COMPETITION ECONOMISTS GROUP

Response to AER draft position paper on inflation

A report for Jemena

November 2020

COMPETITION ECONOMISTS GROUP

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1 Executive summary

1. The AER currently deducts a 10 year estimate of future inflation in the PTRM, but only provides compensation for actual inflation over the 5 year period of the regulatory regime. I have previously argued[1] that this is internally inconsistent with delivering an expectation to investors that they will be compensated for the return on debt determined in the RoRI.

2. In particular, when the best estimate of 5 year inflation is below the best estimate of 10 year inflation, the AER models are expected to undercompensate for the efficient cost of debt (determined in the RoRI) by the difference in these estimates. This is true irrespective of whether the return on debt is expressed in nominal or real terms.

3. In its October 2020 draft position paper, the AER has proposed a change in methodology to use a 5 year inflation estimate in the PTRM. This directly addresses the primary concern in my previous report.

4. It is important to acknowledge that the new AER draft position involves a substantial improvement to the regulatory regime. This is true notwithstanding that the AER has not adopted a number of my recommendations associated with how to estimate 5 year inflation.

5. The AER draft position paper seeks stakeholder views on whether there is any merit in delaying the implementation of a 5 year forecast in order to reduce, or eliminate, any expected benefits to NSPs who have upcoming regulatory decisions. The AER refers to such an approach as a "transition" between a 10 year and a 5 year forecast methodology (although I consider that it is more accurate to describe this as delayed implementation).[2]

6. The logic for such a delay is set out in the below passage:[3]

> *Whether to apply a transition is a matter of regulatory judgement. We note that at this time the impact of the change is not known with certainty as our*

[1] See my report for the ENA dated July 2020 "Delivering meaningful real returns via the PTRM, RoRI and RFM".

[2] I prefer to describe this as a delayed implementation because, in reality, the 5 and 10 year methods are discrete and the AER is either applying one or the other (not a blending of the two). A transition seems to imply a gradual move from one method to the other (as was applied in the change from the on-the-day cost of debt to the trailing average cost of debt).

[3] AER, Draft Position Paper, Regulatory Treatment of Inflation, October 2020, p. 70.

next decisions will incorporate estimates of inflation from the RBA's Statement on Monetary Policy in February 2021. Further, the impact of the potential mismatch between our current approach and the indexation of the RAB is also uncertain. However, based on submissions from the service providers this impact may be significant and therefore should be addressed presently

On the other side, based on current market data, our change in approach could lead to a significant increase in the revenue we would allow in our upcoming decisions. We need to be confident such an increase is a genuine result of a mismatch and not a windfall gain or loss.

7. I consider that delaying implementation of a 5 year forecast would be inappropriate on the following grounds:

   a. The existing mismatch is an error that if uncorrected will, given current forecasts, lead to under-compensation for the cost of debt. Correcting this expected under-compensation should not be characterised as a windfall gain but, rather, the avoidance of a windfall loss;

   b. In any event, the AER's proposed approach has, built into it, a material delay in implementation for the upcoming Victorian NSP decisions (described in more detail in paragraph 8 below). This will impose a material negative expected value loss on Victorian NSPs even without any delay/transition to the adoption of a the AER's 5 year forecast;

   c. Even without using an overestimate of inflation expected to be compensated in the RFM there are serious financeability concerns associated with current low risk free rates. These concerns are very materially exacerbated if the best estimate of expected inflation (using a 5 year horizon) is not used in the PTRM.

   d. The three points listed above are true even if one accepts the AER's proposed method (use of RBA forecasts plus a glide path) as being the most accurate prediction of inflation over 5 years. However, there is strong reason to believe that, in the current market conditions, this is not the case. If so, even the immediate adoption of the 5 year forecast and the removal of the delay described in point b. would leave Victorian NSPs undercompensated for the return on investments.

   e. Finally, I note that there may be a perception that there have been windfall gains from inflation forecast error in the past that should, somehow, be corrected by imposing windfall losses now. I would disagree with such an argument even if the data supported the existence of such historic windfall gains. However, it is clear that the AER's current 10 year forecast method has over-forecast inflation in almost every regulatory decision since it was adopted in 2007 – including the

two decisions made by the AER for JEN in that period. Delaying implementation of a five year forecast now would compound those historic windfall losses.

8. I now explain point b. above in more detail, which I consider to be important to understand:

   - Even if implemented immediately, the AER's 5 year forecast is for the 5 years from 1 July 2021 to 30 June 2026. On the AER's own published estimates, based on the RBA August 2020 SoMP, this would result in a **1.95%** inflation forecast. (This compares to **2.30%** under continuation of the current 10 year method.)
   - However, the Victorian NSPs will be compensated for inflation in the next RFM using lagged inflation (covering the five years from 1 January 2020 to 31 December 2025). Based on the same method the AER uses to derive the 1.95% forecast, the expected inflation that will be compensated in the RFM is **1.55%**.

9. If the AER were to truly eliminate the mismatch between PTRM and RFM inflation, it would need to use the 1.55% forecast in the PTRM. By proposing to use the 1.95% inflation forecast the AER is already implementing an effective delay (transition) that creates an expected windfall loss to Victorian NSPs of 0.40% pa in under-compensation for inflation. If the AER imposed a further delay by applying the current 10 year forecast for Victorian NSPs (around 2.30%) then the total windfall loss to Victorian NSPs would be around 0.75% under-compensation for inflation (2.30% less 1.55%).

2 Why the AER's proposed 5 year inflation forecast is necessary

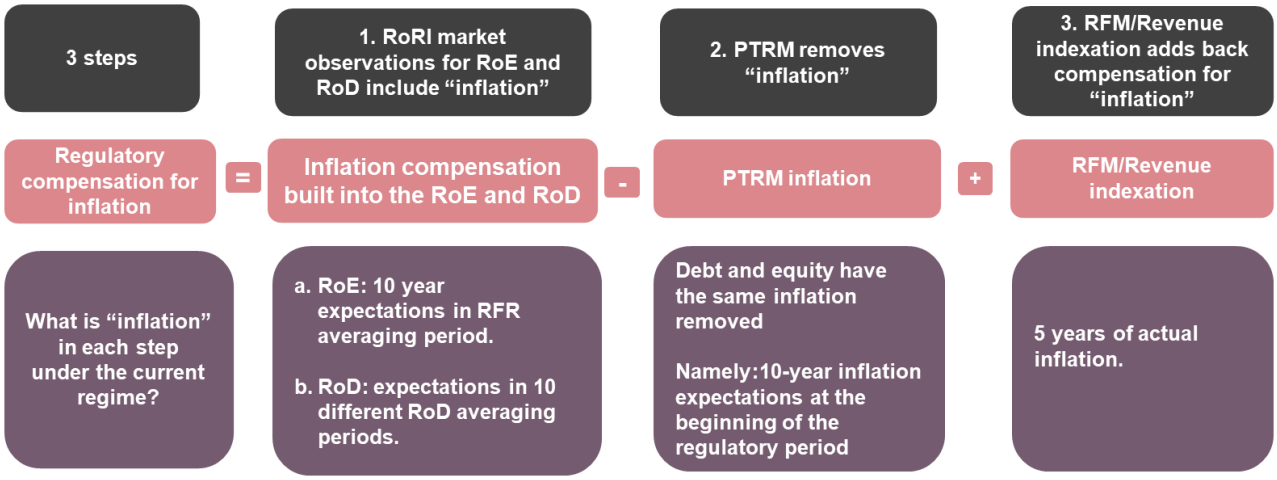
10. The AER's current regime is summarised in the graphic below. Inflation enters (and leaves) the regulated return in three places:

    i. Market rates of compensation for expected inflation are embedded in nominal yields for the risk-free rate and trailing average cost of debt estimated pursuant to the RoRI;

    ii. PTRM deducts inflation from debt and equity returns;

    iii. Compensation for actual inflation is added back via indexation of the RAB in the RFM (and, to a lesser extent, via indexation of revenues).

Figure 2-1: Summary of current regime



11. Only with this full structure of the regulatory regime in mind can one ask what the economically logical best estimate of PTRM inflation is. In my report for the ENA I explained that the best estimate of expected inflation had to do one of two things:

    A. Remove the inflation compensation embedded in step 1; or

    B. Remove the inflation compensation expected in step 3.

12. In my report for the ENA I explained that, when applied to the cost of debt estimated pursuant to the RoRI, the current 10 year inflation forecast is not targeting either of the above permissible objectives. That is, the 10 year inflation forecast is neither removing inflation embedded in the (10 year trailing average) nominal cost of debt

and neither is it removing inflation compensation expected to be provided via the RFM (which is a 5 year figure).

13. This conclusion is solely based on the mismatch between a 10 year inflation forecast and compensation in the RFM for only 5 years of actual inflation. This conclusion is not based on there being a bias in the AER's current method as an estimate of actuarially expected inflation over 10 years.

2.1 What is the impact of the 10 vs 5 year mismatch?

14. The RoRI estimates the cost of debt based on the historical average of a number (up to 10) of different observations of bond yields.[4] Each of these observations embeds in it different inflation expectations and different inflation risk premia unique to the period the observation was taken.

15. In the context of the rules, the question is what should the PTRM attempt to remove in step 2 of Figure 2-1 above? I conclude that the answer is that the PTRM should attempt to remove the inflation compensation that is expected to be added back in step 3 of Figure 2-1 (i.e., via revenue and RAB indexation to actual inflation over the next 5-years). This is a point of agreement between me and Dr Lally (as discussed below).

16. This means that PTRM inflation must be forecast at a 5-year horizon. This ensures that, in expectation if not in certainty,[5] the nominal compensation provided by the regime (RoRI, PTRM, and inflation indexation of revenues and RFM) will actually return us to the starting point (the nominal cost of debt estimated in the RoRI).

17. This is the approach applied by Ofgem, which subtracts a 5-year inflation forecast from a 10-14 year trailing average of nominal debt costs to arrive at a real cost of debt for the regulatory period.[6] Lally also provides a mathematical proof that, if the PTRM discount rate is a nominal discount rate, then the PTRM inflation used must anticipate inflation over the term of the regulatory period in order that the NPV=0 principle is satisfied.

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4 The RoRI uses 11 observations for the Victorian NSPs due to a recent change in timing from a calendar year basis to a financial year basis.

5 After all, actual inflation may turn out to be different to the 5 year ex ante estimate.

6 Ofgem, RIIO-2 Draft Determinations – Finance Annex, 9 July 2020, See summary of "consultation position" on p.13

18. The following stylised example describes how the AER's current regime results in any difference between 10- and 5-year inflation expectations being removed from the expected nominal compensation for the cost of debt.

Table 2-1: Stylised numerical example of current approach

Variable	Role in AER models	Algebraic designation	Value
Nominal TA RoD	Input to PTRM	A	2.0%
10-year expected inflation	Input to PTRM	B	2.0%
AER "real" RoD	Output of PTRM	C (=A-B)	0.0%
5-year expected inflation	Expected input to RFM/revenue indexation	D	1.0%
Expected nominal RoD compensation	Expected output of AER models	E (=C+D=A-B+D)	1.0%
Difference between "input" nominal cost of debt and output nominal compensation		F (=E-A=D-B)	-1.0%

Source: CEG analysis.

19. The first row starts with a nominal cost of debt of 2.0%. This is a nominal cost that will have to be paid irrespective of actual inflation. The second row is the PTRM input for actual inflation if a 10 year forecast equal to 2.0% is used. The third row is the "real" cost of debt output from the PTRM of 0.0% (2.0%-2.0%). The next row is expected inflation over 5 years of 1.0%.

20. These assumptions involve a 1.0% mismatch between expected inflation over 10 and 5 years. The net effect of this mismatch is that expected compensation for the cost of debt (the penultimate row) is 1.0% lower than the nominal cost of debt that was the starting point.

21. The RFM will only add 5 year inflation and therefore if the PTRM subtracts 10 year inflation the framework will not deliver the expected real or nominal return to the investors.

22. This illustrates the fact that, under the current model, even if inflation turns out to be exactly as expected (zero forecast errors) the combined AER models will deliver nominal compensation for debt costs that is different to the estimate of nominal debt costs from the RoRI. This is true whenever there is a mismatch between 5 and 10 year inflation.

23. This cannot be an appropriate outcome. If the RoRI reflects efficient debt funding costs on an ex-ante basis then investors must expect to recover those costs if inflation is as expected. The current method does not satisfy this requirement. If 5 year forecast inflation is lower than 10 year forecast inflation, then investors' expectations will be that they will not recover the cost of debt determined in the RoRI.

24. This implies that an NSP will not recover their ex-ante real or nominal cost of debt even if the NSP contracts at precisely the nominal rates that the AER estimates as being cost reflective, and even if 10 year inflation is exactly as the AER predicts will occur.[7] This is because the inflation that should be removed from nominal returns in the PTRM is 5 year inflation and not 10 year inflation.

Key conclusion

If debt is a nominal cost that is, nonetheless, to be turned into a "real" compensation stream, the PTRM must remove the same value of inflation compensation as the value it expects to add back in revenue/RAB indexation. This value is equal to inflation over the 5-year regulatory period.

2.2 What is the forecast impact for Victorian NSPs

25. The above described under compensation due to a mismatch between 5 and 10 year inflation, is precisely what, on the basis of current forecasts, would occur if the AER applied a 10 year forecast for Victorian NSPs in the upcoming regulatory determination for the 2021-26 period. On the basis of AER estimates, the 10 year forecast for Victorian NSPs is likely to be 2.30% while the 5 year forecast is likely to be 1.95%.[8]

7 As already discussed, when expected inflation is lower over 5 years than 10 years it is perfectly appropriate that the expected nominal compensation for equity is lower than the PTRM nominal cost of equity input. This is because the nominal cost of equity input to the PTRM includes the 10 year inflation compensation embedded in it. Therefore, to derive a real risk free rate (one that is free from any inflationary impact) we must remove 10 year inflation compensation. Having done this, all we care about is the real return derived. It does not matter for that real return whether nominal returns over 5 years are different to those expected over 10 years.

8 AER, Draft Position Paper, Regulatory Treatment of Inflation, October 2020, p. 67, Table 5. The five year estimate applies a glide path based on the fact that the AER regards this as most accurate. Even if the 5 year estimate did not apply a glide path (2.10%) the difference would still be material.

26. This 0.35% difference is a direct estimate of the under-compensation for the RoRI cost of debt that will be expected to occur if the AER uses 10 year inflation rather than 5 year inflation.

27. There is nothing that Victorian NSPs can do, or could have done, to avoid this loss. Even if the businesses had issued inflation indexed debt, they would still be exposed to this loss of 0.35 bppa on its cost of debt (see Appendix C below).

2.3 AER draft position to adopt a 5-year forecast

28. The AER draft position to move to a five year forecast moves the regulatory regime from an untenable position to an internally consistent position.

29. This removes the error that existed in the previous regime and is a significant improvement in the overall robustness of the regulatory models and methods.

3 AER glide path vs market measures

30. The AER has proposed that it will estimate the 5-year inflation forecast based on:

    - Two years of RBA forecasts; plus
    - 3 years of a linear glide path starting at the second year of the RBA forecasts and ending at 2.5% in the final year.

31. This decision involves an additional change in methodology – above and beyond the adoption of a 5 year forecast. The current method assumes that expected inflation jumps immediately to 2.5% at the end of the initial 2 years of RBA forecasts. The AER has stated that there is good reason in the current market circumstances to believe that this assumption is aggressive. The AER states:[9]

    … there is evidence that the transition back to the mid-point of the RBA's target band may take longer than previously. This is supported by:

    - *Statements from the RBA including:*

      …the global outbreak in coronavirus is expected to delay progress in Australia towards full inflation and the inflation target, and

      Inflation is not likely to be within the 2-3 per cent target range for at least three years.

    - *Data from Consensus Economics' surveys showing a transition over years 3 to 5 back to the mid-point of the target band.*
    - *Inflation outcomes that have been below the mid-point of the RBA's target band for an extended period.*

    On the basis of this evidence we are proposing to introduce a glide-path approach to provide the best estimate of expected inflation.

32. I consider that this is a correct decision and that it is appropriate to assume a gradual return to 2.5%.

9 AER, Regulatory treatment of inflation, Draft position, October 2020, p. 57.

33. This is consistent with advice I have been providing since at least 2015. For example, in a 2015 report for SAPN I stated (in relation to the AER method of assuming an immediate return to 2.5%):[10]

> *While the AER method may be reasonable in what might be termed 'normal' market conditions, this is not currently the case. With the RBA cash rate at record low levels of 2.00%, and with further near term rate cuts priced into financial markets, the RBA cash rate is dangerously close to the 'zero lower bound'. Monetary policy's most direct effect on the economy and, therefore, inflation is through lower interest rates. However, the RBA cannot set a cash rate below zero (or at least not materially below zero) because at such levels, businesses and households will prefer to hold cash – which delivers a zero rate of interest. Thus, the potential for monetary policy to stimulate economic activity diminishes as policy interest rates approach zero, thereby creating the potential for a low inflation trap, which monetary policy may be ineffective at extracting the economy from.*

34. This advice has been borne out in the subsequent years with, as noted in the AER quote above, "*inflation outcomes that have been below the mid-point of the RBA's target band for an extended period*".

35. I commend the AER for the adoption of an assumption that assumes a slower return to 2.5% than under the current regime. However, I note that the assumption of a return to 2.5% in the fifth year of the forecast period may well still be optimistic. I reach this conclusion based on:

- The fact that back-casting the 5 year glide path method results in an overestimate of actual 5 year inflation using every RBA SoMP from February 2010 onwards; and
- The fact that current market based estimates of expected inflation are materially lower than the AER 5-year glide path method.
- While I note that the AER has reservations about potential bias in these market measures, I also note that these measures have, since 2010, more accurately estimated actual inflation than:
  - The AER glide path approach over 5 years; and
  - The RBA 2 year forecast.

[10] CEG, Measuring expected inflation for the PTRM, June 2015,

36. In the following tables and figures I present the evidence that the above three dot points are based on.

37. Figure 3-1 compares the historical series of inflation forecast estimates from the AER's 5 year glide path (obtained on a half-yearly basis) against actual CPI inflation over the subsequent 5 years.[11] Since June 2010, the AER's proposed 5 year glide path and current 10 year approach have both historically overestimated actual CPI inflation.

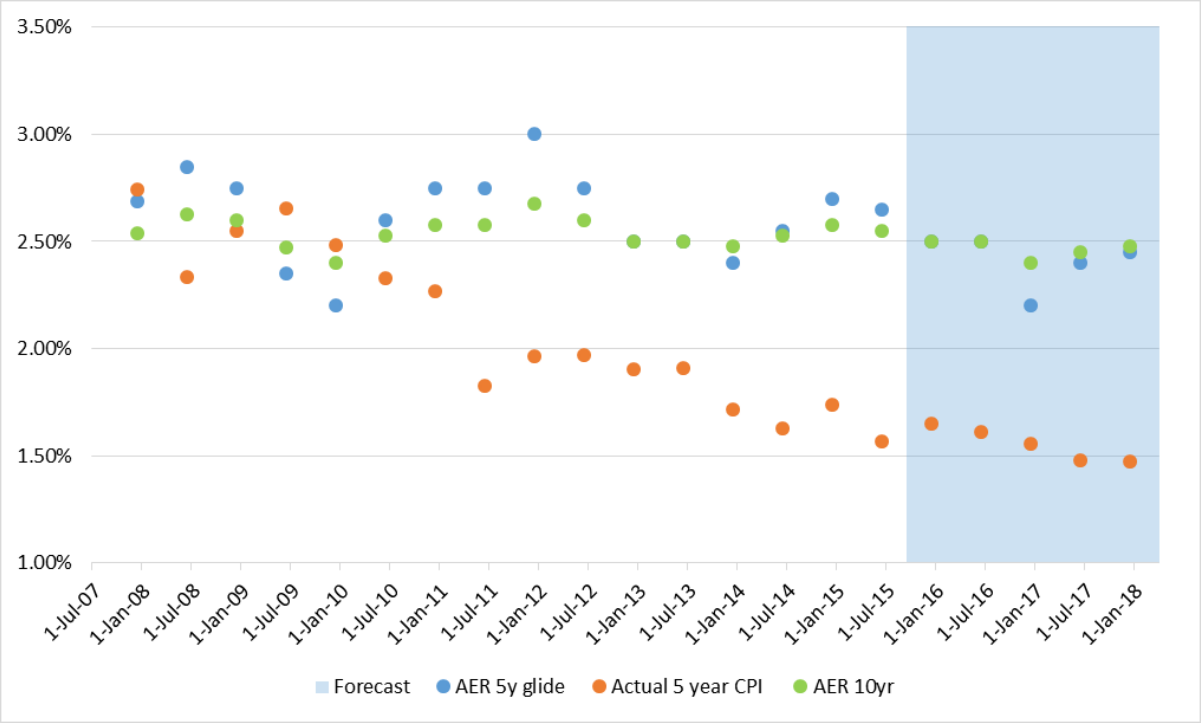
38. In generating Figure 3-1, I have assumed that actual inflation for December 2020 onwards is equal to the inflation forecasts from the RBA's August 2020 Statement on Monetary Policy. The shaded box indicates the actual 5-year CPI inflation observations (orange dots) that were derived based on this assumption, namely all observations from December 2015 onwards.[12]

[11] Each 5 year glide path forecast is obtained from the SoMP four months prior to the forecast date, such that a December forecast is obtained from the August SoMP in that year, while a June forecast is obtained from the February SoMP. This roughly reflects the AER's forecast timeframe in practice, where the inflation forecast is made around 1-2 months prior to the start of the regulatory period.

[12] The CPI for June 2020 was contaminated by the temporary childcare subsidy that came into effect on 6 April 2020 and ended on 28 June 2020, resulting in negative year-on-year inflation (-0.3%) for June 2020. I have adjusted the June 2020 CPI by applying the corresponding trimmed mean inflation (1.2%) for that quarter. This is consistent with the AER's final decision for JGN, which used the RBA's trimmed mean inflation forecasts for the first two years.

See: AER, Jemena Gas Networks (NSW) Ltd Access Arrangement 2020 to 2025, Attachment 3 – Rate of return, Final Decision, June 2020, p. 9.

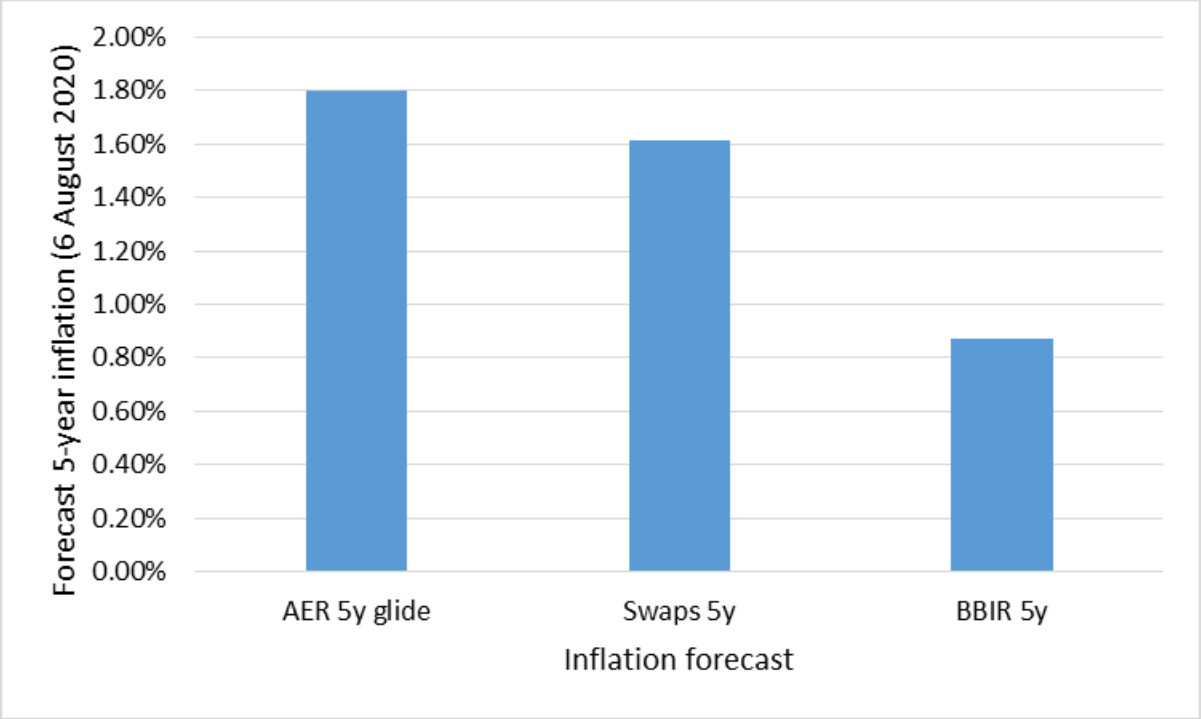
Figure 3-1: AER 5 year glide path vs actual inflation



Source: AER, RBA, ABS, CEG analysis

39. Figure 3-2 compares forecasts generated using the AER's 5 year glide path against current market based estimates of 5 year expected inflation (5 year inflation swaps and 5 year bond break-even inflation rate (BBIR)) as at 6 August 2020, which is the publication date of the RBA's latest *Statement on Monetary Policy*. The AER's 5 year glide path (1.80%) is materially higher than the 5 year inflation swap rate (1.62%) and 5 year BBIR (0.87%).

Figure 3-2: AER 5 year glide path vs 5 year swaps and BBIR (6 August 2020)



Source: AER, RBA, ABS, Bloomberg, CEG analysis

40. Appendix A sets out a historical comparison of the AER's 5 year glide path against two market-based inflation forecasts, namely 5 year CPI swaps and 5 year BBIR. My analysis shows that all three forecast methods have consistently overestimated actual inflation since June 2010 onwards, but the 5 year BBIR estimate has been the most accurate of the three from December 2014 onwards, followed by the 5 year inflation swap estimate. The AER's 5 year glide path was the least accurate of the three from December 2014 onwards. The same patterns apply to the 2 year forward inflation forecasts generated by the three forecast approaches.

4 Is a delay in implementation appropriate?

41. The AER draft position paper seeks stakeholder views on whether there is any merit in delaying the implementation of a 5 year forecast in order to reduce, or eliminate, any expected benefits to NSPs who have upcoming regulatory decisions. The AER refers to such an approach as a "transition" between a 10 year and a 5 year forecast methodology (although I consider that it is more accurate to describe this as delayed implementation).[13]

42. The logic for such a delay is set out in the below passage:[14]

> *Whether to apply a transition is a matter of regulatory judgement. We note that at this time the impact of the change is not known with certainty as our next decisions will incorporate estimates of inflation from the RBA's Statement on Monetary Policy in February 2021. Further, the impact of the potential mismatch between our current approach and the indexation of the RAB is also uncertain. However, based on submissions from the service providers this impact may be significant and therefore should be addressed presently*
>
> *On the other side, based on current market data, our change in approach could lead to a significant increase in the revenue we would allow in our upcoming decisions. We need to be confident such an increase is a genuine result of a mismatch and not a windfall gain or loss.*

43. I consider that delaying implementation of a 5 year forecast would be inappropriate on the following grounds:

    a. The existing mismatch will result in material under-compensation for the funding costs. Correcting this expected under-compensation should not be characterised as a windfall gain but, rather, the avoidance of a windfall loss.

    b. In any event, the AER's proposed approach has, built into it, a material delay in implementation for the upcoming Victorian NSP decisions. This will impose a

[13] I prefer to describe this as a delayed implementation because, in reality, the 5 and 10 year methods are discrete and the AER is either applying one or the other (not a blending of the two). A transition seems to imply a gradual move from one method to the other (as was applied in the change from the on-the-day cost of debt to the trailing average cost of debt).

[14] AER, Draft Position Paper, Regulatory Treatment of Inflation, October 2020, p. 70.

material negative expected value loss on Victorian NSPs even without any delay/transition to the adoption of a the AER's 5 year forecast;

c. Even without using an overestimate of inflation expected to be compensated in the RFM there are serious financeability concerns associated with current low risk free rates. These concerns are very materially exacerbated if the best estimate of expected inflation (using a 5 year horizon) is not used in the PTRM. (I discuss this further in section 5 below).

d. The three points listed above are true even if one accepts the AER's proposed method (use of RBA forecasts plus a glide path) as being the most accurate prediction of inflation over 5 years. However, there is strong reason to believe that, in the current market conditions, this is not the case as my analysis in Appendix A shows that forecasts from 5 year CPI swaps and 5 year BBIR have historically been more accurate at forecasting actual inflation since December 2014. These rates are currently well below the AER 5 year glide path. If these rates continue to be the most accurate predictor then, even the immediate adoption of the 5 year forecast and the removal of the delay described in point b. would leave Victorian NSPs undercompensated for their return on investments.

e. Finally, I note that there may be a perception that there have been windfall gains from inflation forecast errors in the past that should, somehow, be corrected by imposing windfall losses now. I would disagree with such an argument even if the data supported the existence of such historic windfall gains. However, it is clear that the AER's current 10 year forecast method has over-forecast inflation in almost every regulatory decision since it was adopted in 2007 – including the two decisions made by the AER for JEN in that period. Delaying implementation of a five year forecast now would compound those historic windfall losses.

44. I further note that the National Electricity Rules (NER) require the AER to implement the method that is likely to result in the "best estimates of expected inflation" in the PTRM:[15]

> *(b) The contents of the post-tax revenue model must include (but are not limited to):*
>
> *(1) a method that the AER determines is likely to result in the best estimates of expected inflation…*

45. Importantly, the NER does not include a provision for a transition to the best estimate of inflation. This contrasts with the rules that applied at the time the AER implemented a transition on the cost of debt top a trailing average – which specifically

[15] NER version 153, Rule 6.4.2(b)(1) and Rule 6A.5.3(b)(1).

envisioned such a transition. Moreover, the transition imposed by the AER in that context could reasonably be argued, and was argued by the AER, to be either:

- a transition between two more or less equally satisfactory methods for estimating the cost of debt; and/or
- the best estimate of the cost of debt for a NSP that was, itself, transitioning between "on the day" hedging and a simple trailing average cost of debt.

46. No similar argument is available here for delaying the implementation of the best estimate of expected inflation. This is a critical input into how the return on capital is compensated. Such a delay is, at least as a matter of economics, inconsistent with the requirements set out in the rules that the AER adopt a method that is likely to result in the best estimate of expected inflation.

4.1 Failing to correct the identified mismatch creates a windfall (not the opposite)

47. I explained in section 2 that the AER draft position to move to a five year forecast moves the regulatory regime from an untenable position to an internally consistent position. This removes the error that existed in the previous regime and is a significant improvement in the overall robustness of the regulatory models and methods.

48. I also noted in section 3 that, in the AER's own estimation (which I share), the decision to implement a glide path materially improves the accuracy of the inflation estimate in current market circumstances.

49. Given these facts, there can be no basis to not adopt both reforms immediately. Both reforms make the estimate better and will, as explained in section 2, prevent (or at least limit) under-compensation for the cost of debt.

50. Failing to immediately implement these reforms in the upcoming Victorian NSP decision will mean that the estimate of inflation is not the best estimate. According to the AER's own estimates that are based on current RBA forecasts, this will lead to under-compensation of around 35bppa. This under-compensation would amount to deliberately imposing an expected windfall loss on Victorian NSPs relative to the AER's own estimate of efficient costs.

51. Of course, one can always describe the elimination of a "loss" as a "gain" to the party. However, it is only reasonable to assign the term "windfall" to the action that creates a departure from cost-based compensation. In this context, that action would be failing to implement the best estimate of expected inflation.

4.2 The AER's proposed approach already includes an implicit transition

52. This section explains the issue raised in paragraph 43.b above.

53. If implemented immediately, the AER's 5 year forecast is estimated for the 5 years from 1 July 2021 to 30 June 2026. On the AER's own published estimates based on the RBA August 2020 SoMP, this would result in a **1.95%** inflation forecast. (This compares to **2.30%** under continuation of the current 10 year method.)

54. However, the Victorian NSPs will be compensated for inflation in the next RFM using lagged inflation (covering the five years from 1 January 2020 to 31 December 2025). Based on the same method the AER uses to derive the 1.95% forecast, expected inflation over the RFM period is **1.55%**.

55. If the AER were to truly eliminate the mismatch between PTRM and RFM inflation, it would need to use the 1.55% forecast in the PTRM. By proposing to use the 1.95% inflation forecast the AER is already implementing an effective delay (transition) that creates an expected windfall loss to Victorian NSPs of 0.40% pa in under-compensation for inflation. If the AER imposed a further delay by applying the current 10 year forecast for Victorian NSPs (around 2.30%) then the total windfall loss to Victorian NSPs would be around 0.75% under-compensation for inflation (2.30% less 1.55%).

4.3 The 5 year glide path is very likely to overestimate 5 year inflation

56. While the 5 year glide path is, in my view, likely to generate forecasts that are more accurate than the AER's current approach, it is nevertheless still likely to overestimate actual 5 year inflation. This can be seen in Figure 3-1 above, where the 5 year glide path forecasts derived from previous RBA SoMP have resulted in overestimates from 2010 onwards.

57. Furthermore, as shown in Figure 3-2, the 5 year glide path forecast as at the RBA's latest SoMP (1.80%) was 18 bp higher than the 5 year inflation swap forecast (1.62%) and 93 bp higher than the 5-year BBIR forecast (0.87%). This is the case even though these two market measures have historically been more accurate than the 5 year glide path while still overestimating inflation over the subsequent 5 years.

58. These two empirical observations suggest that if current market conditions continue, then the 5 year glide path is very likely to continue overestimating 5 year inflation. Thus, even if the AER were to immediately adopt the 5 year glide path as its inflation

forecast without a delay in implementation, the Victorian NSPs would still be undercompensated for the return on their investments.

4.4 Inflation has been over forecasted for a decade

59. The AER's current inflation forecasting approach assumes that forward inflation 3 to 10 years ahead is 2.5%, meaning that 80% weight is applied to a 2.5% estimate when deriving the inflation forecast. As shown in Figure 3-1, however, actual inflation has in fact been materially below 2.5% since 2010, meaning that the Victorian NSPs have incurred windfall losses for the past decade. This period includes the two decisions made by the AER for JEN in that period.

60. To the extent that the AER perceives that Victorian NSPs have received windfall gains in the past that should be corrected by imposing windfall losses now, the empirical evidence shows that such a perception is incorrect. The historic windfall losses incurred by Jemena and the Victorian NSPs will continue to compound if the AER were to delay the implementation of the 5 year glide path inflation forecast.

5 Flexibility to deal with financeability concerns

5.1 Unprecedented low risk free rates and unorthodox monetary policy

61. On the 3rd of November 2020 the RBA reduced the cash rate and the target 3 year Government bond rate to 0.10%. The RBA also announced a further $100bn purchase program for Government bonds with longer than 3 year maturity. This is in addition to the purchase of bonds with around 3 years maturity – which is uncapped:[16]

> *The Bank remains prepared to purchase bonds in whatever quantity is required to achieve the 3-year yield target. Any bonds purchased to support this target would be in addition to the $100 billion bond purchase program.*

62. This is an unprecedented move by the RBA, which firmly places policy interest rates at the zero lower bound – as foreshadowed was a real prospect in my advice for the last 5 years (see paragraph 33 below). This fact creates asymmetry around the expected path of medium term inflation – with greater likelihood of inflation staying below the midpoint of the RBA range than of inflation exceeding the midpoint of the RBA range over the next 5 years (see paragraph 33 below).

63. The effect of the purchase program for longer dated bonds is that the yield on the 10 year bond used to set the risk free rate (RFR) under the RoRI will be directly affected by RBA purchases. This is likely to put further downward pressure on these rates and lead to financeability concerns addressed in the next section.

64. I note that other regulators internationally have cited such central bank purchases of long dated bonds as a reason to set a risk free rate for regulatory purposes above the prevailing bond rate.[17]

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16 https://www.rba.gov.au/media-releases/2020/mr-20-28.html

17 For example, Ofcom's 2018 wholesale market review statement, available here and here cites "quantitative easing" as a reason for not simply relying on observed market rates [emphasis added]:

> *A16.21 We continue to believe that caution is required in interpreting the evidence available. Given that we are attempting to estimate a forward-looking real RFR appropriate for the end of the charge*

65. The RoRI does not afford the AER the same flexibility. In the context of a very low, and potentially artificially low, risk free rate, it is especially important not to impose known under compensation for the cost of debt via the adoption of a 10 year inflation forecast that is known to be inferior to a 5 year inflation forecast.

5.2 Impact on cash-flows of PTRM/RFM inflation mismatch and unprecedented low RFR

66. Using an unchanged 10 year inflation estimate in the PTRM of 2.30% would, based on the AER's estimates, result in a mismatch of:

- **0.35% pa** being the difference between 10 and 5 year estimates both forecasting from the same start date of 1 July 2021; and
- **0.75% pa** being the difference between 10 and 5 year estimates with the 10 year forecast starting on 1 July 2021 while the 5 year estimate was a mix of actual and forecast inflation starting on 1 January 2020 (the date from which 5 years of inflation will be included in the RFM).
    - Note that 0.75% is the sum of 0.35% (from the first dot point) and 0.40% referred to in paragraph 55 above.

67. A forecast under compensation of 0.35%/0.75% on funding costs is especially problematic given the current low risk free rate environment.

68. Extremely low risk free rates, applied in conjunction with the RoRI's fixed market risk premium (MRP), have dramatically lowered the overall equity buffer for NSPs. Noting that it is the equity buffer that must absorb under-compensation for debt costs.

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control period, ***it would be inappropriate to simply adopt the current low rates on index-linked gilts without considering the reasons why they could be depressed***.

A16.22 ***Rather than seek to make a mechanistic adjustment to the real RFR for these factors, our revisions to the real RFR are taken in the round, considering information on longer-term average yields as well recognising the low observed yields in more recent years.***

A16.23 Figure A16.6 shows Ofcom's decisions on the real RFR compared to yields on ten-year gilts over different averaging periods – spot rates, five year averages, ten year averages and 15 year averages. As can be seen from this figure, our real RFR assumptions have more closely followed the longer-term averages. ***We have placed less weight on spot yields which may not be typical for the forward-looking period*** *for which the WACC is set and may not reflect the long-term features underlying the return required by investors.*

69. In recent decisions, the AER's own modelling is showing negative net profit after tax (NPAT). This negative NPAT is being driven by the removal of high 10 year inflation forecasts (circa 2.3%) from low 10 year nominal government bond rates (circa 0.7% at the time of writing) to arrive at a negative real risk free rate of around -1.6%.

70. This, on its face, serious financeability concern (negative NPAT) is resolved, within the logic of the PTRM, by assuming that NSPs can borrow against a RAB that is rising by 2.3% pa. That is, equity holders are assumed, within the logic of the PTRM, to fund the negative NPAT by borrowing against a RAB that is rising at 2.3% pa. When funding from new debt raising (against a growing RAB) is accounted for cash flow to equity will generally turn positive (and will certainly turn positive if the RAB is actually growing consistent with the rate assumed by PTRM inflation).

71. However, even if the RAB were growing at 2.3%, a negative NPAT is still problematic from a financeabilty perspective because it means that there is a negative cash buffer. This means access to funding markets are required purely to pay interest on debt. If access to funding markets became problematic, the ability to solve cash-flow issues by retaining more profits is non-existent. The only alternative option available to a NSP would be cutting back on expenditures but this is likely to impact service levels.

72. The above conclusion is true even if the RAB is growing at 2.3%. In reality, the RAB will only grow at the rate of inflation over the 5 years. If there is a 0.35% or 0.75% gap between 10 and 5 year inflation (as currently forecast by the AER for Victorian NSPs) then the negative NPAT problems are materially exacerbated.

73. This can be illustrated with JEN's draft decision PTRM. More detailed calculations are provided in Appendix D which I summarise below.

74. Assuming a 0.7% risk free rate, then the nominal return on equity input to the PTRM will be 4.36% (=0.75%+0.6×6.1%). If 10 year expected inflation of 2.30% is used as the input to the PTRM then JEN can expect negative cash flow to equity (excluding any cash flow from the proceeds of new debt) of **– 1.39%**.[18] This is the value of NPAT to a first approximation.

75. If I include the proceeds from new debt raised (worth 60% of any projected growth in the RAB) then cash-flow to equity will increase. However, this depends on the

[18] Cash flow to RoE (excluding proceeds from new debt) =4.36%-2.3%×(1+(60%)/(40%))= -1.39%. The subtraction in this formula relates to the withholding of inflation compensation in the PTRM cash-flows because it is projected to be provided via RAB indexation. The 60/40 factor accounts for the fact that equity must also fund the compensation for debt funding that is withheld in the PTRM (and debt is 1.5 times the size of equity).

inflation indexation in the RFM (not PTRM). If RFM inflation is expected to be 0.35%/0.75% pa lower than 2.30% pa then:

- **RFM inflation is 0.35% lower** - the cash flow to equity is just **+1.54%**.[19]
- **RFM inflation is 0.75% lower** - the cash flow to equity is just **+0.94%**.[20]

76. These are the equity cash-flow buffers consistent with maintaining a 60% gearing. These are only achievable if debt markets are able to be accessed and are, in any event, very small buffers against other forms of shocks to cash-flows.

77. The actual return on equity (inclusive of growth in the equity portion of the RAB) will only be:

- **RFM inflation is 0.35% lower** – overall return on equity of +**3.49%**.[21]
- **RFM inflation is 0.75% lower** - the cash flow to equity is just **+3.09%**.[22]

5.3 Implications for AER inflation (and other) decisions

78. By immediately implementing the use of a 5 year glide path the AER substantially reduces, but does not necessarily eliminate, the stress that low risk free rates place on equity cash-flows. Relative to a 2.30% value, a 1.95% PTRM inflation value increases equity cash-flows by 0.87%.[23] This is a substantial improvement and an important reason not to delay a move to adopting a 5 year inflation estimate.

79. However, there is still a material risk that changes in risk free rates and/or RBA forecast between now and JEN's final decision could undo some, or all, of the cash-flow benefits from this measure. This is especially the case in the context of the RBA's

[19] 1.54% =4.36%-2.3%-0.35%×60%/40%= +1.54%. The 0.35% deduction follows from the fact that if RFM inflation is 0.35% lower than PTRM inflation then total compensation for debt costs will be 0.35% lower. This means that, even with borrowing against the growing RAB, equity cash-flows receive 0.35% less than necessary to cover the interest costs of debt.

[20] 1.54% =4.36%-2.3%-0.75%×60%/40%= +0.94%.

[21] 3.49% =1.54% + 1.95%. 1.95% is the actual indexation of the equity portion of the RAB in the RFM (assuming actual inflation is 0.35% less than 2.30%).

[22] 3.09% =1.54% + 1.55%. 1.55% is the actual indexation of the equity portion of the RAB in the RFM (assuming actual inflation is 0.75% less than 2.30%).

[23] This is 2.5 times the 0.35% difference in inflation values due to the fact that equity is only 40% of the RAB.

long term bond purchase operations – which have the potential to materially distort long term bond rates relative to their values without such RBA intervention.

80. In that case, the AER should retain flexibility to adopt measures that increase cash flow to businesses to help them meet financeability requirements of a BBB+ business. Such flexibility could potentially come in the form of increasing regulatory depreciation allowance using one, or multiple, of the below three options:

- Instead of forecasting inflation from June 2021 to June 2026, forecast 5 years of inflation based on:
  - December 2020 to December 2025; or
  - December 2019 to December 2024.

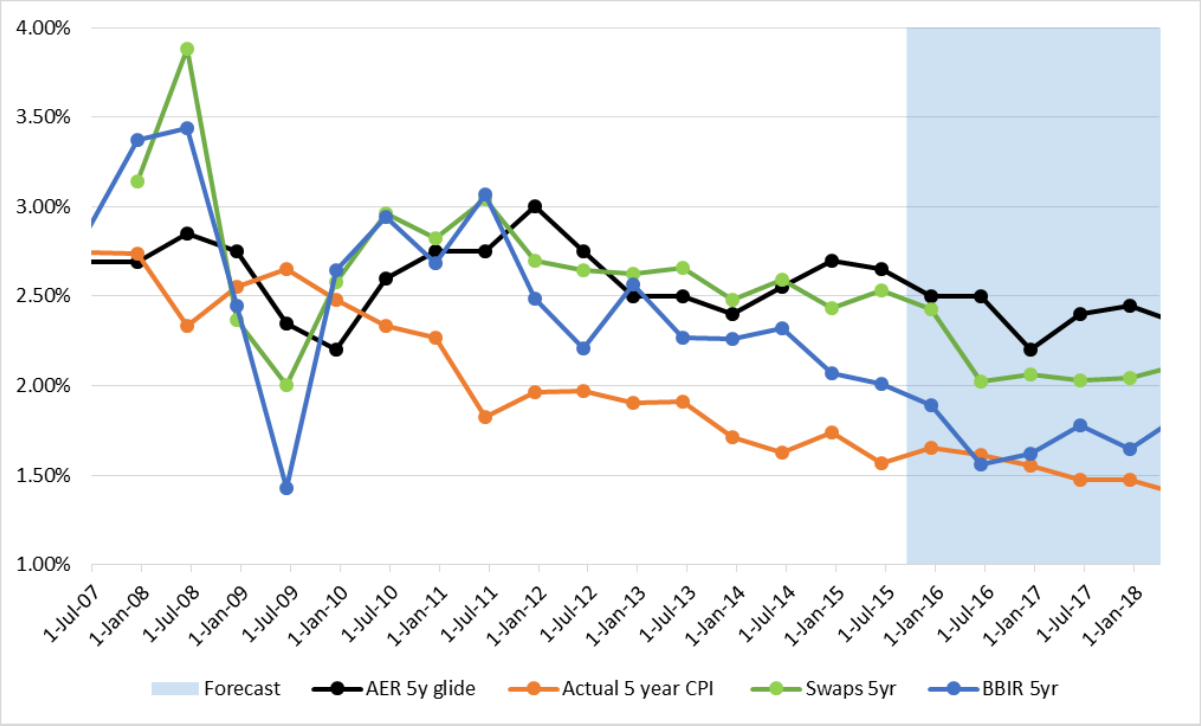
  Given current low inflation, both of these approaches would almost certainly lower PTRM inflation. Both of these approaches will better match the actual inflation used in the RFM (which is a December-December series). The second approach will perfectly match the inflation to be used in the RFM.
- Lower the 5th year target inflation from 2.5% to a lower level that can be determined using, for example, inflation swaps or some other approach the AER considers helps it in making a financeable decision; and
- Lower asset lives for some categories of investment to increase depreciation allowance.

81. The first two of these approaches have a NPV impact on the value of assets while the second does not. However, the NPV impacts of the first two adjustments may well be appropriate in the circumstances.

Appendix A Accuracy of inflation forecasts

82. Figure A-1 compares the accuracy of the AER's 5 year glide path against the 5 year CPI swaps and 5-year BBIR. All three forecast methods have consistently overestimated actual inflation since June 2010 onwards, but the 5 year BBIR estimate has been the most accurate of the three from December 2014 onwards, followed by the 5 year inflation swap estimate. The AER's 5 year glide path was the least accurate of the three from December 2014 onwards.

Figure A-1: Accuracy of AER 5 year glide path vs 5 year CPI swaps and 5 year BBIR



Source: AER, RBA, ABS, Bloomberg, CEG analysis

83. Table A-1 sets out three measures of forecast accuracy, namely: root mean squared error (RMSE); mean absolute deviation (MAD); and median absolute deviation (MAD-median). With all three measures, a lower number indicates a more accurate set of forecasts. When these measures are applied to the forecast estimates over June 2010 to June 2019, it can be seen that BBIR generates the most accurate forecasts,

followed by inflation swaps. The AER/RBA forecasts are the least accurate of the three, and this is true for both the 2 year forward inflation forecasts and the 5 year geometric mean forecasts.

Table A-1: Error statistics (half-yearly over Jun 2010 - Jun 2019)

	RMSE			MAD			MAD-median		
	AER/RBA	Swaps	BBIR	AER/RBA	Swaps	BBIR	AER/RBA	Swaps	BBIR
2 year forward	0.89%	0.74%	0.74%	0.81%	0.58%	0.57%	0.80%	0.54%	0.47%
5 year	0.83%	0.71%	0.49%	0.80%	0.68%	0.41%	0.87%	0.70%	0.36%

Source: AER, RBA, ABS, CEG analysis; In the AER/RBA column, the 2 year forward forecast is from the RBA's SoMP, while the 5 year forecast is from the AER's glide path; RMSE: root mean squared error, MAD: mean absolute deviation, MAD-median: median absolute deviation.

84. I would include in my list of reasons for this assumption a further point that is not included in the above list. Namely, that in periods where short term interest rates are close to 'the zero lower bound' monetary policy can be ineffective in stimulating economic activity.[24]

[24] Because there is a limit to how low short term nominal interest rates can fall before economic agents prefer to hold cash than deposits at financial institutions).

Appendix B Lally's proof that PTRM inflation should be 5 years

85. Dr Lally proves, on pages 4 and 5 of his report, that PTRM inflation must anticipate inflation over the regulatory period in order to satisfy the NPV=0 result.

86. I agree that Dr Lally's proof is well constructed and valid. However, I note that it implicitly assumes that the discount rate is a nominal discount rate. This means that for the cost of debt, which I agree is a nominal cost, Dr Lally and I agree that the PTRM inflation (used to index the debt portion of the RAB) should reflect expected inflation instead of actual inflation.

87. Dr Lally has a simplified model with no building blocks other than capital returns and zero depreciation/capex and with a single year regulatory period. In this model, the value of the opening RAB (A_o) must equal the present value of nominal expected revenues plus the expected indexed value of the opening RAB ($A_o[1 + E(i_1)]$).

$$A_o = \frac{E(REV_1) + A_o[1 + E(i_1)]}{1 + k_0} \qquad (1)$$

88. From this incontrovertibly correct position, Dr Lally simply rearranges terms to derive the correct real rate of return consistent with the NPV=0 condition (equation 1).

$$E(REV_1) = A_o[k_0 - E(i_1)] \qquad (2)$$

89. Equation 2 is the cash return that the PTRM must deliver such that, in combination with indexation in the RFM (equation 1), the NPV=0 principle.

90. Dr Lally's equation (2) proves that the NPV=0 principle requires that PTRM revenues must be derived by deducting the same inflation that is expected to be added to the RAB (i.e., $E(i_1)$).

Appendix C Current methods do not compensate for real cost of debt

91. The AER's current models and methods neither:

    - Estimate the cost of a nominal debt issuance program and turns this into a real target return over the regulatory period; nor
    - Estimate the cost of a real debt issuance program.

92. What the AER's models and methods actually do is start with a trailing average of nominal debt costs over 10 historical years then deduct a 10-year estimate of expected future inflation at the beginning of the regulatory period. This results in a real return that does not:

    - bear any relation to the real debt costs that an NSP would incur if they funded themselves using inflation indexed debt. To achieve this objective the AER would have to remove a 10-year trailing average of expected inflation;[25]

    nor does it

    - result in an expectation that the nominal cost of debt estimated pursuant to the RoRI will be recovered. This is true even if actual inflation exactly matches the AER 10-year forecast. This is because actual compensation for inflation is provided in the AER models over 5-years not 10-years.

93. The current methods and models do estimate and target a "real" level of compensation for the cost of debt. It is just that this "real" estimate will generally not be an economically meaningful estimate. The only circumstance in which the current methods and models do accurately compensate (in expectation) debt funding costs is where: a) debt funding costs are nominal in nature; and b) 10 year inflation expectations are, by coincidence, the same as 5 year inflation expectations.

[25] And the AER would need to add a liquidity premium to reflect the difference in real yields between nominal and inflation indexed corporate debt.

Appendix D Equity cash flow calculations

94. Assuming 10 year government bond rates are 0.7%, the RoRI will deliver a nominal return on equity (RoE) of 4.36% (=0.7%+0.6*6.1%). However, with 2.3% PTRM inflation this translates to a negative cash returns to equity investors. Cash returns to equity investors (i.e., before any proceeds from borrowing against a rising RAB) will be given by the following approximate formula:

$$\begin{aligned} True\ cash\ RoE\ (excl.proceeds\ from\ new\ debt) &= 4.36\% - 2.3\% \times (1 + \frac{60\%}{40\%}) \\ &= 4.36\% - 2.3\% \times 2.5 \\ &= -1.39\% \end{aligned}$$

95. The reason a nominal RoE of 4.36% becomes a negative cash RoE is that equity must bear 100% of the reduction in cash returns in the PTRM despite funding just 40% of the RAB. Consequently, 2.3% reduction cash returns must be multiplied by $(1 + \frac{60\%}{40\%})$=2.5 to arrive at the impact on cash return to equity.

96. The PTRM assumes that JEN can fund this negative cash return on equity by borrowing against a rising RAB. If the RAB were truly rising at 2.3% then the cash return inclusive of additional borrowings would be estimated without the $\frac{60\%}{40\%}$ term in the above equation. This is because equity holders could effectively borrow against a 2.3% higher RAB to pay the interest costs on their debt.

$$\begin{aligned} PTRM\ cash\ RoE\ (incl.proceeds\ from\ new\ debt) &= 4.36\% - 2.3\% \times (1) \\ &= 4.36\% - 2.3\% \\ &= +2.06\% \end{aligned}$$

97. Equity investors achieve the target 4.36% return mostly via nominal indexation of the RAB (4.36%=2.06% cash+2.30% indexation of the RAB). Of course, this 2.06% nominal equity buffer is derived assuming that debt markets are open and can be accessed. This is not a buffer against problematic access to debt markets (as noted already, the equity buffer is negative 1.39% in that context.)

98. Of course, if the RAB is only truly growing at 1.95%, consistent with the AER 5 year forecasts, then the true cash flows available to JEN is materially lower than 2.06%. The true cash-flows are given by:

$$True\ PTRM\ Cash\ RoE\ (incl.proceeds\ from\ new\ debt)$$
$$= 4.36\% - 2.3\% - \frac{60\%}{40\%} \times (2.3\% - 1.95\%)$$
$$= +1.54\%$$

99. This means that the actual nominal return to equity holders will only be 3.49% (=1.54% cash plus 1.95% in RAB indexation) not 4.36%. Critically, from a financeability perspective, the 1.54% cash equity return is an extremely small buffer that remains to absorb any economic shocks an NSP.

100. If, instead, 1.95% is substituted for 2.3% in the above formulae, then:

- PTRM cash RoE (excluding proceeds from new debt) rises from **-1.39% to -0.52%** - a material increase even though NPAT remains negative; and
- Cash flow to equity inclusive of borrowing against a growing RAB rises from **1.54% to 2.41%**.