22 May 2020

Dr Paul Paterson
Chair
Independent Pricing and Regulatory Tribunal
PO Box K35
Haymarket Post Shop NSW 1240

Consultation on estimating equity beta for the weighted average cost of capital (WACC)

Dear Dr Paterson,

Thank you for the opportunity to submit Sydney Water's views on IPART's proposed approach to estimating the equity beta for the purpose of setting WACC allowances.

As IPART notes in its Draft Report[1] the equity beta is a key input to IPART's determination of the WACC allowance. The WACC allowance, in turn, is a key determinant of the largest driver of Sydney Water's notional revenue requirement. We welcome IPART's efforts to improve the methodology used to derive robust estimates of the equity beta.

Focus on stable and predictable regulatory outcomes

In the Final Report on the 2017 WACC Methodology Review, IPART acknowledged that a regulatory approach that promotes stable and predictable outcomes is desirable from the perspective of customers and regulated businesses. IPART has noted:[2]

> *"Having a stable WACC method within and between regulatory periods provides certainty to regulated businesses and their customers. Increased certainty translates to reduced risk, stable revenues for businesses and stable prices for customers."*

IPART explained that the stability of the regulatory environment is an important factor considered by rating agencies:[3]

> *"…regulatory stability is an important influence on the credit ratings of Australian water utilities. Moody's rating agency's 'Regulated Water Utilities' methodology assigns a 15% weight to 'stability and predictability of regulatory environment'."*

IPART also noted that stable WACC outcomes helps regulated businesses raise finance on reasonable terms by supporting strong credit ratings:[4]

> *"We consider maintaining the stability, certainty, replicability and predictability of our WACC method is important, as well as ensuring it produces reasonably accurate estimates. The stability and transparency of having a standard WACC method has been an important factor in supporting a strong credit rating for some of our regulated water businesses."*

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[1] IPART, *Estimating Equity Beta for the Weighted Average Cost of Capital*, Draft Report, March 2020.
[2] IPART, *Review of our WACC method*, Final Report, February 2018, p. 15.
[3] IPART, *Review of our WACC method*, Final Report, February 2018, p. 15.
[4] IPART, *Review of our WACC method*, Final Report, February 2018, p. 3.

We agree with IPART. The ability to maintain a strong credit rating helps regulated businesses raise the external capital required to deliver efficient investments that are in the long-term interests of customers.

Views on IPART's proposed improvements to its equity beta methodology

IPART has proposed to make five key changes to its beta estimation methodology. We set out below our views on each of these proposed changes.

1. ***Use weekly returns rather than monthly returns and examine all five possible reference days to estimate beta.***

   We supports this change. As IPART notes, beta estimates can be highly sensitive to the choice of the reference day. This fact is well-recognised in the empirical finance literature. Averaging estimates over all possible reference days would reduce sampling error, improve the statistical reliability of the beta estimates and produce more stable estimates over time.

2. ***Change the threshold for inclusion of a proxy firm to 60 months minimum available return data rather than 36 months.***

   We support this change. Beta estimates based on less than 60 months of historical data may suffer from a 'small sample' problem that introduces statistical noise into the estimation process. Raising the data availability threshold from 36 months to 60 months is likely to improve the statistical reliability of estimates and produce more stable estimates over time.

3. ***Use the market value of equity to calculate gearing and use the average gearing over the sample period to de-lever observed equity betas.***

   We support these proposed changes. Empirical estimates of the equity beta are derived using market returns. Therefore, it is important for internal consistency that the market value of equity, rather than the book value of equity, be used to de-lever estimated equity betas. In addition, the statistical process for beta estimation seeks to derive the *average* relationship between individual stock returns and market returns. Hence, it is the *average* level of gearing over the estimation period, rather than a snapshot of gearing at a particular point in time, that should be used de-lever estimate equity betas.

4. ***Use the Brealey-Myers de-levering formula, which omits the tax term, rather than the Hamada formula.***

   We supports this proposed change. IPART is correct that the Brealey-Myers formula is more consistent with IPART's assumption of a constant (i.e., benchmark) gearing ratio than is the Hamada formula.

5. ***Adopt the decision rule that before considering any revision to an established beta value for a price review:***

   a. ***the prior beta estimate is more than one standard deviation from mean of current sample; and,***

   b. ***there is persistent evidence over a long period (i.e., a regulatory period or longer) of a changed beta.***

We supports this proposed decision rule. Notwithstanding the sensible improvements to the beta estimation process proposed by IPART above, it remains true that beta estimates may still be subject to significant statistical error. It is very unlikely that the true systematic risk faced by a benchmark efficient entity changes significantly over time. Hence, significant movements in beta *estimates* related to such a benchmark efficient business should be viewed by IPART with caution.

Given these considerations, it would only be sensible for IPART to depart from the current equity beta estimate of 0.7 if it has compelling and sustained empirical evidence that the true equity beta has changed materially — as embodied in the decision-rule proposed by IPART.

Considerations about sample size

Stakeholders, including Sydney Water, proposed that IPART should use a broad sample of comparator firms to inform its beta estimate.

IPART agrees in the Draft Report that it is important to recognise that the reliability of an estimate depends on both its statistical precision and the comparability of the firms used to derive that estimate. However, IPART notes that there is a trade-off between statistical precision and comparability. Specifically, IPART has expressed some concern that expanding the sample beyond a certain point could reduce the comparability of firms in the sample, which in turn could reduce the reliability of beta estimates. For this reason, IPART proposes to consider the composition of the comparator sample used for beta estimation purposes at each price review.

We agree, but note that sample size affects not only the statistical precision of estimates, but also the stability of estimates over time. Generally, the larger the sample, the smaller will be the standard errors around the beta estimate, indicating greater statistical precision. However, estimates based on large samples are also likely to be less sensitive to individual comparators entering or exiting the sample over time. Consequently, estimates based on large samples will tend to exhibit 'stability' from one period to the next.

Further, to IPART's point on the trade-off between statistical precision and comparability when selecting an appropriate sample, it is worth considering the experience of the AER. The AER has long held a position that it should focus primarily on regulated energy comparators listed in Australia, seeking primarily comparability of firms within its estimation sample. This means the AER largely disregards beta estimates of dozens of listed energy networks overseas, many of whom likely contribute useful information on the systematic risk of regulated energy networks in Australia.

The AER's insistence on such selective criteria for its comparator sample has resulted in an ever-shrinking sample, so that when the AER:

- Conducted its 2009 review of WACC parameters, it relied on *nine* Australian comparators.[5]
- Developed its 2013 Rate of Return Guideline, four of the original nine Australian comparators had de-listed.[6] This left the AER with just *five* comparators that remained listed at the time it developed its 2013 Guideline.

[5] AER, Review of the weighted average cost of capital (WACC) parameters, May 2009, p. 255.
[6] Henry, O., Estimating β: An update, April 2014, pp. 9-10.

- Developed its 2018 Rate of Return Instrument, a further two comparators had become delisted. This left the AER with just *three* listed comparators.[7]

Of course, by any reasonable statistical measure, three comparators is inadequate to derive statistically-reliable beta estimates. Instead of expanding the comparator sample to include listed overseas comparators and/or non-energy Australian infrastructure/utility firms[8], the AER used its original nine comparators, despite a delisting of firms[9] which no longer had any contemporaneous information to contribute on beta whatsoever.

In summary, we accept that there is a trade-off between sample size and comparability when selecting an appropriate comparator set and we accept IPART's proposed approach of considering the relevant comparator sample at each price review. However, the AER experience demonstrates that caution should be exercised to avoid potentially perverse outcomes when the strict pursuit of comparability is prioritised over pragmatic compromises that improve statistical reliability.

Summary

Overall we agree that the various changes proposed by IPART will improve the stability and statistical reliability of beta estimates. This is desirable as it will promote regulatory certainty and the long-term interests of consumers.

We would be very pleased to discuss this submission further with IPART. Please direct any queries regarding our submission to Philip Davies, Head of Competition and Regulation, on or philip.davies@sydneywater.com.au.

Yours sincerely

Philip Davies.

[7] AER, Rate of return instrument, Explanatory Statement, December 2018, Table 12, p. 155.
[8] The sample could have been expanded during its 2018 Rate of Return Instrument.
[9] See AER 2018 Rate of Return Instrument, Explanatory Statement, Table 12.