. Thus, the problems for individual firms that have been identified in the ATO FAB data also apply to the Lally FAB estimates.

78 For example, the ATO states that:

> It would be difficult to use this data to reconstruct franking accounts due to the dynamic nature of the tax system as it impacts on business.[34]

79 One example provided by the ATO is:

> Churn within consolidation groups.[35]

80 That is, some credits are extinguished within corporate structures without being distributed to shareholders. For example, BHP Ltd has distributed over $1 billion of imputation credits to BHP Plc under its 'dividend equalisation scheme.' Although these credits have been removed from the FAB, they have not been distributed to shareholders, so the FAB-based estimate of the distribution rate is overstated.

81 Similarly, as noted below, a number of firms have received large tax refunds that materially decrease their FAB. Under the Lally approach, these reductions are incorrectly treated as distributions to shareholders. Again, the result is an overstatement of the distribution rate.

82 It is difficult to reconcile the ERA's rejection of the ATO data (largely on the basis of problems with FAB data, although that FAB data is not needed for any purpose) with its 100% reliance on the Lally 20 firms approach (which relies directly on FAB data).

The benchmark efficient entity

83 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

[34] ATO Note, p. 1.

[35] ATO Note, p. 1.

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.

84 In its 2018 Draft Rate of Return Guideline, the ERA has defined the BEE to be:

> An efficient 'pure-play' 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.[36]

85 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.[37] 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.[38]

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[36] ERA, 2018, Draft Rate of Return Guideline, Paragraph 67.

[37] I note that the 2017 DBP Final Decision (paragraphs 180-183) contains a discussion about a related, but quite separate point stemming from the 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.

[38] 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-%20Evidence%20Session%201%20%26%202%20-%20Expert%20Joint%20Report%20-%2021%20April%202018.pdf.

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

86 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.

87 For example, the AER notes that:

> …the distribution rate is a firm specific parameter.[39]

88 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.[40]

89 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.[41]

90 In its recent decisions, and in its Draft Guideline, 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.[42] [43]

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

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

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.

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

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

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

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

[43] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, Paragraph 835.

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.

92 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.[44] Since credits can only be distributed by attaching them to dividends in the ratio of 3/7,[45] 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 $\frac{21.43}{30} = 71\%$.

93 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.[46] 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%.

94 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.

95 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.

96 I have computed the proportion of revenue generated in Australia for each of the 20 companies in the Lally sample. To do this I have obtained data from the Bloomberg FINANCIAL ANALYSIS tool under the SEGMENT-GEOGRAPHIC tab. For each of the 20 companies, I have computed the average proportion of Australian revenues over the last five years.[47] 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

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

[45] 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%.

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

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

to use foreign revenues to assist in the distribution of imputation credits, the estimate of the distribution rate will be over-stated.

97 I have also computed the proportion of domestic revenue for the ASX 200 firms that are not included in the Lally sample.[48] 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.

98 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.

99 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.

100 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.

101 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.

102 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.[49]

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

[49] 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

4.4 Distribution rate from comparator firms

103 In its Draft Guideline, the ERA notes that Lally (2018) concludes that the comparator firms may have a distribution rate higher than the 83% figure for the top 20 firms.[50]

104 Dr Lally considers the imputation credit distribution rate for five comparator firms: APA, AusNet, DUET, Envestra, and Spark Infrastructure.[51] However, there are a number of material problems with this analysis:

a. Dr Lally is unable to find the required FAB information in relation to three of those firms, although for one of those firms he *assumes* a closing FAB and proceeds on that basis.

b. For one of the two remaining firms, he replaces his empirical estimate of the distribution rate with his assessment of what he considers the distribution rate would have been if the company in question had adopted what he considers to be more efficient behaviour.

c. For the one remaining firm (AusNet), Dr Lally concludes that the distribution rate must be 1 because the 2017 FAB is less than the 2007 FAB. However, AusNet annual reports reveal that the FAB increased materially from $10.3 million in 2006 to $28.6 million in 2007 to $51.2 million in 2016. The FAB recorded for 2017 is -$26.4 million. The cause of this large reduction in the FAB is *not at all* related to the distribution of credits. Rather, it is due to AusNet receiving a large tax refund during that financial year. The 2017 AusNet Annual Report highlights:

> The reduction in franking credits that will arise from the receipt of tax refund for FY2017 from the ATO[52]

and notes that:

> The refund for FY2017 arises primarily from increased deferred tax resulting from differing tax and book depreciation profiles.[53]

105 This serves to highlight the dangers of using a high-level analysis of FAB data to estimate the distribution rate for any firm. Not every reduction in the FAB is caused by the distribution of credits. That is, the assumption that every reduction

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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.

[50] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, Paragraph 853.

[51] Lally (2018), pp. 19-20.

[52] Ausnet 2017 Annual Report, p. 107.

[53] Ausnet 2017 Annual Report, p. 107.

in the FAB is due to credits being distributed to shareholders is inconsistent with the evidence.

106 Moreover, a materially different estimate of the distribution rate would be obtained if the sample period had started one year earlier (2006) or finished one year earlier (2016). So the estimates are unstable depending on the particular sample period that is used.

107 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. I am 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.

108 An obvious example of this problem relates to BHP, where the Australian company BHP Ltd has distributed over $1 billion of credits to the sister firm in the UK, BHP Plc, under the dividend equalisation scheme, which has recently come to the attention of a number of activist shareholder groups. Although these credits have been removed from the FAB, they have not been distributed to shareholders, so the FAB-based estimate of the distribution rate is overstated.

109 Similarly, a number of firms, including AGL and AusNet Services, have received large tax refunds that materially decrease their FAB. Under the Lally approach, these reductions are incorrectly treated as distributions to shareholders. Again, the result is an overstatement of the distribution rate.

110 It is difficult to reconcile the ERA's rejection of the ATO data (largely on the basis of problems with FAB data, although that FAB data is not needed for any purpose) with its 100% reliance on the Lally 20 firms approach (which relies directly on FAB data). That is, the concerns that have been raised in relation to the quality of FAB figures in relation to the ATO data also apply to the Lally approach as it also relies on the FAB data.

111 I 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. That is, the ATO publishes figures for credits created and credits redeemed. It does not publish figures for credits distributed – that figure must be derived using either the 'dividend' or 'FAB' approach.

4.5 Other problems with the 20-firms figures

112 In addition to the conceptual problems set out above, I 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 I 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 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

113 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.

114 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.

115 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

116 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.[54]

117 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 ERA assessment of the reliability of equity ownership estimates

118 The ERA's Draft Guideline follows the AER's approach to using the equity ownership data. It contains no assessment of the quality of the equity ownership data and does not consider any of the troubling features of the revised estimates set out in the following section below.

119 The Draft Guideline also does not recognise that the equity ownership estimates can only provide an upper bound for gamma because they do not reflect the effect of the 45-day rule, or any other reason why a resident investor may not redeem a credit that is distributed to them.

5.4 Updated equity ownership estimates

120 In its recent Discussion Paper,[55] 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.[56]

[54] 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=.

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

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

121 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.

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.

122 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.

5.4.1 AER approach

123 I 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). I note that the ERA has now fallen in line with 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.[57] 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.

124 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.

125 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 expected to either utilise or waste the imputation credits they receive." This involves 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.

126 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, I assume that these were included as well.[58]

127 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

[57] 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.

[58] 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.

sector. As such, in the rest of this report I include equity in listed public non-financial corporations even if the "filter" is applied.

128 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.

129 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. I take the convention of allocating the ownership to the class that results in the lowest domestic ownership share, although the impact is minimal.[59]

130 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.

131 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)[60], 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[61] equity is considered; and

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

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

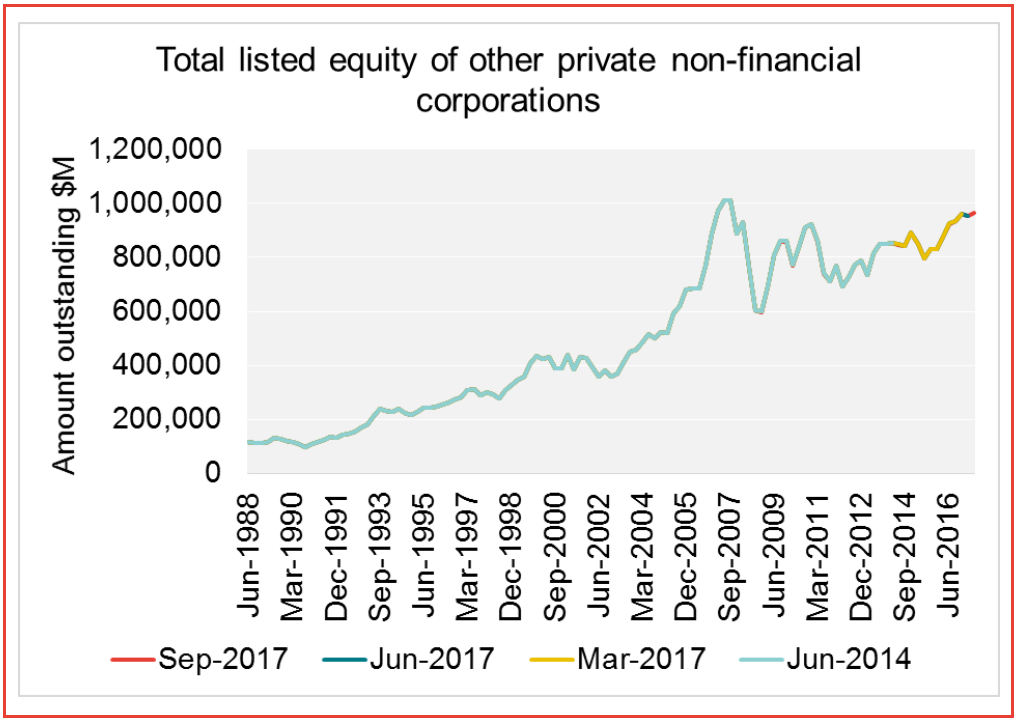
[60] It is stated that the evidence in all four figures are considered.

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

5.4.2 2017 ABS revision

132 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 3, the four releases are identical, save for the extended coverage of later releases.

Figure 3: Total listed equity class example



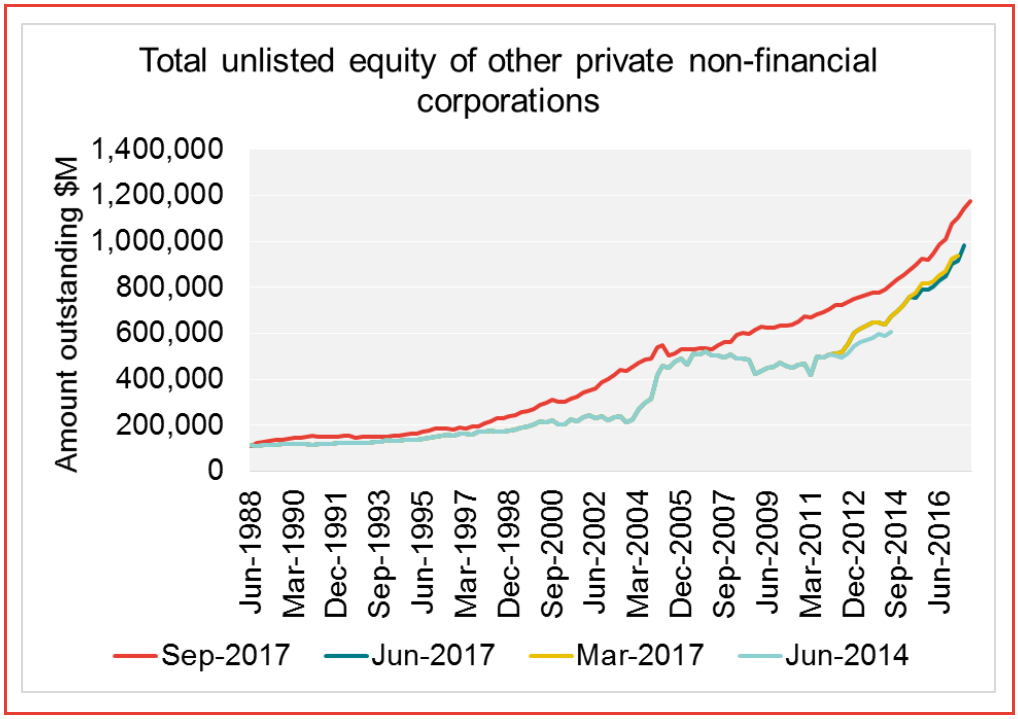
Source: ABS 5232.0.

133 However, unlisted equity totals differ considerably across releases, specifically between those prior to September 2017 and the September 2017 release. In Figure 4 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.

134 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 5, 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.

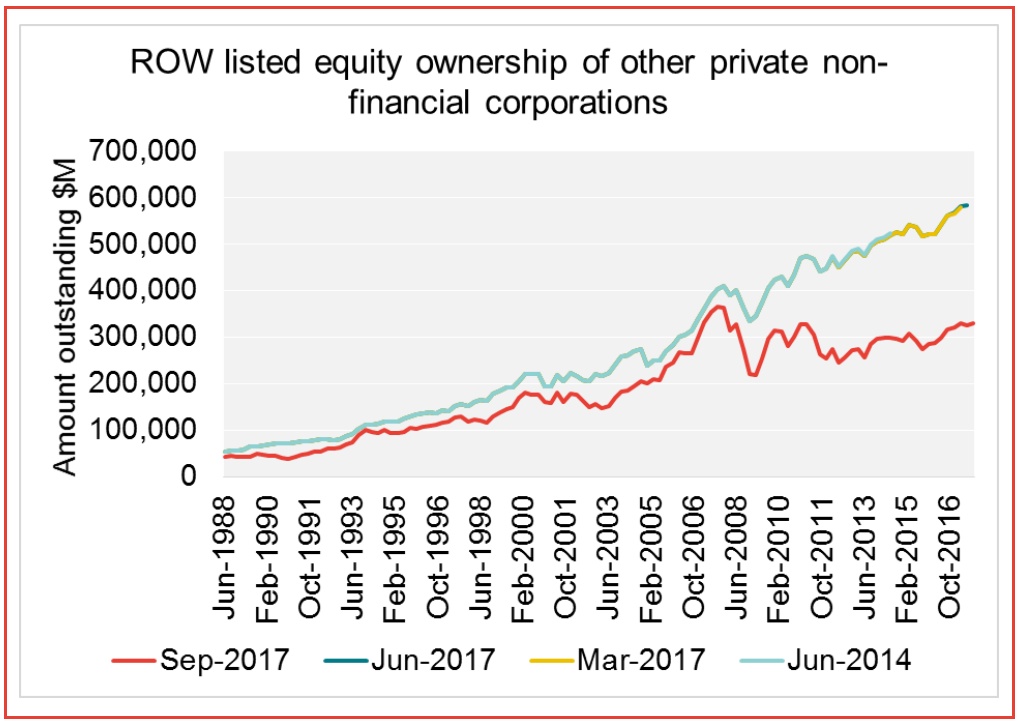
135 Conversely, the unlisted counterpart of OPNFC equity shows a higher share owned by foreign investors, in Figure 6 below.

Figure 4: Total unlisted equity class example



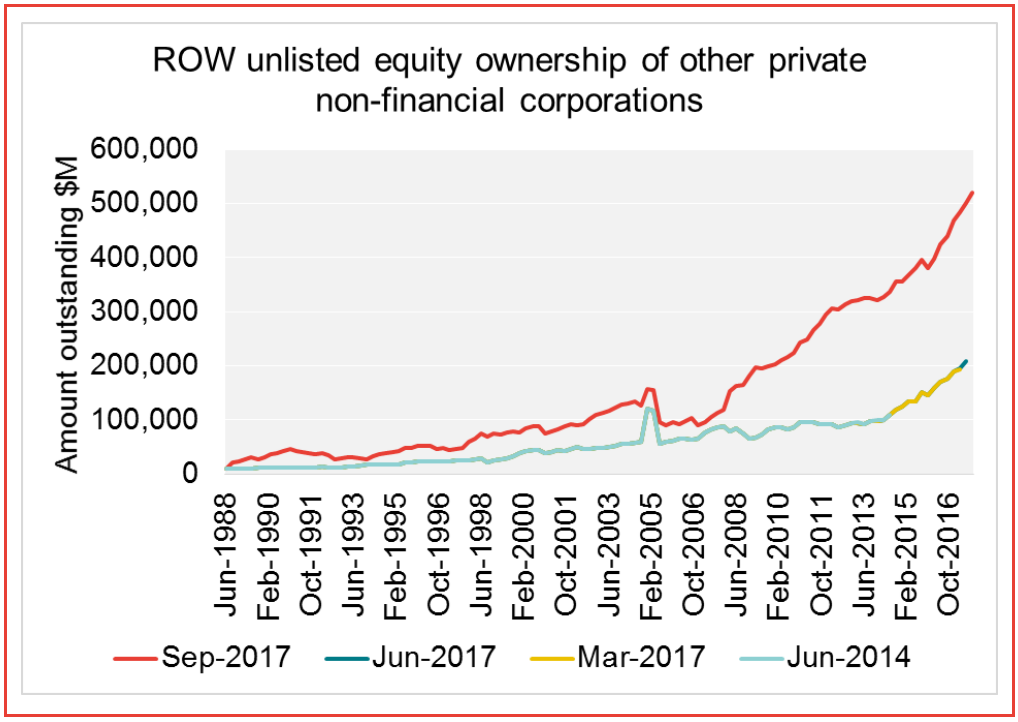
Source: ABS 5232.0

Figure 5: Listed equity class example



Source: ABS 5232.0

Figure 6: Unlisted equity class example

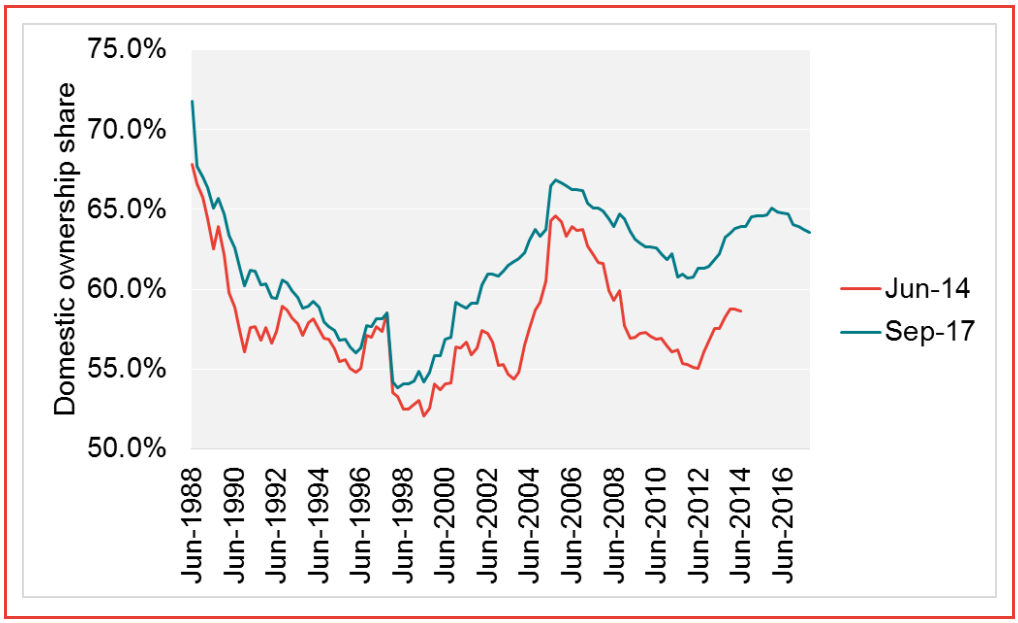


Source: ABS 5232.0

136 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 7 and Figure 8 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.

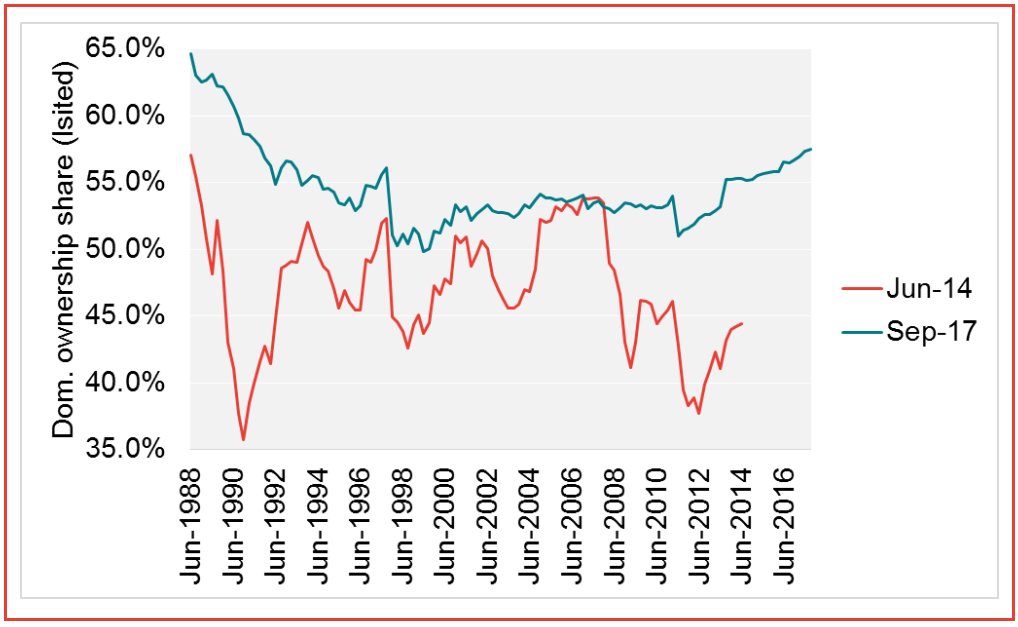
137 The revised series are almost invariably higher across the four approaches to the domestic ownership share, especially for listed equity.

Figure 7: Refined domestic ownership share of listed and unlisted Australia equity



Source: Frontier Economics analysis of ABS 5232.0

Figure 8: Refined domestic ownership share of listed Australia equity



Source: Frontier Economics analysis of ABS 5232.0

Puzzling impact on volatility

138 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

139 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'

140 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.

141 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.[62] 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 3); whereas the increase in unlisted OPNFC equity owned ROW can coincide with an increase in unlisted equity (as seen in Figure 4). This yields an increase in the domestic ownership share of listed and unlisted equity, as seen in Figure 7, and a more drastic increase in the domestic ownership share of listed equity, as seen in Figure 8.

142 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

[62] 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

143 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."[63]

144 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.

145 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."[64]

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

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

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

6.1 Market value or cash flow interpretation

146 As noted above, two different interpretations have been proposed for theta:

a. *Market value*: Theta can be interpreted as the market value of a distributed credit – the price that investors would be prepared to pay for a credit if there was a market for them; or

b. *Cash flow*: Theta can be interpreted as the proportion of distributed credits that are redeemed by investors.

147 The market value interpretation can be implemented in two ways:

a. *Estimated from market data using econometric methods*: An example of this approach is dividend drop-off analysis where the market-clearing value of credits is estimated by examining the fall in stock prices when credits are paid out; or

b. *Derived from economic models under a certain set of assumptions*: An example of this approach is Lally and Van Zijl (2003)[65] where, under a certain set of assumptions, the market-clearing value of credits is derived as a complex weighted-average of the extent to which investors are able to redeem credits.

148 In its Draft Guideline, and in its recent decisions, the ERA has apparently adopted the cash flow approach to theta – defining it in terms of the proportion of credits that are redeemed by investors. Indeed, 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.[66]

149 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. The AER documents this 'cash flow' interpretation of gamma in the 2013 Guideline, as shown in Figure 1 above. 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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[65] Lally, M. and T. van Zijl, 2003, Capital gains tax and the capital asset pricing model, *Accounting and Finance*, 43, 187-210.

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

150 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'.[67]

151 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.

152 In summary, the 'cash flow' or 'utilisation' interpretation of gamma seeks to answer the question: of all of the corporate tax paid by the BEE, how much will be returned to its shareholders via the redemption of imputation credits? Under this interpretation, there is no need to consider econometric studies of market prices or theoretical economic models – one simply estimates the proportion of the tax paid by the BEE that is redeemed by its shareholders.

6.2 Whose redemption rate is relevant?

153 As noted above, the 'cash flow' or 'utilisation' interpretation of gamma seeks to determine how much of the corporate tax paid by the BEE will be returned to its shareholders via the redemption of imputation credits. In my view, this interpretation requires consistent estimation of the distribution rate and the utilisation rate. That is, some proportion of credits will be distributed to the BEE shareholders, who will then redeem some of those credits. The corporate tax allowance is then reduced by the amount of credits that are redeemed back by the BEE shareholders.

154 Under the 'cash flow' interpretation of gamma it would make little sense to take the proportion of credits distributed to the BEE shareholders and to pair that with the proportion of credits redeemed by some *other* group of shareholders.

155 The Draft Guideline concludes that listed equity represents the most suitable estimate of the BEE.[68] Consequently, it would follow that the 'cash flow' estimate of gamma would be based on the proportion of credits distributed to and redeemed by shareholders in listed firms.

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

[68] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, Paragraphs, 852 – 854.

156 This would involve pairing the Lally 83% distribution rate[69] with the equity ownership estimate of 47% for listed equity, producing a gamma of 0.39.[70]

157 Alternatively, one may reach the conclusion that the BEE is better represented by all equity. For example, the Draft Guideline specifically notes that "some regulated businesses are unlisted."[71] In this case, the best estimate of gamma would be the direct estimate of 0.34 from tax statistics. This approach has the great benefit of not requiring any estimate of the contentious distribution rate because it can be computed directly from 'credits created' and 'credits redeemed.'

158 That is, under the cash flow approach, to gamma, one seeks to estimate how much of the corporate tax paid by the BEE will be returned to its shareholders via the redemption of imputation credits – so that the corporate tax allowance can be reduced by that amount. This requires a decision to be made about what group best represents the shareholders of the BEE, such that the proportion of tax redeemed by that group can be estimated in an internally consistent manner.

[69] If the ERA maintains confidence in that estimate in spite of the issues set out in Section 4 above. Alternatively a lower estimate could be adopted, as set out in Section 2.3.2 above.

[70] Or less, if a lower estimate of the distribution rate is used.

[71] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, Paragraphs, 875.

7 The use of dividend drop-off analysis

159 Under the 'cash flow' interpretation, gamma is defined to be proportion of corporate tax paid by the BEE that is redeemed by its shareholders. In this case, the *value* of those credits (i.e., the amount the shareholders would pay to purchase a credit) is irrelevant. For this reason, I agree with the ERA that dividend drop-off analysis is irrelevant under the 'cash flow' interpretation of gamma that the ERA now adopts.

8 Conclusions on the best 'utilisation' estimate of gamma

8.1 A process for working through the relevant issues

160 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.[72] Consequently, there is no model or theory to guide the estimation. Rather, under the 'cash flow' or 'utilisation' interpretation, gamma is simply defined to be the proportion of corporate tax paid by the BEE that is returned to its shareholders via the redemption of imputation credits.

161 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:

   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. The ERA would then explain how its implementation is consistent with the relevant model. In this regard, I note that all known models require the weighted average to be taken over *all* of the wealth of each investor, and not merely the proportion of that wealth invested in Australia. This is why Lally (2018) has noted that the AER's approach (which the ERA now follows) is not consistent with any equilibrium asset pricing model.

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

However, if (in Step 1) the ERA determines that its interpretation of gamma is *not* consistent with any identifiable equilibrium asset pricing model (as the experts concluded in the AER's concurrent evidence sessions) the concept of the weighted-average utilisation rate is irrelevant.

That is, it would seem to be open to the ERA to define gamma in terms of an equilibrium asset pricing model. It would also seem to be open to the ERA to define gamma in terms of the proportion of corporate tax paid by the BEE that is returned to its shareholders via imputation credits. But it would not seem to be open to the ERA to define gamma to be the highest available estimate of the distribution rate multiplied by the highest available estimate of the utilisation rate.

c. Step 3: If (in Step 1) the ERA follows the AER's cash flow interpretation, wherein 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 relevant task is to estimate how much of the corporate tax paid by the BEE will be returned to its shareholders via the redemption of imputation credits – so that the corporate tax allowance can be reduced by that amount.

   This requires a decision to be made about what group best represents the shareholders of the BEE, such that the proportion of tax redeemed by that group can be estimated in an internally consistent manner.

d. Step 4: If (in Step 3) the ERA determines that the BEE is best represented by listed equity, the proportion of corporate tax returned to the BEE's shareholders would be estimated using the ERA's estimates of the proportion of credits distributed to listed equity shareholders (83%) and the proportion of credits redeemed by those shareholders (47%), producing a gamma of 0.39.

e. Step 5: The ERA may determine (in Step 3) that the BEE is better represented by all equity. For example, the Draft Guideline specifically notes that "some regulated businesses are unlisted."[73] In this case, the best estimate of gamma would be the direct estimate of 0.34 from tax statistics. This approach has the great benefit of not requiring any estimate of the contentious

[73] ERA, July 2018, Draft Rate of Return Guideline: Explanatory Statement, Paragraphs, 875.

distribution rate because it can be computed directly from 'credits created' and 'credits redeemed.'[74]

162 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.

8.2 Weighing of strengths and weaknesses

163 The Explanatory Statement concludes that the BEE is best proxied by a listed firm. However, there are three problems with the data that is available in relation to listed firms:

a. The 20-firms estimate of the distribution rate provides, at best, an upper bound because franking account balances can reduce for reasons other than the distribution of credits to shareholders.

b. The equity ownership estimate of the utilisation rate is, at best, an upper bound because resident investors do not (and cannot) redeem all credits distributed to them – a problem that may well intensify after 1 July 2019.

c. Combining two estimates from two different methodologies using two different data sources results in a compounding of estimation error.

164 The ATO tax statistics have the great benefit of providing a direct estimate of gamma from a single source of data. There is no need to separately estimate distribution and utilisation rates – the 'cash flow' gamma can be estimated directly as the ratio of credits redeemed to credits created.

165 Also, the ATO tax statistics provide a point estimate rather than an upper bound – the ATO records credits actually redeemed, rather than an estimate of the maximum amount of credits that could possibly be redeemed.

166 The only disadvantage of the ATO data is that it also includes unlisted equity, whereas the AER has concluded that listed equity provides the best proxy for the BEE. The AER considers that the distribution rate for listed equity may exceed that for unlisted equity. In this case, the ATO estimate would be a lower bound for the 'utilisation' gamma for listed equity.

[74] When one data source and method is used to estimate the distribution rate and an entirely different data source and method are used to estimate the utilisation rate, the two calculations will inevitably reflect a different estimate of 'credits distributed.' Moreover, when two estimates that are each subject to statistical estimation error are combined, there is a compounding of that estimation error.

167 The ERA has concluded that the relevant task is to estimate the utilisation/cash flow gamma for listed equity. Consequently, the ERA must weigh the various strengths and weaknesses of each approach in performing that task. For the reasons set out above:

a. The 20 firms/equity ownership approach produces an upper bound of 0.39. The 20-firms estimate for listed equity is an upper bound because the FAB can fall for reasons other than the distribution of credits to shareholders. The equity ownership estimate for listed equity is an upper bound because resident investors do not (and cannot) redeem all of the credits that they receive.

b. The ATO tax statistics approach produces a lower bound of 0.34. This is because the ATO data includes unlisted equity and the distribution rate for unlisted firms may exceed that for listed firms.

9 Appendix: Estimation issues with the 20-firms approach

9.1 Overview

168 The 20-firms estimate that is used in the UT5 Draft Decision is taken from an appendix to Lally (2014),[75] 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.

169 The approach that is adopted is as follows:

[75] 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;[76]

c. The distribution rate is then computed as:[77]

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

170 I 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. My view is that these issues should be resolved before any material weight is applied to the figures above.

171 One general problem that I 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

172 In attempting to replicate the figures in the FAB columns above, I 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 I have been unable to replicate the AUD figures used in the table

[76] 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%.

[77] 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

173 In my analysis, I have used the 2000 and 2013 annual reports for all firms, whether their financial year ends on June 30 or December 31, and I 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

174 Several FABs were reported in their respective annual reports in USD, requiring a conversion to AUD. In all instances where I found an annual report which reported in USD, I was unable to reconcile the FAB figure with the Lally estimate. In these instances, I 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[78]	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

175 I 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.

[78] Woodside do not explicitly mention an exchange rate between AUD and USD. In lieu of them explicitly quoting an exchange rate, I 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 Franking account balance as at year end	1,247	585	Westpac Group (2013), page 149

Source: Annual reports and Lally (2014)

9.2.4 Change in company structure

176 I 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

177 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[79]	Rio Tinto (2013), page 142

Source: Annual reports and Lally (2014)

9.3 Issues with dividend figures

178 I 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.

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

[79] 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 I 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. Macquarie Group and Westfield have been removed 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.

9.4 Miscellaneous errors

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

181 Given that tax is calculated as:

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

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

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

182 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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ATTACHMENT 3: CAPITAL RESEARCH MEMORANDUM

28 JUNE 2018

Source: AER website

PUBLIC
28 September 2018

Capital Research

28 June, 2018

[redacted]

Dear Sir,

I understand that the AER has recently published a Discussion Paper on Gamma, as well as:

1. A note that summarises discussions between the AER and the ATO regarding the ATO tax data and specifically some of the matters raised in my December 2017 report to you.
2. A report from Dr Lally on the AER's views on gearing and gamma, dated May 2018.

In addition, the ATO have published a note, issued on 9th May 2018, about the subject of: Franking account balance – tax of time series data from Taxation Statistics. I have also been provided with a copy of an email from Esmond Smith, Director Rate of Return, Network Regulation, Australian Energy Regulator to you dated Friday 1st June 2018 referring to the use of ATO statistics. In addition, on 21 June 2018 I participated in a telephone conference with representatives of the AER and the ATO to discuss the ATO statistics.

I have been asked three questions about these items.

1. Whether any of the matters raised in the AER's note summarising its discussions with the ATO or the Lally May 2018 report attached change any of the opinions you expressed in your December 2018 report for Energy Networks Australia.
2. Whether the comments of the ATO recorded in Attachment 1 shed any light on the inability you have referred to in your December 2017 report to reconcile the franking account balance (FAB) data and the dividend data reported to the ATO?
3. It is said in point 4 in Attachment 1 and section 3.3 of the Lally 2018 report that a limitation on your previous analysis is that it does not account for non-resident companies paying company tax in Australia which do not generate franking credits. It is stated in the ATO notes that this proportion may appear to be small at first glance, but it "adds to the report's inability to reconcile the imputation system using aggregate data." What is your response to this said limitation and if it exists, in your opinion would it have a material impact on your analysis?

This is my response to the three questions you have put to me.

This is my response to the first question: **Whether any of the matters raised in the AER's note summarising its discussions with the ATO or the Lally May 2018 report attached change any of the opinions expressed in my 2017 Report.**

I preface my remarks by the comment that I am delighted to at last see a response by the ATO to my analysis of ATO statistics, notwithstanding that it is a second hand account of the ATO comments as reported by some staff of the AER. It is this one-person removed account of the ATO's comments which I think has a bearing on my responses to the AER's reported comments of the ATO.

The AER note has six substantive comments within it:

1. "Net Tax" does not equate to Tax Payable
2. There are items within Labels C and Z of the company tax return that are not germane to franking credits.
3. The dynamic nature of changes over time within companies pose particular problems, especially with respect to the FAB and demergers.
4. Non-resident companies paying tax within Australia do not give rise to franking credits.
5. Within mergers and acquisitions, companies may not be able to utilise the combined FAB.
6. The FAB is poorly reported over time.

The effect of these points strengthens my view that the FAB data is the data item that is the overall weakest one among the ATO statistics relevant to franking credit research and gamma.

However, I reinforce my previous comments that in order to estimate an overall system-wide gamma, we do not need any of these interim calculations. All we need is the amount of company tax paid that gives rise to franking credits. In order to address this I reproduce the following diagram from my 2013 Report.

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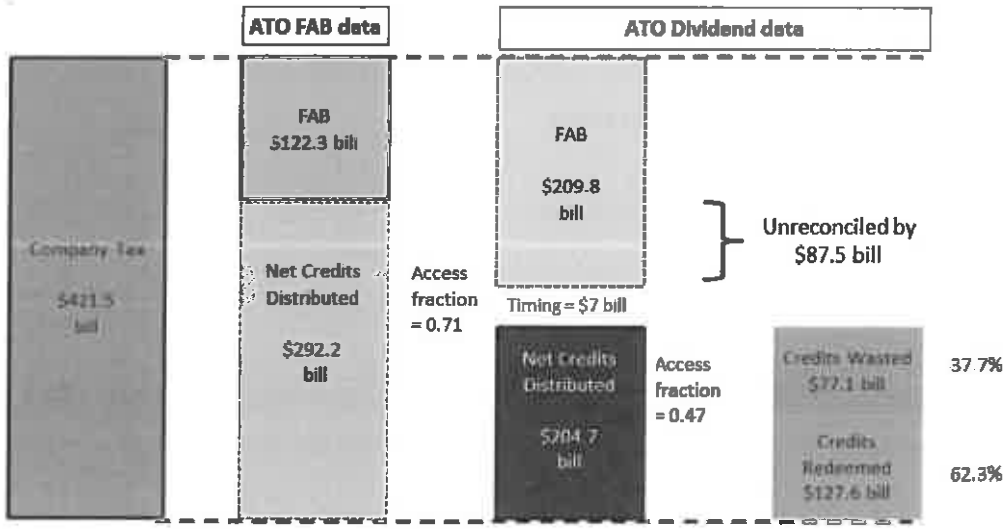
Figure 1: Summary of ATO tax flow data: 2004-2011



The Company Tax total payment of $421.5 billion and the Credits Redeemed of $127.6 billion are both data generated from the ATO processing taxation filings. There is no other source than the ATO who essentially create these data. If it were readily available, I would have to modify this statement by allowing for any non-resident company tax payment that does not give rise to franking credits. I return to this below. 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 and other 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.

These two data items immediately produce a national average gamma of 0.3 calculated as gamma equals credits redeemed divided by company tax (or credits created), namely gamma = $127.6 billion/$421.5 billion = 0.30.

The other two data items are created by companies reporting their data to the ATO. They report their dividends paid, their franking credits distributed and the Franking Account Balance (FAB). These are the two data items that do not reconcile with one another. In the past, I have had trouble deciding which one of these two items is the cause of this lack of reconciliation. In the light of the comments above attributed to the ATO, I now heavily lean towards the FAB data as being the unreliable one. Substantial under reporting of the FAB would be a strong driver of the apparently unreconciled data.

Turning to the six points individually, for point 1 I have always recognised this issue. Indeed, the definition of "Net Tax" has changed over the years. I do not use it directly but work through the issues that these changes pose. For example, in the Notes of the Tax Statistics 2014-15, there is an explicit comment that

5. Net tax has a new definition. The new definition no longer deducts refundable credits, i.e. new Net tax = gross tax less non-refundable tax offsets.

However, in the latest statistics (Tax Statistics 2015-16) this has changed to:

5 Net tax has a new definition where new Net tax = Tax payable + Refundable tax offsets.

Point 2. In relation to the data at Labels C and Z of the Calculation Statement, I have always looked behind these headline labels and considered the components where reported by the ATO. For example, with the 2012 data we could identify the following components within label CS.C.

Instructions 2012 for CS:C		
• Entrepreneurs tax offset (11F)	11F: Entrepreneurs' tax offset	$2,381,357
• Allowable franking tax offsets for the income year The amount claimed here should include the share of franking credits included in gross distributions from partnerships and gross distributions from trusts, the amount recorded at J Franking credits item 7 and the amount recorded at C Australian franking credits from a New Zealand company item 7	Share of franking credits 7J: FC income 7C:NZ cpy credits	 $10,752,751,724 $5,768,682
• Tax offsets for bonuses and certain other amounts received under short-term life insurance policies taken out after 27 August 1982. • Tax offsets for interest on certain government and semi-government securities. • Tax offsets to approved resident lenders for infrastructure borrowings.		
• ***Foreign income tax offset (the amount at item 21 label J).***	21J:Foreign income tax offset	$456,588,208
CS:C		$14,966,325,692

I have analysed the data by extracting the relevant items where they are identified by the ATO. I also commented that there was missing items and these could modify our conclusions.

Points 3, 5 and 6 all relate to the FAB data and reinforce the view that the FAB is the weakest data upon which to rely. I take note of those comments and they direct me towards relying much more on the dividends paid data than the FAB data for any interim factor calculations alluded to above. This also answers the second question put to me: **Whether the comments of the ATO recorded in Attachment 1 shed any light on the inability you have referred to in your December 2017 report to reconcile the franking account balance (FAB) data and the dividend data reported to the ATO?** The reported comments by the ATO direct me to putting much less credence on the FAB data and direct me to relying much more on the dividend data. Under reporting of the FAB data would be a large element in explaining my inability to reconcile the two sets of data.

I would not suggest that companies misreport their FAB data and so make it unreliable data. Instead of a problem of commission of reporting false data, I would tend to believe it is more a problem of omission of data. The end result is the same though – the FAB data would be unreliable for the purpose of my analysis. Indeed,

the unreliability of the FAB data, as pointed out by the ATO, would lead me to generally council anyone against relying on any analysis based on FAB data.

I found Point 4 quite interesting and sought to explore it further. The ATO data indicates that it is a minor distortion of the data. The latest data – see the following Table, indicates that such companies are a tiny proportion of all companies (0.34%) and pay a small 2.3% of Net Tax. This disparity here arises from non-resident companies being bigger on average than all Australian companies which have an abundance of small companies.

Residency Status: Tax Statistics 2016

Number	Total	Non-Resident	% non-resident
Taxable	393,048	1,601	0.41%
Non-taxable	548,118	1,594	0.29%
Total	941,166	3,195	0.34%
Net Tax	$66,662,876,031	$1,539,689,000	2.31%

Source: TaxStats2016Company03

My response is that whilst I would prefer the ATO to show both resident and non-resident data in their time series, it is a very small fraction of the total and does not materially change any of my conclusions

This also answers the third question put to me: **It is said in point 4 in Attachment 1 and section 3.3 of the Lally 2018 report that a limitation on your previous analysis is that it does not account for non-resident companies paying company tax in Australia which do not generate franking credits. It is stated in the ATO notes that this proportion may appear to be small at first glance, but it "adds to the report's inability to reconcile the imputation system using aggregate data." What is your response to this said limitation and if it exists, in your opinion would it have a material impact on your analysis?** Not only does the data for non-residents "appear to be small at first glance" but it *is* small and not material in the overall scheme of my analysis and conclusions. If the company tax collection within Figure 1 is reduced by 2.31% then the net resident company tax becomes $411.7 billion, giving an overall national average gamma of 0.31. The effect of the non-resident data only changes the second decimal place of the gamma estimate. It is clearly not material in the overall scheme of gamma estimates.

My conclusion from reviewing the six points made by the ATO with respect to analysing their data is that whilst there may be some problems with analysing taxation, dividends and franking credits (primarily because they do not publish data in sufficient detail to allow for all the various nuances within the system), the major difficulty lies within the FAB data. Hence little credence should be placed on any research based on FAB data.

In reference to the ATO Note of 9 May 2018, I recognise the comments made by the ATO, namely

> The ATO is of the view that the Taxation Statistics data should not be used for detailed time series analysis of the imputation system.
>
> It would be difficult to use this data to reconstruct franking accounts due to the dynamic nature of the tax system as it impacts on business. Factors such as entries and exits, churn within consolidation groups, and other complexities such the rules relating to life insurance companies would affect any macro analysis.
>
> Consequently, we would not recommend using Taxation Statistics data as the basis of a detailed macro analysis of Australia's imputation system.

My first reaction on reading this Note by the ATO was along the lines of - this is the case with nearly ***all*** finance and economics data. Data published by the ABS and RBA, for example, no doubt also have a host of real-world problems within their creation. That does not preclude any economist or financial analyst from analysing ***any*** official data. They consider the reliability of each piece of data that they are analysing. The advice from the ATO directly points to the weakness in the Franking Account Balance (FAB) data so caution should be applied when relying on any analysis based on that FAB data.

However, I would respond that the ATO are the *sole* source of the system-wide set of taxation data, including imputation tax statistics. The ATO is responsible for the Australian Taxation system and for publishing data about that system. Whilst there are obvious difficulties with the dynamic nature of the system, which is reflected in the ATO data, there is no other source of the data. The ATO effectively create these data. If I was instead to attempt to build a data set from individual company reports, I would still have the same problems. Notwithstanding the difficulties of using the ATO data, it is in effect the primary source of the imputation tax statistics.

In relation to the telephone conference on 21 June 2018 between the various parties, including representatives from the ATO, I was happy to hear the ATO staff confirm the conclusion that the FAB data were the most likely source of the conflicts within the ATO taxation statistics data. They suggested a few reasons for this, including that it was only informational data and had no bearing on corporate tax liabilities and so could be poorly reported.

There was one other issue raised by the ATO during that call that I found curious. They suggested that ATO tax statistics included tax liabilities as well as tax paid. Only tax paid gives rise to franking credits so this outstanding liability would reduce tax paid and hence the amount of credits created. By memory, they suggested about 2% of company tax was a liability not yet collected. What I found curious with that estimate is that the vast majority of company tax is already collected by PAYG instalments (typically about 85% of the total tax liability) so 2% of the total represents about 14% of the residual tax due. This struck me as a high proportion of tax outstanding. I will endeavour to explore this issue with further research over time.

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None of these issues would cause me to change my overall conclusions presented above. They potentially represent small adjustments to the estimates but I consider them likely to only cause changes in the second decimal place of the estimates and so they are overall immaterial.

Yours sincerely

[redacted]

Neville Hathaway
Capital Research

[redacted]