SYDNEY DESALINATION PLANT
ABN 50 125 935 177

Sydney Desalination Plant Pty Ltd
Suite 19, Level 17, Australia Square
264 George Street Sydney NSW 2000

Phone: (02) 8599 8532
Email: info@sydneydesal.com.au
www.sydneydesal.com.au

18 August 2017

Dr Peter Boxall
Independent Pricing and Regulatory Tribunal (IPART)
PO Box K35
Haymarket Post Shop NSW 1240

Dear Dr Boxall

Review of WACC method

Thank you for the opportunity to provide Sydney Desalination Plant Pty Limited's (SDP's) views on IPART's 2017 review of its Weighted Average Cost of Capital (WACC) method. SDP commends IPART for taking the initiative to conduct this review, to ensure that its approach to determining the allowed WACC reflects the efficient financing costs of SDP and the other businesses that IPART regulates.

SDP agrees with the three key principles that IPART considers should guide this review, namely:[1]

1. The WACC method should be relatively stable over time to give stakeholders certainty.
2. The WACC method should be predictable and able to be replicated by stakeholders to provide transparency and reduce resources required in each review.
3. IPART should make incremental improvements where there is compelling evidence that they increase the accuracy of the cost of capital faced by a benchmark firm.

IPART has sought submissions on its preliminary views on a number of aspects of its WACC methodology, as set out in its Issues Paper. In keeping with the three principles outlined above, the Issues Paper proposes no change to most aspects of its existing WACC methodology. Any changes proposed by IPART are relatively minor refinements.
SDP considers that IPART's WACC methodology is, on the whole, working well. We are therefore in agreement with almost all of the IPART's preliminary views set out in the Issues Paper. SDP has however identified a small number of important areas in which we seek improvement to IPART's methodology. In SDP's view, the changes we propose would be small and incremental, but result in WACC allowances that match more closely the efficient financing costs of a benchmark entity.
Our submission is structured as follows:

- Attachment 1 sets out SDP's views on the key areas in which we consider IPART's existing methodology could be refined.
- Attachment 2 (confidential) explains the prudent debt management approach that SDP has adopted to match its actual cost of debt as closely as possible to IPART's cost of debt allowance, and proposes a set of arrangements that would allow SDP to transition gradually from its existing debt management approach to a debt management approach that would be consistent with the efficient cost of debt approach proposed by SDP in Attachment 1.
- Attachment 3 summarises SDP's views on all of the issues on which IPART has sought comment.
- Attachment 4 is a report that presents Frontier Economics' recommendations in relation to five of the issues on which IPART has sought views:
  - The approach to setting the cost of debt allowance;

[1] IPART WACC methodology review Issues Paper, 4 July 2017, p.8.

- The approach to estimating the market risk premium;
- Equity beta and gearing;
- Expected inflation; and
- Gamma.

SDP endorses all of the recommendations made by Frontier Economics.

SDP looks forward to working constructively with IPART during its WACC methodology review.

Should you wish to discuss or clarify any aspect of our proposal, SDP would be pleased to engage with IPART further.

[redacted]

Yours sincerely,

[redacted]

Keith Davies
Chief Executive Officer
Sydney Desalination Plant

Attachment 1 – SDP's views on key matters raised in the Issues Paper

Cost of debt approach

Proposed change to the cost of debt approach

IPART considers that its current approach to determining the cost of debt is working well and therefore proposes to retain this approach (Preliminary view 4).

The current approach is based on IPART's conclusion during the 2013 WACC methodology review that the 50/50 approach is consistent with the cost of debt for a benchmark efficient firm. SDP submits that IPART's conclusion during the 2013 WACC methodology review is justified for the following reasons:

- The long-term average rate would be consistent with a debt management approach whereby the firm issued fixed-rate debt on a staggered maturity basis. IPART considered that such an approach would be an efficient response to managing refinancing risk as it would result in a relatively small proportion of the firm's debt maturing each year; and
- A benchmark efficient firm might also be expected to have exposure to the prevailing spot rate because (a) any new capital expenditure would have to be financed at the prevailing rate; and (b) a benchmark efficient firm might maintain an amount of spot exposure such that it is able to lock in a fixed rate from time to time when it considers market conditions to be favourable.
- Maintaining a 50/50 approach to the allowed return on debt is consistent with the approach adopted for the allowed return on equity.

SDP notes that neither the long-term nor current components of IPART's existing cost of debt allowance correspond to a debt management approach that is actually implementable in practice. Thus, it is difficult to maintain that the allowance reflects the benchmark efficient approach if it does not correspond to an approach that is implementable in practice. In particular:

- In respect of the long-term debt pool, the debt management approach that is efficient and attempts to match the regulatory allowance would be to issue staggered floating rate debt, with a portion of the debt portfolio refinanced annually. A business could then progressively execute forward-starting swaps to ensure that it paid a constant fixed rate over the next regulatory control period, where that fixed rate reflected the average rate over the previous historical period. However, even this approach does not provide a precise match to the regulatory allowance because (a) forward-starting swaps tend to be relatively expensive so that the fixed rate that is locked in is higher than the allowed rate, and (b) forward-starting swaps exist only for the risk-free rate component of the allowed return, so it is impossible to fix a constant rate for the debt risk premium (or debt margin).
- In respect of the short-term debt pool, the debt management approach that best matches the regulatory allowance, under the existing methodology, is for the firm to issue staggered floating rate debt so that there is spot exposure to the risk-free rate component of interest rates that can be fixed for the duration of the regulatory control period using interest rate swaps. This does not result in a precise match to the regulatory allowance because the firm would have trailing average exposure to the debt risk premium (which is locked in progressively at the time each tranche of debt is issued).

With some incremental changes, IPART could implement a version of its current cost of debt approach that would better match the actual cost of debt that would be borne by a benchmark efficient business:

- IPART would continue to determine its cost of debt allowance by placing 50/50 weight to the long-term and short-term cost of debt estimates.
- In relation to the long-term cost of debt allowance, IPART would:
  - Set the risk-free rate allowance as an average of short-term risk-free rate (sampled over a 40-day averaging period in each year) over each of the 10 years prior to the commencement of the regulatory period. The long-term risk-free rate allowance would be updated annually; and

  - Set the debt premium allowance as an average of short-term debt premium (sampled over a 40-day averaging period in each year) over each of the 10 years prior to the commencement of the regulatory period. The long-term debt premium allowance would be updated annually.

- In relation to the current cost of debt allowance, IPART would:
  - Set the current risk-free rate allowance as it does (i.e., by calculating a 40-day average of 10-year CGS yields over the relevant sampling period, and then locking that rate in for the duration of the regulatory period); and
  - Set the debt premium allowance as an average of short-term debt premium (sampled over a 40-day averaging period in each year) over each of the 10 years prior to the commencement of the regulatory period. The short-term debt premium allowance would be updated annually.

These minor improvements are consistent with IPART's aim of making only incremental changes to its WACC methodology, where required.

A trailing average 'true-up' in the next regulatory period

During the public hearing, some stakeholders proposed that they favoured a trailing average cost of debt allowance with annual updating of the allowance, but with the accumulated changes in the cost of debt allowance 'stored up' until the end of the regulatory period and then spread over the next regulatory period. In the current regulatory period, regulated businesses would receive a fixed cost of debt allowance that does not update in line with the efficient cost of debt of the benchmark entity. In essence, this is a proposal to 'true-up' any deviations between the fixed cost of debt allowance and the trailing average allowance in the next regulatory period.

SDP does not favour such an approach for two reasons:

- Firstly, suppose the trailing average approach implied a reduction in the cost of debt allowance within a regulatory period, but consumers were obligated to pay a higher, fixed cost of debt allowance. In the absence of annual of the cost of debt allowance, consumers would not realise the benefit of a price reduction immediately, but would have to wait until the next regulatory period to receive that benefit.
- Secondly, under the trailing average true-up proposal, a regulated business would need to bear any mismatches between the fixed cost of debt allowance and the trailing average cost of debt allowance for duration of the current regulatory period. Even if the business were made whole in the next regulatory period, via the true-up, the cash flow implications of such mismatches could put the business under unnecessary financeability pressure.

In SDP's view, there is no sound reason to support the trailing average true-up proposal.

Transitional arrangements in relation to a change of cost of debt approach

If IPART changes its cost of debt approach along the lines outlined above, it may be necessary to implement transitional arrangements to allow the effects of any existing hedging arrangements in response to the current approach to be unwound.

During the public hearing on IPART's WACC methodology (held on 15 August 2017), Dr Boxall indicated that the details of any cost of debt transitional arrangements could be examined at the time IPART next price reset for individual businesses. SDP agrees that such an approach would be appropriate. However, SDP submits that IPART should set out as part of its 2017 WACC methodology review the key principles that would guide:

- IPART's decision as to whether cost of debt transitional arrangements are necessary for different types of businesses; and
- The design of any such transitional arrangements.

SDP proposes that there is no one-size-fits-all set of transition arrangements for regulated businesses to move from their current debt management approach to one that is consistent with a proposed new regulatory approach to the allowed return on debt. SDP's view is that at the time of each determination, the particular regulated business would provide information about:

- Its debt management approach to date (under the existing cost of debt approach), explaining why it considers that approach to have been a prudent response to the existing regulatory regime; and
- What it considers to be the most prudent and efficient means of transitioning from its current position to the assumed debt management approach that underlies the new regulatory allowance.

This would only be required once for each regulated business and only arises in the context of a change in the regulatory approach.

If IPART were persuaded that:

- The current approach was a prudent response (for that particular business) to the incentives created by the previous regulatory regime; and that
- The proposed transition was a prudent and efficient means of moving to a debt management approach consistent with the new regulatory regime,

the allowed return on debt should be set in accordance with the costs that would be borne by a benchmark efficient firm implementing the proposed transition.

SDP proposes that the following considerations should guide IPART's decision on cost of debt transitional arrangements for individual businesses, and seeks IPART's endorsement of these principles as part of this WACC methodology review:

1. IPART should begin by assessing what the prudent and efficient debt management approach would have been for an efficient benchmark entity facing similar risks to the individual regulated business in question, in response to IPART's existing cost of debt methodology. In this context:

    a. A prudent debt management approach would, in SDP's view, be one that seeks to minimise any mismatch between the actual cost of the benchmark entity in question and the cost of debt allowance provided by IPART's existing cost of debt methodology. Mismatches between the actual cost incurred by the benchmark entity and the cost allowance provided through the regulatory allowance could degrade the financeability of the business (potentially lowering its creditworthiness and increasing its cost of borrowing) and/or degrade the returns to equity below the minimum efficient level (potentially deterring efficient investment).

    b. An efficient debt management approach would be one that minimises the hedging costs associated with aligning the actual cost of debt of the benchmark entity to the cost of debt allowance derived using IPART's existing methodology.

    c. As noted above, the efficient debt management approach may differ from one business to the next, depending on its characteristics. For instance, businesses with very large debt portfolios may not be able to access (in the Australian swaps market) the volume of interest rate swap instruments required to fully hedge their actual cost of debt to the cost of debt allowance. For such businesses, a debt management strategy that involves hedging using interest rate swaps would not be feasible and/or efficient. However, the volume of swaps required by businesses with smaller debt portfolios would be commensurately lower, and therefore a swaps strategy may be feasible and efficient for such businesses.

    d. When assessing the prudency of a business's existing debt management approach, it would be necessary to think about the most appropriate debt management approach in response to the extant cost of debt methodology. In other words, it would be inappropriate to disregard a prudent and efficient response by businesses to the prevailing regulatory arrangements. For example, given that IPART's existing debt methodology involves combining a 'current' cost of debt allowance with a 'long-term' cost of debt allowance, it would have been entirely prudent and efficient for a benchmark entity to structure its debt portfolio into two distinct debt pools, and to manage each of these debt pools individually, in order to match current cost of debt allowance and the long-term cost of debt allowance as closely as possible.

2. IPART should then consider what the efficient debt management approach for a benchmark entity ought to be going forward. The efficient cost of debt allowance would then flow naturally from the implementation of that efficient debt management approach. In SDP's view, this efficient debt management approach is different from that implicit within IPART's existing cost of debt methodology. If IPART agrees with our submission on this issue, that would imply the need for a change to a cost of debt approach that would be consistent with the efficient debt management approach. We outline in the previous section what we consider to be the efficient debt management approach for a benchmark entity with SDP's characteristics, and the report by Frontier Economics in Attachment 4 provides more details in this regard.

3. Finally, IPART should identify what set of transitional arrangements (if any) would be required in order to allow the regulated business in question to migrate efficiently (and gradually) from the prudent and efficient debt management approach under the existing cost of debt methodology to the debt management approach commensurate with the new cost of debt methodology. SDP notes that transitional arrangements may not in fact be necessary for all businesses regulated by IPART (i.e., if the efficient and prudent debt management approach under the existing cost of debt approach, for businesses of a certain type, were the same as the efficient and prudent debt management approach under the new cost of debt approach).[1] However, SDP considers that if IPART were to adopt the cost of debt approach proposed above, then transitional arrangements would be necessary in SDP's case.

Attachment 2 of this submission (confidential), explains the prudent debt strategy that SDP has adopted in response to IPART's existing cost of debt approach, and also outlines a set of arrangements that would allow SDP to transition from its present debt management approach to one that would be consistent with the cost of debt approach proposed by SDP in the previous section.

SDP is seeking a transition from its current debt management approach (which is prudent in the context of IPART's current regulatory allowance) to the debt management approach that underlies the proposed new regulatory allowance, as set out above. The elements of this transition are as follows:

- In relation to the long-term debt pool:
    - The risk-free rate would transition over 10 years from the spot rate at the beginning of the next regulatory control period to a full 10-year trailing average; and
    - No transition is required in relation to the debt risk premium; and
- In relation to the short-term debt pool:
    - No transition arrangements are required.

Notification of sampling period

IPART currently selects a 'sampling period' to apply to market data (e.g., government and corporate bond yields) when estimating market-based parameters (e.g., risk-free rate, debt premium). SDP seeks to hedge its actual cost of debt to the cost of debt allowance during this sampling period, to ensure that the two are as closely aligned as possible.

IPART proposes to continue to select the relevant sampling period and notify businesses in advance, confidentially, of its chosen sampling period (Preliminary view 3).

---

[1] This was a consideration that arose in a recent merits review appeal by certain large, publicly-owned electricity networks in NSW, against decisions by the Australian Energy Regulator (AER), to the Australian Competition Tribunal. The AER had decided to implement a 10-year cost of debt transition, when moving from its old (rate-on-the-day) cost of debt approach to its new (trailing average) cost of debt approach. However, the NSW networks argued that the debt management approach they had adopted all along under the old cost of debt approach: (a) had been efficient and prudent for a benchmark entity in their circumstances; and (b) was exactly the same as the debt management approach that the AER said would be efficient and prudent under the new cost of debt approach. Therefore, argued the networks, no debt transition should have been applied by the AER in relation to them. The Australian Competition Tribunal agreed with this contention and noted that a debt transition of some form may have been appropriate for businesses with different characteristics to those of the NSW networks that appealed, because businesses with different risk characteristics may have pursued a different prudent and efficient debt management strategy under the AER's old cost of debt approach. See Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1.

SDP supports this proposed approach.

If IPART decides to continue its current approach of selecting the sampling period and notifying businesses (as opposed to allowing businesses to choose their own sampling periods), then SDP requests that IPART provide notification of the sampling period **at least three months** before the sampling period commences. This would allow sufficient time for hedging arrangements to be made.

Market risk premium

Under IPART's existing WACC approach, IPART:

- Determines a long-term historical estimate of the market risk premium (MRP) anchored around an estimate of 6%;
- Determines an estimate of the current MRP using six different measures; and
- Gives the long-term and current MRP estimates equal weight (unless IPART's uncertainty index suggests that a different weighting might be appropriate).

SDP supports the continuation of this approach.

IPART has proposed that, when combining its six different measures of the current MRP into a single estimate, it should replace its existing midpoint approach (i.e., calculation of the midpoint of the highest and lowest of these six approaches) with the median of all six approaches (Preliminary view 10). IPART's proposal is underpinned by a concern that the existing midpoint method gives disproportionate weight to extreme values. By contrast, its median approach would be insensitive to outlier estimates.

In SDP's view, the fact that a single estimate of the current MRP happens to be very high or very low does not necessarily make it a genuine outlier. It could be that this high or low estimate provides some useful information about the true MRP (which is unobservable), which the remaining estimates fail to do. Discarding such an estimate (by application of the median estimate) would, under such circumstances, result in a worse (rather than better) estimate of the current MRP.

Therefore, SDP proposes that IPART compute the current estimate of the MRP by taking the mean (rather than the median) of its six indicators.

Such an approach would:

- Give equal weight to each of the six estimates (which is appropriate if no individual estimate can, for methodological reasons, be identified as clearly inferior or superior);
- Give less weight to the highest and lowest estimate than under IPART's current approach;
- Ensure that the two central estimates of the current MRP do not receive disproportionate weight. Under a mean approach, the third-highest and fourth-highest estimates would each get more weight than they currently do, but less weight than they would receive under the median approach proposed by IPART.

Equity beta

IPART proposes that it should review its estimate of the equity beta at each price review (Preliminary view 11). SDP agrees with this approach.

However, SDP notes that it is very difficult to estimate equity betas precisely. Given these difficulties SDP proposes the following:

- IPART should only change its determination of equity beta from one price review to the next if there is compelling evidence to do so;
- In order to maximise the statistical reliability of its equity beta estimate, IPART should use the largest possible sample of comparators, and the longest history of returns data available for each firm in the selected comparator set. Maximising the number of observations used in the estimation process in this way would minimise the statistical noise/measurement error associated with the equity beta estimates; and

- The comparator set used to estimate the equity beta should be selected using, as a starting point, standard industry classification systems used by third party data providers (e.g., Bloomberg, Thomson Reuters). This initial sample could be supplemented by any additional comparators used by other regulators. Such an approach would support the use of as broad a sample of comparators as is feasible.

Gearing

As with equity beta, IPART proposes to review its estimate of the gearing of the benchmark entity at each price review (Preliminary view 15).

SDP supports this approach. However, in doing so, SDP:

- Endorses strongly IPART's long-standing practice of using an estimate of the "capital structure that a benchmark entity would have", rather than "the gearing ratio of the actual firm". This is an approach that IPART has reaffirmed in its Issues Paper;[2]
- Submits that, when reviewing its estimate of gearing of the benchmark entity, IPART should have regard to precedent from other relevant regulatory decisions; and
- Submits that IPART should only change its determination of benchmark gearing from one price review to the next if there is compelling evidence to do so.

Expected inflation

IPART has indicated its intention to maintain its current approach to estimating expected inflation (Preliminary view 17).

As IPART recognises, its preferred approach tends to produce an estimate in all periods quite close to 2.5%. However, actual inflation in any given year can deviate materially from this estimate. This has the potential to either under-compensate or over-compensate regulated businesses within any given regulatory period.

For instance, given the present low-inflation environment, IPART's current regulatory approach deducts from the nominal allowed rate of return an inflation estimate very close to 2.5%. However, SDP's RAB will be allowed to grow at a rate that is materially lower than 2.5% (in line with actual inflation). It is possible that in future regulatory periods the opposite will occur, and these unders-and-overs will balance out.

SDP's concern is that if IPART changes its approach to expected inflation (e.g., to minimise mismatches between its estimate of expected inflation and actual inflation within a regulatory period), there would be no opportunity to offset any under-recovery faced by SDP within the current low inflation environment.

In the interests of simplicity, certainty and only incremental change where required, SDP supports the retention of the current approach provided that this approach is maintained by IPART **over the long-run**.

Gamma

IPART has proposed to continue to use 0.25 as its estimate of gamma (Preliminary view 16). SDP agrees with this proposal.

There are two competing interpretations of gamma:

- A market value concept – under this interpretation, gamma represents the economic value of (i.e., the price an investor would be willing to pay for) an imputation tax credit; or
- A redemption or utilisation concept – under this interpretation gamma represents the rate at which imputation tax credits are redeemed or utilised in order to reduce their personal tax liabilities.

A recent Federal Court judgement[3] found that the Australian Competition Tribunal had erred in a recent merits review decision[4] by assuming that gamma was a market value concept. However, the Court was

[2] IPART WACC methodology review Issues Paper, 4 July 2017, p.40.

[3] Australian Energy Regulator v Australian Competition Tribunal (No 2) [2017].

[4] Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1.

clear that the interpretation of gamma for regulatory purposes should be consistent with the role of gamma within a regulatory framework.

Within IPART's regulatory framework, gamma is the amount by which the total allowed return on equity is reduced reflects to reflect the imputation credits that investors will receive. It is an exchange rate – the rate at which investors would exchange dividends and capital gains for imputation credits. Thus gamma must reflect the market value of credits relative to dividends and capital gains, and within IPART's regulatory framework, the market value interpretation of gamma is appropriate.

The best market value estimate of gamma currently available is 0.25. Recent evidence for this estimate is cited in the attached report prepared by Frontier Economics.

Decision rule related to IPART's uncertainty index

IPART has proposed to retain discretion to determine the weighting of current and historical average market data when its uncertainty index is outside the range of one standard deviation from its historical average (Preliminary view 14).

SDP notes that, at present, IPART has not set out a formal decision rule explaining how it would respond should its uncertainty index move beyond one standard deviation from its historical average. It is not inconceivable that the index could do so and indeed, as IPART's own analysis shows, the index has in the past risen well above one standard deviation of the historical average.[5]

SDP notes that the demonstrated potential for the index to move in extreme ways, combined with a lack of clarity about how IPART would respond in such circumstances, could reduce the predictability of IPART's regulatory framework.

In SDP's view, the predictability of the regulatory arrangements would be enhanced if IPART were to set out how it would approach a price review if the uncertainty index were above or below one standard deviation from its historical average. For the avoidance of doubt, SDP is not seeking for IPART to set out a mechanistic formula that would translate a movement in the index to a change in the WACC allowance. Rather, it would be helpful if IPART could set out in advance:

- Which WACC parameters a shift in the index beyond one standard deviation would likely affect and in what direction;
- The sort of engagement that stakeholders can expect from IPART in the event the uncertainty index were to move in this fashion;
- The factors that IPART would have regard to (and the evidence that IPART would be seeking) when exercising its judgment about the appropriate change in weights applied to current and historical market data, in the event the index were to move beyond one standard deviation.

In this regard, it would be instructive and helpful if IPART could explain how its WACC estimate would have differed (and IPART's associated rationale for any change in WACC estimate) in those past instance in which the uncertainty index has been known to move beyond one standard deviation. An analysis of this kind would help all stakeholders understand how IPART would likely respond in future such instances.

Finally, SDP submits that any movement of the uncertainty index within a regulatory period (i.e., after IPART has made a price determination) should not lead to a re-opening of an existing price determination.

Effective versus statutory tax rates

During the public hearing held by IPART on 14 August, as part of its consultation on the 2017 WACC methodology review, Dr Boxall noted that IPART had given some consideration to whether the corporate tax allowance should be calculated using companies' effective tax rates rather than the statutory corporate tax rate. The rationale for this would be to allow IPART to take account of actual tax losses incurred by individual regulated businesses (e.g., due to large write-downs of water network assets), when determining the corporate tax allowance.

This issue was not canvassed in IPART's Issues Paper, so it is unclear to SDP whether this particular matter is within the scope of IPART's 2017 WACC methodology review.

As this matter was raised during the public hearing SDP submits that applying the effective tax rate (rather than the statutory rate) would result in double-counting of the effect of tax write offs and deductions.

[5] IPART WACC methodology review Issues Paper, 4 July 2017, Figure 6.1, p.39.

This is because IPART's current approach to calculating the corporate tax allowance is:

- First to compute the business' taxable income. This is done by subtracting from the notional revenue requirement determined by IPART any operating expenditure allowances, tax depreciation and interest expenses; and
- Then apply the statutory tax rate to that amount in order to determine the expected corporate tax obligation for the regulated business.

SDP notes that to the extent that a business has tax write offs and deductions , these would already be reflected in the calculation of taxable income, via the tax depreciation amount that is deducted from the notional revenue requirement in the first step above. This accounts for tax write offs and deductions once.

If IPART were then to apply the effective tax rate faced by the business in the second step, IPART would have accounted for any tax write offs and deductions twice. This would be inappropriate.

Therefore, SDP submits that IPART should continue using the statutory corporate tax rate (rather than effective tax rates) when determining the corporate tax allowance.

Attachment 2 – Cost of debt transitional arrangements (Confidential)

Attachment 3 – SDP's responses to IPART's preliminary views

	IPART preliminary view	SDP response
1	That IPART should maintain our current definition of the benchmark entity.	Agree.
2	That IPART should synchronise the dates that it uses to sample parameters.	Agree.
3	That IPART will continue to choose and advise regulated businesses of its sampling dates in advance and on a confidential basis.	Agree. However, SDP proposes that IPART provide at least 3 months' advance notice of sampling period.
4	That IPART should continue to use a combination of current market data and historical averages to estimate the cost of debt.	Agree. However, SDP proposes that: • The debt risk premium of the short-term component be updated annually using a 10-year trailing average approach; and • The long-term component be updated during a defined sampling period using a 10-year trailing average approach.
5	That IPART should continue to use the 10-year corporate bond spread data published by the RBA, and that the BBB credit rating is the most appropriate proxy for measuring the debt margin.	Agree. However, SDP proposes that IPART consider supplementing RBA data with another data source (e.g., Bloomberg, Thomson Reuters) in the event that RBA data becomes unavailable.
6	That IPART should convert semi-annual bond yields into an annualised yield that recognises the compounding effect.	Agree. Additionally, SDP proposes that IPART also extrapolate the effective tenor of debt of the RBA yields to the target tenor of 10 years.
7	That IPART should continue to use its current approach of using coupon-paying bond yield data to estimate the cost of debt.	Agree.
8	That IPART should continue to:	
	• use a range with a midpoint of 6% as its historical estimate of the MRP	Agree.
	• calculate a historical cost of equity by using a historical MRP and a historical risk-free rate	Agree.
	• calculate a current cost of equity by using a current MRP and a current risk-free rate	Agree.
	• give equal weight to the current and historical costs of equity, unless the uncertainty index is greater than one standard deviation from zero.	Agree.
9	That IPART should continue to use its existing six measures of current MRP.	Agree.

	IPART preliminary view	SDP response
10	That IPART should use the median of the current MRP indicators rather than its existing midpoint approach.	SDP proposes that IPART use the mean of the six MRP estimates rather than the median estimate.
11	That IPART should re-estimate equity betas at each price review.	Agree. However, SDP proposes in doing so, IPART: • Should use the broadest sample of comparators and longest estimation period possible; and • Should change its beta estimate only if there is compelling evidence to do so – in view of the significant challenges in estimating betas precisely.
12	That IPART should decide on the appropriate beta having regard to betas calculated using: • the OLS method with no adjustment • the OLS method with the Blume adjustment; and • the OLS method with the Vasicek adjustment.	Agree.
13	That the sensitivity of IPART's decision rule is appropriate, the uncertainty index is operating as intended and that IPART has not unnecessarily deviated from the midpoint.	Agree.
14	That IPART should retain discretion to determine the weighting of current and historical average market data when the uncertainty index is outside the range of one standard deviation from its historical average of zero.	SDP proposes that IPART explain what its response would be if the uncertainty index were to move outside the range of one standard deviation (as the index has done in the past). SDP also submits that movement in the index, within a regulatory period, should not lead to a reopening of an existing determination.
15	That IPART should review the gearing of the benchmark entity at each price review.	Agree. However, in doing so, SDP: • Affirms IPART's historical practice of using benchmark (rather than actual) gearing • Proposes that IPART have some regard to relevant regulatory precedent when reviewing its estimate of gearing for the benchmark entity; and • Submits that IPART should only change its gearing estimate if there is compelling evidence to do so.
16	That IPART should continue to use 0.25 as the value for gamma.	Agree.
17	That IPART should continue to forecast inflation as the geometric average of the RBA's 1-year ahead inflation forecast and the midpoint of the RBA's target inflation band.	Agree.

	IPART preliminary view	SDP response
18	That IPART should continue to use a forward-looking inflation estimate to deflate our nominal WACC estimates, as a real WACC estimate should capture expected inflation over the regulatory period.	Agree.
19	That IPART should change the way that it calculates expected inflation to consider the geometric average of the change in the level of prices.	Agree.

Attachment 4 – Frontier Economics report – Review of WACC method: response to IPART Issues Paper

Refer separate attachment.

Review of WACC method: response to IPART Issues Paper

A REPORT PREPARED FOR SYDNEY DESALINATION PLANT

August 2017

Review of WACC method: response to IPART Issues Paper

Contents

Contents

Review of WACC method: response to IPART Issues Paper

Figures

1 Introduction

1.1 Scope of this report

1 IPART is currently consulting on possible changes to its existing methodology for estimating the Weighted Average Cost of Capital (WACC) for various businesses and industries that it regulates. IPART's preliminary views on possible changes to its WACC methodology are set out in an Issues Paper published by IPART on 4 July 2017.

2 Sydney Desalination Plant (SDP) has asked Frontier Economics to advise on the following aspects of IPART's methodology:

a. Cost of debt approach (section 2);

b. Market risk premium (section 3);

c. Equity beta and gearing (section 4);

d. Expected inflation (section 5); and

e. Gamma (section 6).

3 Our approach has been to review IPART's approach in each of these areas and to set out whether and how we consider IPART's methodology could be improved.

4 Our key recommendations are summarised below.

1.2 Key recommendations

Cost of debt approach

5 IPART considers that its current approach to determining the cost of debt allowance (i.e., 50% weight on a short-term cost of debt allowance, 50% weight on a long-term cost of debt allowance, locked in for the duration of the regulatory period) is working well. Consequently, IPART proposes to retain its current cost of debt approach (Preliminary view 4).

6 The current approach is based on IPART's conclusion during the 2013 WACC methodology review that the 50/50 approach is consistent with the cost of debt for a benchmark efficient firm. In our opinion, that view could be justified for the following reasons:

a. The long-term average rate would be consistent with a debt management approach whereby the firm issued fixed-rate debt on a staggered maturity basis. IPART considered that such an approach would be an efficient response to managing refinancing risk as it would result in a relatively small proportion of the firm's debt maturing each year; and

b. A benchmark efficient firm might also be expected to have exposure to the prevailing spot rate because (a) any new capital expenditure would have to be financed at the prevailing rate; and (b) a benchmark efficient firm might maintain an amount of spot exposure such that it is able to lock in a fixed rate from time to time when it considers market conditions to be favourable.

7 We note that neither the long-term nor current components of IPART's existing cost of debt allowance correspond to a debt management approach that is actually implementable in practice. Thus, it is difficult to maintain that the allowance reflects the benchmark efficient approach if it does not correspond to an approach that is implementable in practice. In particular:

a. In respect of the long-term debt pool, an efficient debt management approach that attempts to match the regulatory allowance would be to issue staggered floating rate debt, with a portion of the debt portfolio refinanced annually. A business could then progressively execute forward-starting swaps to ensure that it paid a constant fixed rate over the next regulatory control period, where that fixed rate reflected the average rate over the previous historical period. However, even this approach does not provide a precise match to the regulatory allowance because (a) forward-starting swaps tend to be relatively expensive so that the fixed rate that is locked in is higher than the allowed rate, and (b) forward-starting swaps exist only for the risk-free rate component of the allowed return, so it is impossible to fix a constant rate for the debt risk premium (or debt margin).

b. In respect of the short-term debt pool, the debt management approach that best matches the regulatory allowance, under the existing methodology, is for the firm to issue staggered floating rate debt so that there is spot exposure to the risk-free rate component of interest rates that can be fixed for the duration of the regulatory control period using interest rate swaps. This does not result in a precise match to the regulatory allowance because the firm would have trailing average exposure to the debt risk premium (which is locked in progressively at the time each tranche of debt is issued).

8 With some incremental changes, IPART could implement a version of its current cost of debt approach that would better match the actual cost of debt that would be borne by a benchmark efficient business:

a. IPART would continue to determine its cost of debt allowance by placing 50/50 weight to the long-term and short-term cost of debt estimates.

b. The long-term cost of debt estimate would be updated annually using a 10-year trailing average approach. This cost of debt allowance would be consistent with a generic fixed rate staggered maturity debt management approach, which is one efficient strategy is available for a benchmark efficient entity to employ in relation to its long-term debt pool.

c. The short-term cost of debt estimate would be computed by adopting the spot risk-free rate at the start of the regulatory period (per IPART's existing approach). However, the associated debt risk premium allowance would be computed using a 10-year trailing average, which would be updated annually through the regulatory period. This cost of debt allowance would match the floating rate staggered maturity approach that a benchmark efficient entity with similar risk characteristics to SDP would employ in relation to its short-term debt pool.

9 These minor improvements are consistent with IPART's aim of making only incremental changes to its WACC methodology, where required.

10 If IPART changes its cost of debt approach along the lines outlined above, it may be necessary to implement transitional arrangements to allow the effects of any existing hedging arrangements in response to the current regulatory approach to be unwound. To the extent that different hedging strategies may have been efficient for different businesses, different transitional arrangements may be warranted for different regulated companies.

11 We agree with IPART's proposal to continue using published RBA data to determine the debt margin allowance (Preliminary view 5). However, we recommend that IPART consider supplementing the RBA data with comparable data published by other independent data providers (such as Bloomberg and/or Thomson Reuters) to ensure that the allowed debt margin can be calculated if the RBA data become unavailable.

12 We agree with IPART's proposal to convert semi-annual bond yields to annualised yields that recognises the compounding effect (Preliminary view 6). In addition, we recommend that, when computing the allowed debt margin, IPART extrapolate the effective tenor of debt (which is typically less than 10 years) to its target tenor of 10 years.

Market risk premium

13 We agree that IPART should:

a. use a range with a midpoint of 6% as the historical estimate of the MRP;

b. calculate a historical cost of equity by using a historical MRP and a historical risk-free rate;

c. calculate a current cost of equity by using a current MRP and a current risk-free rate;

d. give equal weight to the current and historical costs of equity, unless the uncertainty index is greater than one standard deviation from zero (Preliminary view 8).

14 We also:

a. agree that IPART should continue to use its existing six measures of the current MRP (Preliminary view 9); and

b. support IPART's proposed refinements to the SFG market indicator method.

15 We recommend that IPART combine its six measures of the current MRP by taking the mean of these six estimates, rather than using either a median approach or its current midpoint approach.

Equity beta

16 We agree with IPART's view that it should review its estimate of the equity beta (Preliminary view 11) and gearing of the benchmark entity (Preliminary view 15) at each price review.

17 However, given difficulties involved in estimating equity beta precisely, we recommend the following:

a. IPART should only change its determination of equity beta from one price review to the next if there is compelling evidence to do so. Equity beta estimates are statistically imprecise and can be unstable over time. Consequently, the allowed equity beta should be changed only if there is material and consistent evidence to support a change;

b. In order to maximise the statistical reliability of its equity beta estimate, IPART should use the largest possible sample of comparators, and the longest history of returns data available for each firm in the selected comparator set. Maximising the number of observations used in the estimation process in this way would minimise the statistical noise/measurement error associated with the equity beta estimates; and

c. The comparator set should be selected using, as a starting point, standard industry classification systems used by third party data providers (e.g., Bloomberg, Thomson Reuters). This initial sample could be supplemented by any additional comparators used by other regulators.

18 We agree with IPART's view that its final estimate of equity beta should have regard to 'raw' and' adjusted' (e.g., using the Blume and Vasicek methods) (Preliminary view 12). However, IPART should explain transparently in its decision how and why it has weighted beta estimates derived using different adjustment methods, and why its weighting scheme differs (if at all) from that used in previous price reviews.

Gearing

19 In relation to gearing, we:

a. Endorse strongly IPART's long-standing practice of using an estimate of the "capital structure that a benchmark entity would have", rather than "the gearing ratio of the actual firm";

b. Recommend that, when reviewing its estimate of gearing of the benchmark entity, IPART should have regard to precedent from other relevant regulatory decisions; and

c. Recommend that IPART should only change its determination of benchmark gearing from one price review to the next if there is compelling evidence to do so including changes in other regulatory jurisdictions in Australia.

Expected inflation

20 IPART has indicated its intention to maintain its current approach to estimating expected inflation (Preliminary view 17).

21 As IPART recognises, its preferred approach tends to produce an estimate in all periods quite close to 2.5%. However, actual inflation in any given year can deviate materially from this estimate. This has the potential to either under-compensate or over-compensate regulated businesses.

22 We agree with IPART's proposal to change the way it calculates expected inflation to consider the geometric average of the change in the level of prices (Preliminary view 19).

Gamma

23 We agree with IPART's proposal to continue to use 0.25 as its estimate for gamma – the value of imputation tax credits (Preliminary view 16).

24 There are two competing interpretations of gamma:

a. A market value concept – under this interpretation, gamma represents the economic value of (i.e., the price an investor would be willing to pay for) an imputation tax credit; or

b. A redemption or utilisation concept – under this interpretation gamma represents the rate at which imputation tax credits are redeemed or utilised by taxpayers in order to reduce their personal tax liabilities.

25 A recent Federal Court decision found that the Australian Competition Tribunal had erred by *assuming* that gamma was a market value concept. However, the Court was clear that the interpretation of gamma for regulatory purposes should be consistent with the role of gamma within a regulatory framework.

26 Within IPART's regulatory framework, gamma is the amount by which the total allowed return on equity is reduced to reflect the imputation credits that investors will receive. It is an exchange rate – the rate at which investors would exchange dividends and capital gains for imputation credits. Thus gamma must reflect the market value of credits relative to dividends and capital gains, and within IPART's regulatory framework, the market value interpretation of gamma is appropriate.

27 The best market value estimate of gamma currently available is 0.25.

2 Cost of debt approach

Summary of views on cost of debt issues:

- IPART considers that its current approach to determining the cost of debt allowance (i.e., 50% weight on a short-term cost of debt allowance, 50% weight on a long-term cost of debt allowance, locked in for the duration of the regulatory period) is working well. Consequently, IPART proposes to retain its current cost of debt approach (Preliminary view 4).
- The current approach is based on IPART's conclusion during the 2013 WACC methodology review that the 50/50 approach is consistent with the cost of debt for a benchmark efficient firm. The basis for IPART's view is that:
  - The long-term average rate would be consistent with a debt management approach whereby the firm issued long-term debt on a staggered maturity basis. For this debt pool, the firm could either issue (a) fixed-rate debt or (b) floating rate debt with swaps used to fix rates – whichever was more cost effective at the time. IPART considered that such an approach would be an efficient response to managing refinancing risk as it would result in a relatively small proportion of the firm's debt maturing each year; and
  - A benchmark efficient firm might also be expected to have exposure to the prevailing spot rate because (a) any new capital expenditure would have to be financed at the prevailing rate; and (b) a benchmark efficient firm might maintain an amount of spot exposure such that it is able to lock in a fixed rate from time to time when it considers market conditions to be favourable.
- We note that neither the long-term nor current components of IPART's existing cost of debt allowance correspond to a debt management approach that is actually implementable in practice. Thus, it is difficult to maintain that the allowance reflects the benchmark efficient approach if it does not correspond to an approach that is implementable in practice. In particular:
  - In respect of the long-term debt pool, the debt management approach that is efficient and attempts to match the regulatory allowance would be to issue staggered floating rate debt, with a portion of the debt portfolio refinanced annually. A business could then progressively execute forward-starting swaps to ensure that it paid a constant fixed rate over the next regulatory control period, where that fixed rate reflected the average rate over the previous historical period. However, even this approach does not provide a precise match to the regulatory allowance because (a) forward-starting swaps tend to be relatively expensive so that the fixed rate that is locked in is higher than the allowed rate, and (b) forward-starting swaps exist only for the risk-free rate component of the allowed return, so it is impossible to fix a constant rate for the debt risk premium (or debt margin).
  - In respect of the short-term debt pool, the debt management approach that best matches the regulatory allowance, under the existing methodology, is for the firm to issue staggered floating rate debt so that there is spot exposure to the risk-free rate component of interest rates that can be fixed for the duration of the regulatory control period using interest rate swaps. This does not result in a precise match to the regulatory allowance because the firm would have trailing average exposure to the debt risk premium (which is locked in progressively at the time each tranche of debt is issued).
- With some incremental changes to its current approach, IPART could implement a cost of debt allowance that is consistent with an approach that can be implemented in practice – and which could therefore be said to match an approach that could be undertaken by a benchmark efficient firm:

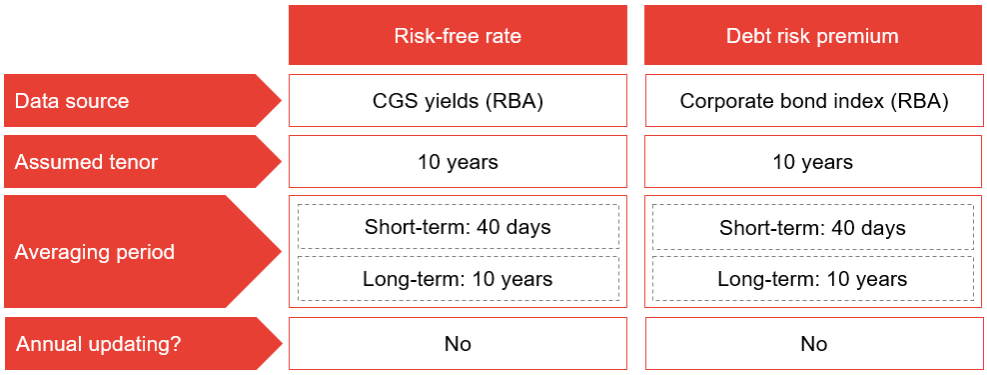
- IPART would continue to determine its cost of debt allowance by placing 50/50 weight to the long-term and short-term cost of debt estimates.
- The long-term cost of debt estimate would be updated annually using a 10-year trailing average approach. This cost of debt allowance would be consistent with a generic fixed-rate staggered maturity debt management approach, which is one efficient strategy is available for a benchmark efficient entity to employ in relation to its long-term debt pool.
- The short-term cost of debt estimate would be computed by adopting the spot risk-free rate at the start of the regulatory period (per IPART's existing approach). However, the associated debt risk premium allowance would be computed using a 10-year trailing average, which would be updated annually through the regulatory period. This cost of debt allowance would match the floating rate staggered maturity approach that a benchmark efficient entity with similar risk characteristics to SDP would employ in relation to its short-term debt pool.
- These minor improvements are consistent with IPART's aim of making only incremental changes to its WACC methodology, where required.

- If IPART changes its cost of debt approach along the lines outlined above, it may be necessary to implement transitional arrangements to allow the effects of any existing hedging arrangements in response to the current approach to be unwound. To the extent that different hedging strategies may have been efficient for different businesses, different transitional arrangements may be warranted for different regulated companies.
- We agree with IPART's proposal to continue using published RBA data to determine the debt margin allowance (Preliminary view 5). However, we recommend that IPART consider supplementing the RBA data with comparable data published by other independent data providers (such as Bloomberg and/or Thomson Reuters) to ensure that the allowed debt margin can be calculated if the RBA data become unavailable.
- We agree with IPART's proposal to convert semi-annual bond yields to annualised yields that recognises the compounding effect (Preliminary view 6). In addition, we recommend that, when computing the allowed debt margin, IPART extrapolate the effective tenor of debt (which is typically less than 10 years) to its target tenor of 10 years.

2.1 IPART's current cost of debt approach

28 When determining the allowed return on debt, IPART's current approach is to compute a long-term (historical average) estimate of the cost of debt and a short-term (prevailing) estimate of the cost of debt. In effect, each component receives 50% weight when determining the allowed return on debt that is used to compute the allowed WACC. The current approach is summarised in Figure 1 below.

Figure 1: Summary of IPART's current approach to the allowed return on debt



Source: Frontier Economics summary of the current IPART approach to the allowed return on debt.

29 The rationale for IPART's current approach to the allowed return on debt was first developed in the Interim Report of the 2013 WACC review. In that report, IPART set out its overall objective for setting the WACC as providing a return to investors commensurate with what would be generated by a benchmark entity:

> …our objective for setting the WACC is to set an efficient product price for a benchmark firm operating in a competitive market and facing similar risks. We conclude that in practice, the cost of capital and expected return on investment for this benchmark are likely to reflect a mix of current market rates and long-term averages.[1]

and:

> Our objective for setting the WACC is to set a value that reflects the efficient cost of capital for a 'benchmark entity'.[2]

30 The benchmark entity is then defined in terms of a firm operating in a competitive market:

> The benchmark entity in determining the WACC is a firm that operates in a competitive market and faces similar risks to the regulated business that is subject to our decision.[3]

31 IPART went on to note that it had rejected the approach of estimating the cost of capital for a new entrant, and that it considered the efficient cost of capital of the benchmark firm to warrant weight being given to current market data and long-term averages:

> This is a change from our discussion paper where we proposed to use the test of the cost of capital for a new entrant in a competitive market. We found that the benchmark cost of debt for an efficient firm operating in a competitive market is consistent with the objective of efficient pricing and is more readily observable and independent of the

1 IPART, 2013, WACC Methodology: Interim report, June, p. 2.

2 IPART, 2013, WACC Methodology: Interim report, June, p. 6.

3 IPART, 2013, WACC Methodology: Interim report, June, p. 6.

> specific form of regulation chosen. Being based on the efficient cost of capital for a broad pool of firms, we consider that it is also consistent with the reasonable expectations of the asset owners and the long-term interests of consumers. As set out below, we consider that the use of this benchmark is consistent with a WACC that is set with regard to both current market data and long-term averages.[4]

32 In relation to the allowed return on debt, IPART concluded that the efficient cost of debt of a benchmark efficient firm would involve a mix of current and past interest rates:

> Using a cost of debt that has regard to both current rates and longer term averages is consistent with the outcome of financing strategies of unregulated businesses. Business financing strategies need to be sufficiently flexible to adjust to changing conditions in financing markets and product markets while also seeking to minimise financing costs over time. In practice, the resulting financing strategies employ a mix of different instruments: floating rate debt, fixed rate debt, locally issued debt, offshore debt, currency swaps, interest rate swaps and hybrid debt/equity securities. This conclusion is supported by the observation that there are active markets in all these forms of securities that are accessed by a wide range of companies. As a result, the effective interest cost of an unregulated business is likely to be a mix of current and past interest rates.[5]

33 IPART also noted that it does not dictate the financing or hedging practice of the firms that it regulates, but noted that those firms would be able to substantially hedge to the regulatory allowance if they chose to:

> Utilities have argued that using the current cost of debt leads to inefficient hedging practice. This statement overstates our role in management of utilities. Our role is to set maximum prices and to oversee license compliance. We do not dictate utilities' expenditure programmes, nor do we determine their financing or hedging practices. We have created a strong presumption that we will use an equal weighting of the current interest rate and long-term averages. The utilities can, if they wish, largely replicate this by using a similar mix of historical un-hedged debt and swaps to lock-in current rates at the time of the decision.[6]

34 In summary, the foundation for IPART's current approach is that:

a. It should set the allowed return on debt to be consistent with the efficient cost of a benchmark entity operating in a competitive market;

b. That efficient cost would reflect a mix of the current cost of debt and the long-term average cost of debt; and

4 IPART, 2013, WACC Methodology: Interim report, June, p. 7.

5 IPART, 2013, WACC Methodology: Interim report, June, p. 11.

6 IPART, 2013, WACC Methodology: Interim report, September, p. 13.

c. Regulated businesses can largely replicate the regulatory allowance via their approach to financing and hedging, if they choose to do so.

35 In its September 2013 Draft Report, IPART affirmed the approach set out in its Interim Report:

> In estimating the cost of debt, we try to build up an estimate of the efficient cost of capital that is consistent with investors' expectations. We had previously adopted the view that current market rates were the best predictor of future rates and that investors' expectations reflected this. However, we observe that, in practice, the cost of capital used in project evaluations or business valuations are often more stable than current market rates and informed by longer term expectations.
>
> In our Interim Report, we decided to estimate the cost of debt based on the on-the-day rate (approximated using a 40-day average) and long-term averages (approximated using a 10-year average). This is consistent with the competitive market objective, but does not assume that we attempt to replicate actual financing practice.[7]

36 IPART also re-emphasied that:

> We have created a strong presumption that we will use an equal weighting of the current interest rate and long-term averages.[8]

37 In its December 2013 Final Decision, IPART simply noted that the proposed approach of combining short-term and long-term estimates of the cost of debt appeared to be uncontroversial:

> …stakeholders agreed with our draft decision to use both current market data and long-term averages in estimating the cost of debt.[9]

38 In our view, there are two reasons that could support IPART's conclusion that the benchmark efficient cost of debt would be based on a mix of the prevailing spot rate and the long-term average rate:

a. The long-term average rate would be consistent with a debt management approach whereby the firm issued fixed-rate debt on a staggered maturity basis. IPART considered that such an approach would be an efficient response to managing refinancing risk as it would result in a relatively small proportion of the firm's debt maturing each year; and

b. A benchmark efficient firm might also be expected to have exposure to the prevailing spot rate for two reasons:

---

7 IPART, 2013, WACC Methodology: Draft report, September, p. 13.

8 IPART, 2013, WACC Methodology: Draft report, September, p. 14.

9 IPART, 2013, Review of WACC Methodology: Final report, December, p. 11.

i. Any new capital expenditure would have to be financed at the prevailing rate; and

ii. A benchmark efficient firm might maintain an amount of spot exposure such that it is able to lock in a fixed rate from time to time when it considers market conditions to be favourable.

2.2 Issues relevant to the present WACC methodology review

39 In the Issues Paper for the present review, IPART states that:

> In our view, the current WACC method is working well. Stakeholders can replicate our calculations and the method has increased the stability of the regulatory regime for our regulated businesses.[10]

40 This has led IPART to restrict the current review to a consideration of incremental improvements that are likely to produce substantial benefits:

> Therefore, our objective for this review is to identify whether there are opportunities to make incremental improvements to the method to reflect the efficient financing costs. We propose to make such improvements where we find this to be feasible and there are likely to be substantial benefits from doing so.[11]

41 In this context, IPART has set out the following principles to guide the present review:

> We consider that in making our decisions for this review, we should aim to balance the following three principles:
>
> i. The WACC method should be relatively stable over time to give stakeholders certainty.
>
> ii. The WACC method should be predictable and able to be replicated by stakeholders to provide transparency and reduce resources required in each review.
>
> iii. We should make incremental improvements where there is compelling evidence that they increase the accuracy of the cost of capital faced by a benchmark firm.[12]

42 In relation to the allowed return on debt, IPART has proposed four issues for consideration within the current review:

---

10 IPART, 2017, Review of our WACC method: Issues paper, July, p. 1.

11 IPART, 2017, Review of our WACC method: Issues paper, July, p. 8.

12 IPART, 2017, Review of our WACC method: Issues paper, July, p. 8.

a. Whether the allowed return on debt should be updated within the regulatory period;

b. The relative weights that should be applied to current market data and historical averages;

c. The data source that should be used to estimate the debt margin (debt risk premium); and

d. Whether published bond yields should be converted into effective annual rates.

2.3 Framework for analysis

43 When addressing the four matters to be addressed in the present review, we have sought to apply the IPART principles set out in Paragraph 41 above within the following framework:

a. IPART's view is that its current approach to determining the allowed return on debt is working well and that it is considering only incremental improvements that are likely to produce substantial benefits;

b. IPART has developed its current approach to the allowed return on debt to be consistent with the efficient cost of a benchmark entity operating in a competitive market;

c. IPART considers that the efficient cost of debt would reflect a mix of the current cost of debt and the long-term average cost of debt;

d. IPART notes that regulated businesses can largely replicate the regulatory allowance via their approach to financing and hedging, if they choose to do so;[13] and

e. In its 2013 WACC Review, IPART noted that it had "created a strong presumption that we will use an equal weighting of the current interest rate and long-term averages."[14]

44 Within this framework and context, we set out two proposals below in which:

a. The current 50/50 weighting of current market rates and long-term average rates is maintained; and

---

13 The basis for the submissions below is that the current IPART allowance is not based on an implementable debt management strategy. Some incremental changes to the current IPART approach would match an implementable strategy, and would therefore be more consistent with the cost of a debt management strategy that could be implemented by a benchmark efficient firm.

14 IPART, 2013, WACC Methodology: Draft report, September, p. 14.

b. Incremental changes are made to the way in which each component is estimated in a way that:

   i. More accurately reflects the actual costs of a benchmark firm in relation to each component; and

   ii. Reduces the volatility in prices that customers might experience between one bill and the next.

45 For each of the two components of the allowed return on debt, we consider how that component would be financed and managed by the benchmark firm which then leads to an estimate of the benchmark efficient cost of debt for that component.

2.4 The long-term component

2.4.1 Staggered maturity approach

46 In relation to the long-term component, our view is that the benchmark efficient approach includes an approach where a firm issues long-term fixed-rate debt on a staggered maturity cycle.[15] For example, in each year of a 10-year cycle, the benchmark firm might refinance 10% of its debt requirements in 10-year fixed-rate debt.[16] The primary reason for this staggered debt issuance is to minimise refinancing risk – only 10% of the relevant debt portfolio matures each year.

47 In its 2013 Rate of Return Guideline, the AER considered the financing practices of the benchmark efficient entity in some detail and concluded that the fixed-rate staggered-maturity approach is efficient. After considering the relevant evidence and submissions the AER concluded that:

---

15 We note that there are a range of efficient approaches that are consistent with the broad principle of fixing rates on a staggered maturity basis. For example, many firms find it more attractive to issue floating rate debt and to use interest rate swaps to fix rates. The "efficient" strategy would also include issuing debt offshore and using cross currency swaps to fix rates back into Australian dollars. All of these approaches are consistent with the same general approach. For the purposes of explaining the relevant points, we use the generic terminology of long-term fixed-rate debt on a staggered maturity cycle.

16 We also note that it may be efficient for some firms to issue debt with maturity beyond 10 years, and that a number of Australian infrastructure firms have recently done that. It may also be efficient for some firms to refinance, say 20% of their debt requirements every two years rather than 10% every year. That is, different firms may adopt different variations of an efficient debt management strategy, depending on their different characteristics and circumstances. Thus, the 10-year staggered maturity approach should be considered to be a generic benchmark for regulatory purposes and not a declaration that any firm that deviates form it is behaving inefficiently or imprudently. That is, the 10-year staggered maturity approach should be considered to be broadly consistent with how an efficient firm would manage its long-term debt portfolio, recognizing that individual firms are likely to depart somewhat from that precise approach, given their particular characteristics and circumstances.

> We consider that holding a portfolio of debt with staggered maturity dates is likely an efficient debt financing practice of the benchmark efficient entity…We consider that the regulatory return on debt allowance under the trailing average portfolio approach is, therefore, commensurate with the efficient debt financing costs of the benchmark efficient entity.[17]

48 We agree with the conclusion that the 10-year staggered maturity approach represents an appropriate generic regulatory benchmark efficient approach to the long-term debt component. We consider this conclusion is uncontroversial.

2.4.2 Annual updates would be consistent with the benchmark efficient cost and would reduce price volatility

49 Given that the generic benchmark efficient approach is to issue 10-year debt on a staggered maturity basis, the benchmark efficient cost would be replicated by updating the regulatory allowance every year. This is because 10% of the relevant debt pool would mature each year, being refinanced at current rate. Thus, the relevant trailing average, and consequently the benchmark efficient cost, would change each year. Updating this component of the return on debt allowance each year would, therefore, produce a regulatory allowance that more accurately reflects the benchmark efficient cost of debt.

50 IPART's current approach to the long-term debt pool is to set an allowance at the beginning of the regulatory control period (RCP) where that allowance remains fixed for the duration of the RCP. That approach does not mirror the cost of any implementable debt management strategy, so in our view cannot be considered to be an estimate of the efficient cost of debt.[18] A generic efficient strategy that *is* implementable is the 10-year staggered maturity strategy set out above. But the cost of that strategy changes each year as 10% of the debt pool is refinanced. Thus, for the regulatory allowance to match the cost of that strategy would require annual updating of the long-term cost of debt component. This annual update would be for the total cost of long-term debt (i.e., risk-free rate plus debt risk premium) – because it is the entire cost of debt that would be refinanced when a particular tranche of debt matures.

51 Annual updating of the long-term component of the return on debt allowance also has the benefit of reducing the size of price changes that customers might experience between one bill and the next. The reason for this is two-fold:

---

17 AER, 2013, Rate of Return Guideline: Explanatory Statement, December, p. 102.

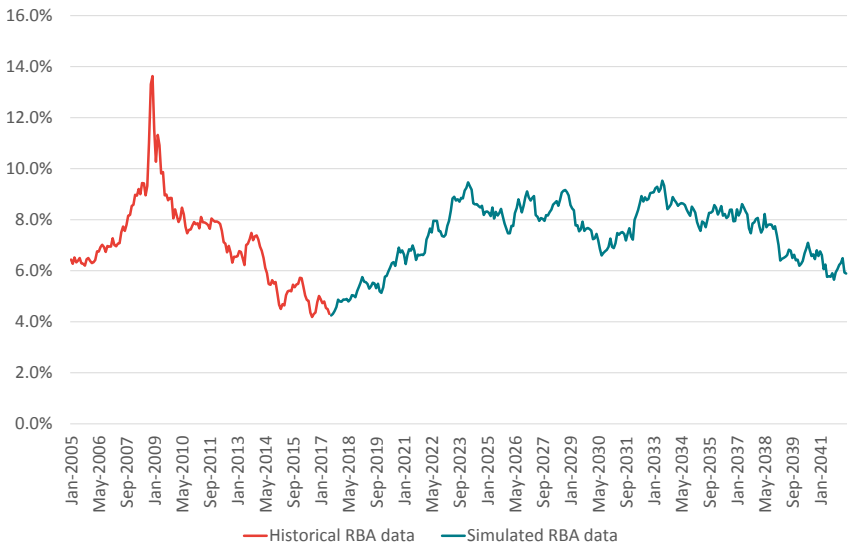
18 In this regard, we note that IPART's current approach is to hold the allowance for the long-term cost of debt fixed for the duration of the regulatory control period, which does not correspond to any implementable strategy. To match the regulatory allowance at the beginning of the RCP, a firm would have to issue 10-year fixed-rate debt consistently over the prior 10 years. During the regulatory period, some of that debt would mature and have to be refinanced at prevailing rates, whereas the regulatory allowance remains fixed.

a. The pressure caused by ongoing changes to the risk-free rate and DRP is released each year, rather than being stored for five years and then released. Thus, if rates are generally rising over a period, customers would see incremental price increases each year rather than a five-fold increase at the beginning of the next regulatory period; and

b. A temporary spike in rates (such as occurred during the GFC) will not be locked in for a full five year regulatory period, but will have a more muted effect as it washes through the trailing average.

52 To show the effect on volatility, we have performed a simple simulation analysis. We begin with BBB corporate bond yield data as published by the RBA and then we simulate different possible scenarios for the future evolution of rates (between July 2017 and April 2042). An example of one simulated path is shown in Figure 2 below. The red curve represents actual, historical RBA data, and the blue curve represents simulated future data.

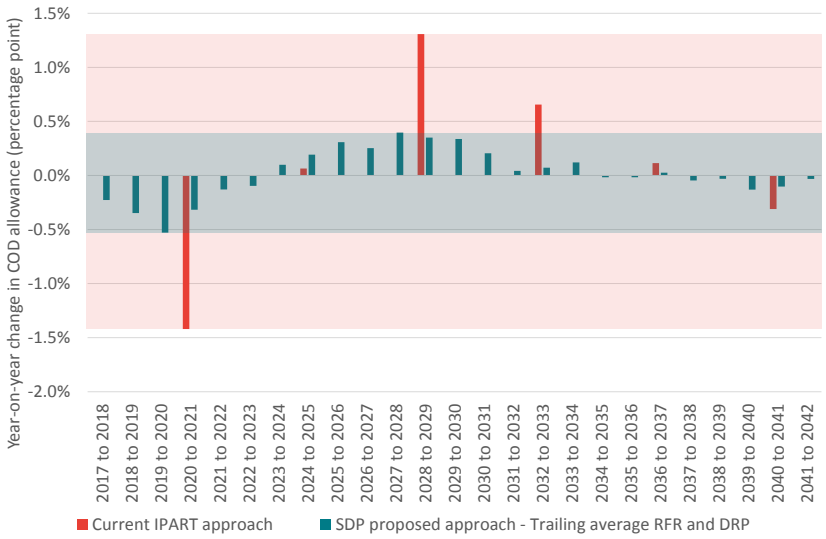
Figure 2: Simulated BBB bond yields



Source: Frontier Economics calculations.

53 Next, we compute the year-on-year change in the cost of debt allowance for the long-term component, assuming a four-year regulatory period. The results for the simulated path of the cost of debt presented in Figure 2 above are presented in Figure 3 below. The Figure shows that the annual updates result in very small changes relative to the changes that can occur when updates occur only every four years. The two shaded regions show the full range of year-on-year changes under each approach. Clearly, the range of changes is much greater when those changes are only made every four years.

Figure 3: Year-on-year changes in long-term cost of debt allowance



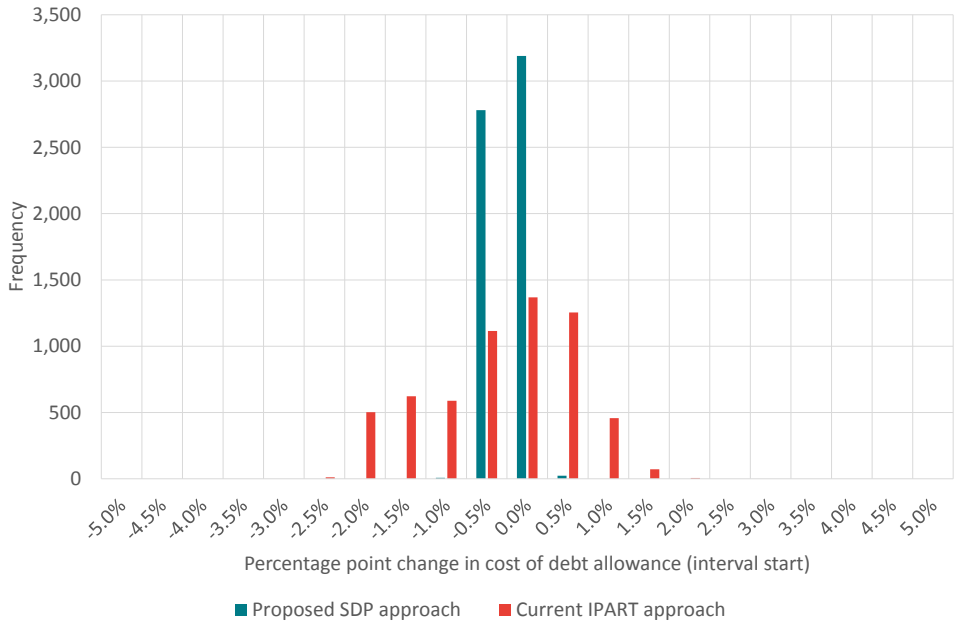
Source: Frontier Economics calculations.

54 In order to ensure that the result presented above is not due purely to statistical chance, we re-ran the simulations 1,000 times and computed the year-on-year changes in the long-term cost of debt allowance for each simulated path of rates. We then examined the distribution of annual change in the long-term cost of debt allowance at the start of each regulatory period, under the current IPART approach and under the trailing average approach proposed by SDP.

55 The frequency distributions presented in Figure 4 below compare the outcomes under the current IPART and proposed SDP approaches. The horizontal axis of this figure specifies the possible range of annual changes in the long-term cost of debt allowance in 50 basis point intervals. The vertical bars then count the number of times, over all simulated paths, a change in the allowance occurred within each of these specified intervals.

56 The figure suggests that the current IPART approach will tend to result in much larger changes in the long-term cost of debt allowance than does the trailing average approach proposed by SDP. This is demonstrated by the very wide range of possible changes in the long-term cost of debt allowance that can occur at each reset under the IPART approach (denoted by the red frequency distribution). However, under the trailing average approach (denoted by the blue frequency distribution), the change in the long-term cost of debt allowance at the start of each regulatory reset tends to be very small, because under the proposed trailing average approach, only 10% of the allowance is updated each year.

Figure 4: Distribution of changes in long-term cost of debt allowance at the start of each regulatory period



Source: Frontier Economics calculations

57 In summary, annual updates for the long-run component of the allowed return on debt would have the dual benefits of:

a. Producing a regulatory allowance that more accurately reflects the benchmark efficient cost of debt as it corresponds to an implementable debt management approach; and

b. Reducing the maximum size of price changes that customers might experience between one regulatory period and the next.

58 We note that, in its 2013 WACC Review, IPART concluded that:

> We also do not consider that indexing the cost of debt on an annual basis in our new methodology provides sufficient benefits to outweigh the increased administrative costs.[19]

59 However, we note that, since 2013:

a. The AER has introduced a trailing average approach to the allowed return on debt that includes annual updates. The AER has shown how these annual updates can be effectively automated as they are mechanical updates based on independently published data. The

[19] IPART, 2013, WACC Methodology: Draft report, September, p. 13.

annual updates are no more complicated than the annual updates that already occur in relation to inflation;

b. A number of other regulators have implemented some form of trailing average approach; and

c. IPART's previous consideration of annual updates did not consider the effect on the quantum of potential year-on-year price changes. We note that Sydney Water has indicated, at IPART's recent public hearing into the WACC, that an annual update for changes in the allowed return on debt would result in a price impact of $4 to $5 in the bill of an average residential customer. This represents a very small year-on-year change in prices.

2.4.3 Annual averaging period

60 We note that, in relation to the long-term debt pool, the approach of an efficient benchmark firm would be to refinance (or reprice) 10% of its debt each year. This would be done during a defined averaging period – set to 40 days under IPART's current approach. It would not be efficient for a benchmark firm to refinance or reprice its debt over the course of an entire year, because that would involve a very large number of transactions, each for a small amount of debt.

61 Consequently, if the regulatory allowance is designed to match the cost of debt for an efficient benchmark firm, the trailing average would be determined using a defined (e.g., 40-day) averaging period each year. This is the approach adopted by the AER whereby the regulated firm nominates confidential averaging periods in advance and where the length of that averaging period can be specified by the firm in accordance with its characteristics and circumstances.

62 We note that the reason for this proposal is to match the regulatory allowance to the generic benchmark efficient cost. IPART has consistently maintained the view that its role is to set a benchmark regulatory allowance and not to:

a. dictate what financing policy a regulated firm should use; or

b. cover the costs of the particular financing strategy a firm chooses to employ,

and we agree with that approach. The basis of the proposed averaging period is that is an approach that could be employed by an efficient benchmark firm. That is, an approach that is impossible to implement in practice, cannot really be considered to be the benchmark efficient approach.

63 Moreover, our view is that, just as there is no reason for a regulator to set the return on debt allowance to be specifically in accordance with the approach adopted by a particular firm, there is equally no reason for a regulator to insist that the return on debt allowance must be set in a way that is impossible for any business to replicate.

64 In the case at hand, there appears to be broad agreement that, in relation to the long-term debt pool, the generic benchmark efficient cost of debt would be consistent with some form of trailing average. The trailing average can either be computed in a way that is practically implementable by a business (specified averaging period) or in a way that cannot be practically implemented (full year averaging period). In our view, the latter approach would create unnecessary risk for the regulated firm for no clear benefit.

2.4.4 Transition arrangements

65 We recognise that IPART has deliberately defined the benchmark firm to be one that operates in a competitive market rather than a firm that operates under regulation. However, it is inevitable that regulated firms will structure their affairs having regard to the regulatory arrangements under which they operate.

66 In practice it is common for regulated firms to seek to hedge, as best they can, to the regulatory allowance for the cost of debt – in order to minimise the risk that the firm's actual cost of debt might diverge materially from the regulatory allowance. This can involve regulated firms entering into various derivative contracts such as interest rate swaps. It is likely that different firms will have taken different approaches to managing this mis-match risk. For example, in the energy sector there was evidence of smaller companies being more active users of interest rate swaps, whereas larger companies tended to use different approaches.

67 In our view, a regulator should have regard to such hedging arrangements when considering any change to its regulatory approach. In particular, the regulator should consider whether any transition arrangements might be required for a regulated firm to move from:

a. Its current portfolio of debt and hedging instruments, prudently adopted in response to the current regulatory regime; to

b. The assumed generic debt portfolio that underpins the proposed new regulatory allowance.

68 Such transitional arrangements may include, for example:

a. The unwinding of hedging instruments that were prudent and efficient under the previous regime and which would not be required under the new regime; and/or

b. Providing the regulated firm with some time to build up a debt portfolio that is consistent with the new regulatory allowance.

69 In our view, there is no one-size-fits-all set of transition arrangements. Rather, at the time of each determination, the particular regulated firm would provide information about:

a. Its existing portfolio of debt and hedge instruments, explaining why it considers that approach to have been a prudent response to the previous regulatory regime; and

b. What it considers to be the most prudent and efficient means of transitioning from its current position to the assumed debt management approach that underlies the new regulatory allowance.

70 This would only be required once for each regulated firm and only arises in the context of a change in the regulatory approach.

71 If the regulator was persuaded that:

a. The current approach was a prudent response (for that particular business) to the incentives created by the previous regulatory regime; and

b. The proposed transition was a prudent and efficient means of moving to a debt management approach consistent with the new regulatory regime,

the allowed return on debt should be set in accordance with the costs that would be borne by a benchmark efficient firm implementing the proposed transition.

72 In this regard, we note that the Australian Energy Market Commission (AEMC) introduced a rule to this effect when allowing the AER to change its approach to the return on debt allowance.

73 Put another way, it would seem to be unreasonable for a regulator to take the view that, when considering potential transition arrangements, they will ignore the incentives that were created under their previous approach.

74 To be clear, we are not suggesting that IPART should change its definition of the benchmark firm. We are also not suggesting that the actual approach of a regulated firm is a relevant consideration to the allowed return in a steady state regulated setting. We agree entirely with IPART that the approach of the regulator is to set a benchmark allowance and the firm is then free to manage its affairs as it sees fit. Our point here only arises in special circumstances where the regulator proposes a change to its regulatory approach. In that setting, we consider it reasonable for a regulator to consider how its previous regulatory approach may have driven the approach adopted by a regulated firm. To do otherwise would be to create a perception of regulatory risk.

75 By way of example, consider a firm that will:

a. Complete its current regulatory control period with a portfolio of floating rate debt issued on a staggered maturity basis, as a prudent response to the previous regulatory regime; and where

b. The regulator proposes to set the allowed return on debt on the basis of a 10-year trailing average approach, with annual updates during the RCP.

76 In that case, given that the firm's current cost of debt already reflects the trailing average of the DRPs that were in the market when the debt was progressively issued over the prior ten years, no transition would be required in relation to that component. That is, a trailing average DRP would reflect the benchmark efficient cost and the firm is already bearing a trailing average DRP, so the regulatory allowance can be immediately set on that basis and no transition is required.

77 However, the firm in this example will finish the current RCP with floating rate debt, so would not be in a position to go back in time and lock in historical risk-free rates over the previous ten years. Rather, it would take the firm ten years to be in a position where the risk-free rate component of its actual cost of debt will reflect a 10-year trailing average.

78 Thus, a transitional allowance that reflected the fact that it would take the firm 10 years to construct a full trailing average debt portfolio would properly recognise the debt management approach that was driven by the previous regulatory regime and how a regulated business would most efficiently transition to the new regime.

79 We note that such a transition, if applied today, would result in a *lower* return on debt allowance than would be obtained under an immediate trailing average allowance. This is because current risk-free rates are materially lower than the 10-year historical average.

80 We also note that this form of transition was proposed by a number of regulated entities in the energy sector – for the same reason that it would compensate firms for the efficient cost of debt in moving from a debt management approach that was appropriate for them under the previous regime. Other businesses submitted that the interest rate swaps market was not available to them due to their size and circumstances such that no transition was appropriate for them.

81 Our view is that different transition arrangements may be appropriate for different businesses, which might react differently (because of their different characteristics and circumstances) to the incentives created under the previous regulatory regime. In this regard, we reiterate the point that transition arrangements are not driven by considerations of the definition of the benchmark entity, but rather by regulatory principles of fairness and the desire to avoid regulatory risk.

2.4.5 Summary of recommendations in relation to the long-term component

82 Our recommendations in relation to the long-term component of the allowed return on debt are:

a. Introduce annual updates of this component of the cost of debt;

b. Take the historical average over nominated (e.g., 40-day) averaging periods each year, rather than over the whole year; and

c. Allow those businesses that put in place reasonable and prudent hedge arrangements in response to the previous regulatory regime to propose a prudent and efficient means of transitioning from their current position to an approach that is consistent with the new regulatory allowance.

83 We note that the primary recommendation is an annual update to the allowed return on debt. This issue has been shown to be straightforward in the energy network setting, where the annual update has already been effectively implemented.

2.5 The short-term component

2.5.1 Staggered maturity floating rate approach

84 In relation to the short-term debt pool, our view is that a benchmark efficient approach would be for the firm to issue long-term floating-rate debt on a staggered maturity cycle. This would result in the benchmark efficient cost at a point in time reflecting:

a. The floating risk-free rate at the point in time; and

b. An average of the DRP over the previous 10 years, locked in when the debt was issued.

85 In its previous determinations, IPART has considered that the benchmark firm's exposure to the current rate would be in the form of the relevant spot 10-year rate. We note that is consistent with the AER's conclusion that infrastructure firms tend to issue debt that has approximately 10 years to maturity at the time of issuance. The AER noted that bonds issued by the firms they regulated averaged a term of 9.7 years at issuance[20] and concluded that:

> A significant proportion of regulated energy assets are long-lived. We observe that electricity transmission lines and gas pipelines are depreciated for regulatory purposes over as long as 60 years. Accordingly, we consider that the entity will seek to fund the long-lived energy assets with longer debt tenors in order to manage refinancing and interest rate risk. By issuing longer term debt the entity reduces the frequency with which it must approach the market, thereby reducing the risk associated with not being able to secure funding at the time when it is required, or at rates that are higher or lower than those it currently pays. In approaching the market less frequently there is less risk associated with changing interest rates, which reduces the volatility in debt

[20] AER, 2013, Rate of Return Guideline: Explanatory Statement, December, p. 143.

> servicing costs and the likelihood of mismatch between the business' cash flows and its debt servicing obligations.[21]

86 Consequently, we consider the approach of issuing 10-year floating rate debt on a staggered maturity basis to be an appropriate generic efficient benchmark for the short-term component of the allowed return on debt.

2.5.2 A regulatory allowance consistent with the benchmark efficient cost

87 To be consistent with the generic benchmark efficient cost set out above, the regulatory allowance would:

a. Set the risk-free rate component to the spot 10-year rate at the beginning of the regulatory period; and

b. Update the DRP each year throughout the regulatory period.

88 This would involve a relatively minor change relative to IPART's current approach in that the DRP allowance would be updated annually on a trailing average basis – exactly as would be required for the long-term component for the allowed return on debt above. Thus, there is no additional complexity beyond what would already be required for the long-term component. We also note that IPART already maintains the relevant data for the purposes of it six-monthly WACC updates.

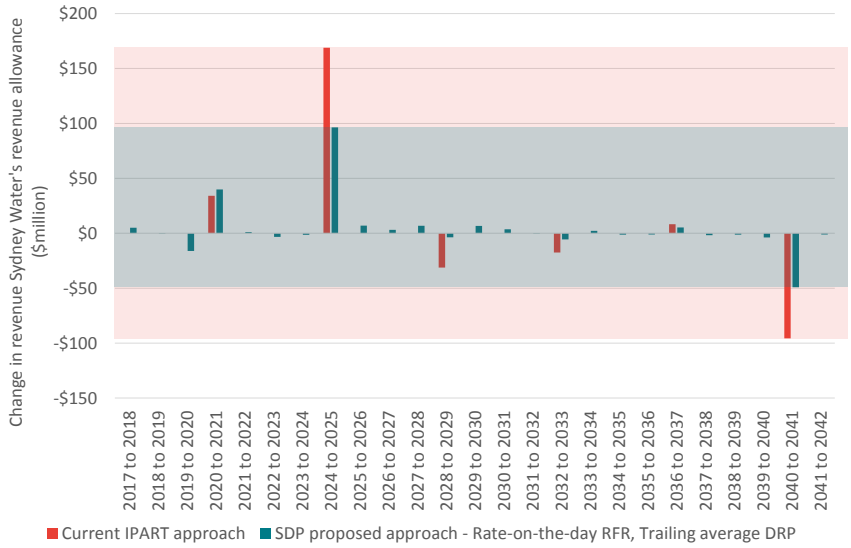
2.5.3 Annual updating of DRP reduces volatility

89 Finally, we note that the approach of updating the DRP component annually has the effect of reducing the size of the change in the allowed return on debt from one regulatory period to the next, and consequently prices, for the same reasons as set out above. In this case the risk-free rate would be re-set every four years and the DRP would be updated annually. The resulting year-on-year changes to the allowed return on debt, for the interest rate simulation in Figure 2, are illustrated in Figure 5 below.

---

21 AER, 2013, Rate of Return Guideline: Explanatory Statement, December, p. 138.

Figure 5: Year-on-year changes in short-term cost of debt allowance



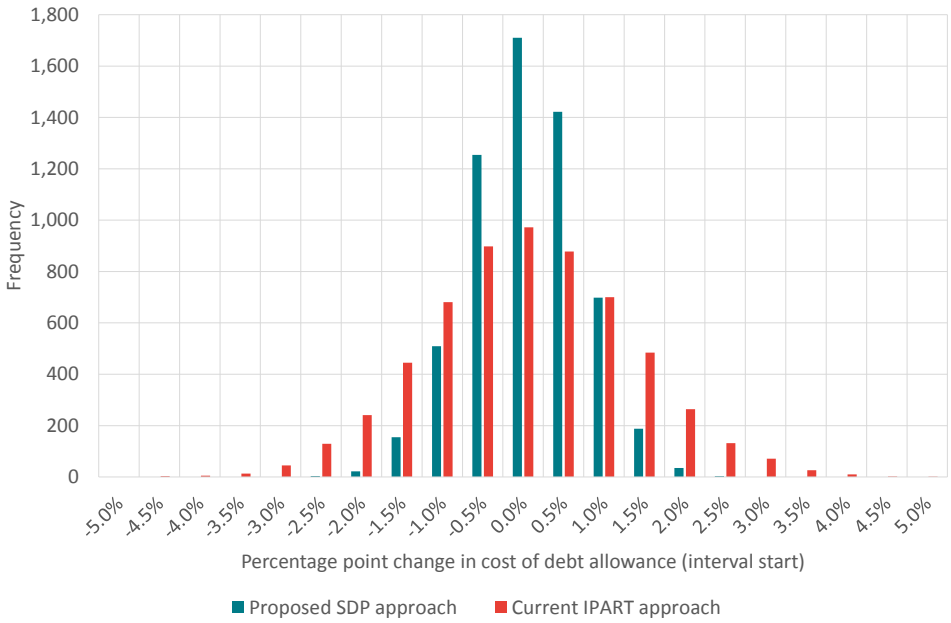
Source: Frontier Economics calculations.

90 Figure 5 shows that the proposed approach results in smaller changes relative to the changes that can occur when the entire update occurs only every four years. The two shaded regions show the range of year-on-year changes under each approach. Clearly, the range of changes is much greater when changes to both components of the return on debt allowance are only made every four years.

91 Once again, in order to ensure that the results presented above are not due to statistical chance, we repeated the simulations 1,000 times and analysed the distribution of the resulting changes in the short-term allowances at the start of each regulatory period, when rates are re-set by IPART.

92 The frequency distributions plotted in Figure 6 demonstrate that the SDP approach will tend to result in much smaller changes in the short-term cost of debt allowance at the start of each regulatory period than does the current IPART approach. Consequently, the changes in prices to consumers from one regulatory period to the next will also tend to be smaller under the proposed SDP approach than under the current IPART approach – all else remaining equal.

Figure 6: Distribution of changes in short-term cost of debt allowance at the start of each regulatory period



Source: Frontier Economics calculations.

2.5.4 Summary of recommendations in relation to the short-term component

93 Our recommendations in relation to the short-term component of the allowed return on debt are:

a. Set the DRP allowance equal to the 10-year trailing average; and

b. Introduce annual updates of the DRP allowance.

2.6 Data sources

94 IPART proposes in its Issues Paper to continue to use 10-year continue to use the 10-year corporate bond spread data published by the RBA when determining the allowed debt margin (Preliminary view 5). We agree with this approach.

95 However, we note that the RBA began publishing these data only in late 2013. There is no guarantee that the RBA will continue to publish these data over the long-run. Therefore, we recommend that IPART consider supplementing the RBA data with data published by another independent data provider (such as Bloomberg and/or Thomson Reuters), to ensure that the allowed debt margin can be calculated if the RBA data become unavailable.

96 This could be done either by:

a. Giving all data sources equal weight in the years in which they all exist. The AER uses this approach. Specifically, it gives RBA and Bloomberg data equal weight. In years in which one data source is available, the other source would receive 100% weight; or

b. Giving the RBA data 100% weight when it is available, but using Bloomberg and/or Thomson Reuters data in the event that the RBA data are not available.[22]

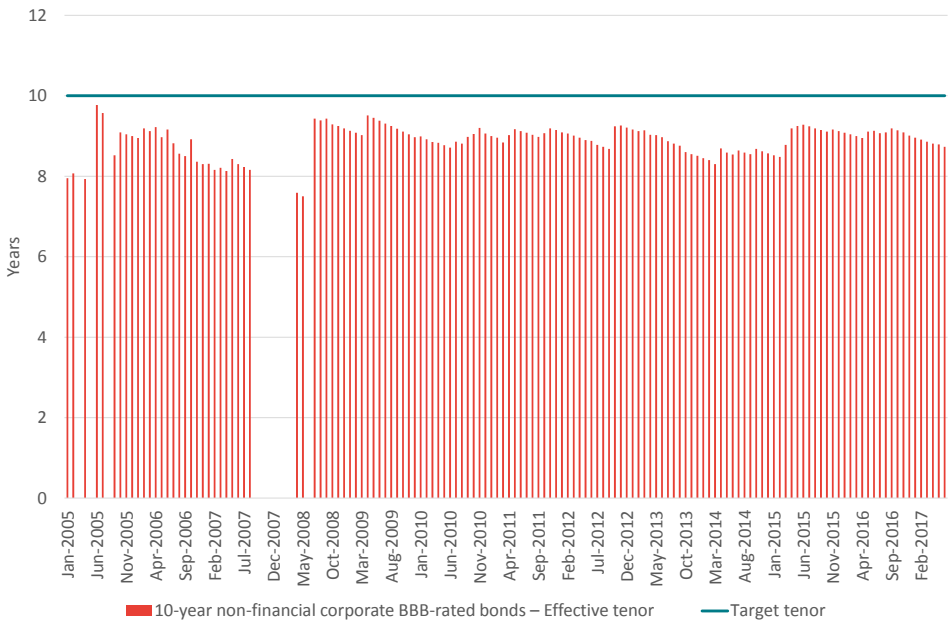
2.7 Adjustments to the raw data

97 IPART proposes to convert semi-annual bond yields into annualised yields to reflect the effect of compounding (Preliminary view 6). We agree with this approach and note that such an approach is standard practice amongst other economic regulators in Australia and New Zealand.

98 Additionally, we note that the bond yield data used by the RBA to compute its estimates of 10-year BBB debt spreads for non-financial corporates are compiled using bonds with effective tenors less than IPART's target tenor of 10-years (see Figure 7 below).

[22] By way of example, in the late 1990's the AER had adopted the approach of having regard to estimates from the two data sources that were available at the time – Bloomberg and CBA Spectrum. When CBA ceased providing estimates, the AER relied solely on Bloomberg. When the RBA began publishing estimates, the AER moved to place 50% weight on each of the Bloomberg and RBA estimates.

Figure 7: Effective vs. target tenor of RBA corporate bond yield data



Source: RBA.

99 In order to adjust for this, we recommend that IPART extrapolate the debt spreads published by the RBA to the target tenor of 10 years. This is the approach followed by the AER when computing the return on debt allowance.[23]

23 Details of how the AER performs this extrapolation exercise are set out in, for example: AER, TransGrid Transmission determination 2015−16 to 2017−18, Final Decision, Attachment 3 – Rate of return, Appendix I, April 2015.

3 Market risk premium

Summary of views on market risk premium issues:

- We agree that IPART should:
  - use a range with a midpoint of 6% as the historical estimate of the MRP;
  - calculate a historical cost of equity by using a historical MRP and a historical risk-free rate;
  - calculate a current cost of equity by using a current MRP and a current risk-free rate;
  - give equal weight to the current and historical costs of equity, unless the uncertainty index is greater than one standard deviation from zero (Preliminary view 8).
- We also:
  - agree that IPART should continue to use its existing six measures of the current MRP (Preliminary view 9); and
  - support IPART's proposed refinements to the SFG market indicator method.
- We recommend that IPART combine its six measures of the current MRP by taking the mean of these six estimates, rather than using either a median approach or its current midpoint approach.

3.1 Matters of agreement

100 IPART seeks views on its proposal to broadly maintain its current approach to estimating the MRP (Preliminary views 8 and 9), including its proposals to:

a. use a range with a midpoint of 6% as the historical estimate of the MRP;

b. calculate a historical cost of equity by using a historical MRP and a historical risk-free rate;

c. calculate a current cost of equity by using a current MRP and a current risk-free rate;

d. give equal weight to the current and historical costs of equity, unless the uncertainty index is greater than one standard deviation from zero; and

e. continue to use its existing six measures of the current MRP.

101 We agree with these proposals. In our view:

a. IPART's approach of pairing estimates of the historical MRP (which changes very slowly over time, and is close to IPART's estimate of 6%) with a historical risk-free rate, and a current MRP with a current risk-free rate, has produced stable and sensible return on equity estimates since 2014;

b. It is reasonable to adopt an equal weighting of the long-term and current estimates of the return on equity as the default approach;

c. Given the alternative ways in which the current MRP can be estimated, it is appropriate to consider a range of different specifications of the Dividend Discount Model, as well as market-indicator-based estimates of the current MRP.

d. IPART's refinements to the SFG market indicator method (set out in the Addendum to the Issues Paper – published on 4 August 2017) are sensible methodological improvements.

3.1.1 Area for improvement: a mean approach to combining estimates of the current MRP

102 At present, IPART combines its six estimates of the current MRP by selecting the midpoint between the highest and lowest of these six estimates. IPART notes that such an approach can be sensitive to "extreme outliers".

103 IPART therefore proposes to use a median approach (Preliminary view 10), which would involve deriving its estimate of the current MRP by taking the median of the six indicators. IPART suggests that:

> …the median approach might be less affected by outliers than the midpoint approach.[24]

104 We agree that when confronted with genuine outliers, a median approach would be appropriate. This is a standard statistical approach.

105 However, the fact that a single estimate of the current MRP happens to be very high or very low does not necessarily make it a genuine outlier. It could be that this high or low estimate provides some useful information about the true MRP, which the remaining estimates fail to do. Discarding this estimate (by application of the median estimate) would, under such circumstances, result in a worse (rather than better) estimate of the current MRP.

106 Furthermore, in our view there is no reliable way to assess whether any individual estimate is an outlier. The normal procedure for testing whether an estimate was sound or not is to compare it to an actual value. Since the current MRP cannot be observed (even with hindsight), there is no way to assess whether one of the six estimates (being very high or low) was a poor estimate of the current MRP, or in fact a good estimate of the current MRP (whilst the other five were in fact poor estimates).

[24] Issues Paper, p.34.

107 In these circumstances, we recommend that IPART derive its estimate of the current MRP by taking the *mean* (rather than the median) of its six indicators.

108 Such an approach would:

a. Give equal weight to each of the six estimates (which is appropriate if no individual estimate can, for methodological reasons, be identified as clearly inferior or superior);

b. Give less weight to the highest and lowest estimate than under IPART's current approach. Under the current midpoint estimate, the highest and lowest estimates each receive a 50% weight in the computation of the estimate of the current MRP. Under a mean approach, the highest and lowest estimates would each receive a weight of only 16.67%;

c. Ensure that the two central estimates of the current MRP do not receive disproportionate weight. Under IPART's current approach, the third-highest and fourth-highest estimates receive zero weight. However, under a median approach, these two estimates would each receive 50% weight. It is unclear that such a high weighting should be given to these two estimates unless they are clearly superior to the remaining four estimates. Under a mean approach, the third-highest and fourth-highest estimates would each get more weight (16.67%) than they currently do, but less weight than they would receive under the median approach proposed by IPART.

4 Equity beta and gearing

Summary of views on beta and gearing issues:

- We agree with IPART's view that it should review its estimate of the equity beta (Preliminary view 11) and gearing of the benchmark entity (Preliminary view 15) at each price review.
- However, given difficulties involved in estimating equity beta precisely, we recommend the following:
  - IPART should only change its determination of equity beta from one price review to the next if there is compelling evidence to do so;
  - In order to maximise the statistical reliability of its equity beta estimate, IPART should use the largest possible sample of comparators, and the longest history of returns data available for each firm in the selected comparator set. Maximising the number of observations used in the estimation process in this way would minimise the statistical noise/measurement error associated with the equity beta estimates; and
  - The comparator set should be selected using, as a starting point, standard industry classification systems used by third party data providers (e.g., Bloomberg, Thomson Reuters). This initial sample could be supplemented by any additional comparators used by other regulators.
- We agree with IPART's view that its final estimate of equity beta should have regard 'raw' and' adjusted' (e.g., using the Blume and Vasicek methods) (Preliminary view 12). However, IPART should explain transparently in its decision how and why it has weighted beta estimates derived using different adjustment methods, and why its weighting scheme differs (if at all) from that used in previous price reviews.
- In relation to gearing, we:
  - Endorse strongly IPART's long-standing practice of using an estimate of the "capital structure that a benchmark entity would have", rather than "the gearing ratio of the actual firm";
  - Recommend that, when reviewing its estimate of gearing of the benchmark entity, IPART should have regard to precedent from other relevant regulatory decisions; and
  - Recommend that IPART should only change its determination of benchmark gearing from one price review to the next if there is compelling evidence to do so including changes in other regulatory jurisdictions in Australia.

4.1 Equity beta

4.1.1 Frequency of equity beta updates and mitigation of estimation errors

109 IPART seeks comment on its proposal to review its estimate of equity beta at each price review (Preliminary view 11). We agree with this proposal.

110 However, we note that the task of estimating equity betas precisely is a very challenging one. As IPART itself recognises, several studies in the finance literature

have found equity beta estimates obtained from ordinary least squares (OLS) regression analysis are likely to be subject to a high degree of sampling error.[25]

111 To illustrate the extent of statistical noise that can influence OLS equity beta estimates, consider the time-series movement in the beta estimates of a group of companies used by the New Zealand Commerce Commission (NZCC) recently to estimate the equity beta of regulated energy networks.

112 Figure 8 below plots the distributions of the NZCC's estimated four-weekly and weekly asset betas for each of four historical estimation periods.[26] The horizontal axis of each distribution plot measures the possible beta values for the sample of comparators, and the vertical axis ('frequency') counts the number of comparators that had each of the possible beta values.

113 Each distribution plot identifies separately the position of six companies that had beta estimates in the right-hand tail in the most recent period (shown in the bottom panel in the figure below).

114 If one examines the distribution plot for the previous period (i.e., 2006-2011) two of the companies have moved from the right-hand tail to the left-hand tail of the distribution (Williams Partners and Kinder Morgan). Three companies (ONEOK, TC Pipelines and Enbridge Energy Partners) move much closer to the median of the distribution. Only one company (National Fuel Gas) remains in the right-hand tail of the distribution.

115 In the 2001-2006 period, ONEOK and National Fuel Gas move closer still to the median of the distribution, and TC Pipelines and Enbridge Energy Partners move left of the median.

116 This analysis demonstrates that the six gas companies that had beta estimates in the right-hand tail in one sub-period, had estimates near the median or even in the left hand tail in other sub-periods. This indicates that firms do not tend to have beta estimates in the right-hand tail because they are systematically riskier than other firms in the set, but rather due to random estimation error.

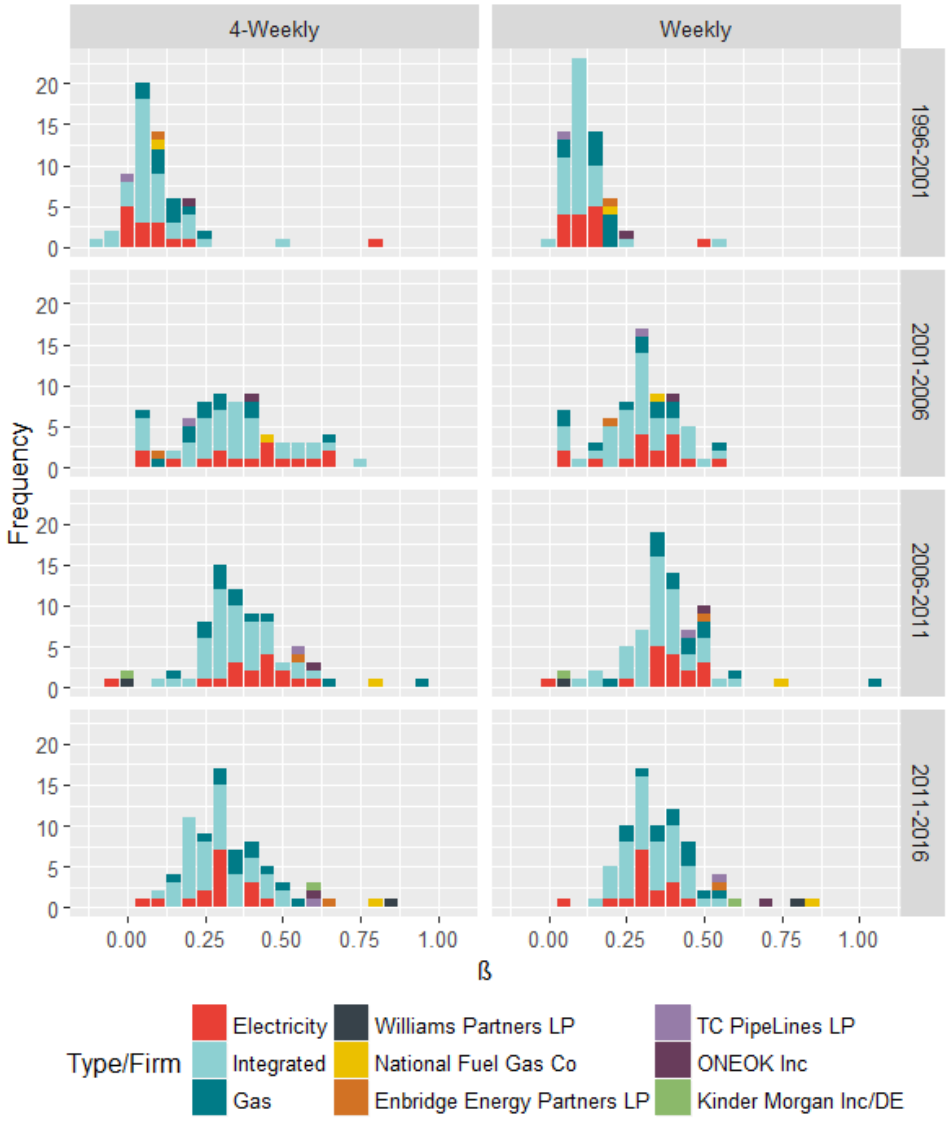
117 The 'mobility' of the outliers is demonstrated even more clearly by the distribution plots in Figure 9 below, which pool together beta estimates from all four time periods. It is immediately clear that the companies that were in the right-hand tail in the most recent period are scattered throughout the distribution at different points in time. None of those companies remain consistently in the right-hand tail of the distribution in all periods (which is what we would expect if they truly are outliers with higher systematic risk). This suggests that more extreme beta *estimates*

25 Issues Paper, p.36.

26 The data used in these plots were obtained from the Excel file published by the Commission entitled *Input methodologies review draft decisions – Asset beta spreadsheet – 11 July 2016*.

are not due to more extreme systematic risk, but rather due to more extreme estimation error.

Figure 8: Distributions of estimated asset betas for each time period evaluated by the Commission

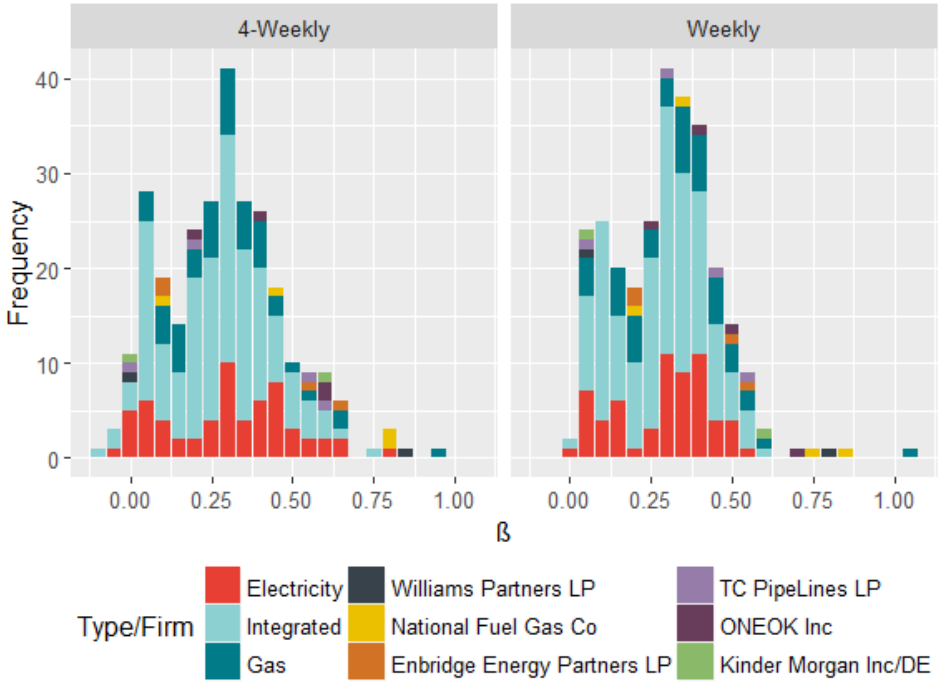


Source: Frontier Economics analysis.

118 This points towards the use of a larger sample of firms. Whereas a small sample of firms might be materially affected by random estimation error, a large sample (contributing more observations to the estimation process) has the benefit of any estimation errors associated with individual beta estimates tending to offset.

Equity beta and gearing

Figure 9: Pooled distributions of beta estimates from all periods



Source: New Zealand Commerce Commission's beta estimates; Frontier Economics analysis.

119 The statistical noise associated with beta estimates also means that it is often difficult to say conclusively that different types of firms operating within the same industry have materially different betas. For instance, one question the NZCC was interested in understanding was whether there is compelling evidence that gas networks have systematically higher betas than electricity networks. Some stakeholders submitted to the NZCC that the discretionary nature of gas as a fuel (relative to electricity), gas networks' exposure to relatively fewer customers than electricity networks, and the threat of stranding meant that gas networks face higher systematic risk than do electricity networks. Whilst these are plausible considerations, there was no way for the NZCC to reliably discern from the data above whether gas networks did indeed have higher betas than electricity networks. As Figure 9 above shows, gas networks (denoted in dark blue) and electricity networks (denoted in red) appear to be scattered evenly throughout beta the distributions. It is impossible to tell whether this is because electricity networks and gas networks do in fact have similar betas, or whether this result is an artefact of statistical noise.

120 This is likely true in all industries. Whilst it may be possible to argue conceptually that individual companies (or types of companies) within a particular industry have higher or lower betas than the industry average, it is generally impossible to confirm this empirically, let alone measure the quantum of any difference. In such circumstances, our recommendation is for regulators to apply the same beta

estimate to all companies within an industry. This is presently IPART's approach, which we endorse.

121 Another way to improve the statistical reliability of equity beta estimates (by increasing the number of observations used in the estimation process) is to make use of the longest history of returns data available for each of the firms in the selected comparator set (rather than, say, just the most recent 5-year window of data).

122 Figure 10 below presents a stylised illustration of how this could be implemented in practice. The red bars in the figure denote the years for which historical returns data exist for each of the hypothetical comparator firms in the regulator's sample. The figure shows that:

a. At Year 0, when the regulator is estimating betas for the first regulatory period (RP1), 16 years of data exist for Comparator 1, 11 years of data for Comparator 2, 9 years of data for Comparator 3 and 14 years of data for Comparator 4. Under our suggested approach, the regulator would make use of all of these available data.

b. At Year 4, when the regulator is estimating betas for RP2, one of the comparators (Comparator 4) has been de-listed, and three of the comparators remain. As a result, 20 years of data are available for Comparator 1, 15 years of data for Comparator 2, 13 years of data for Comparator 3, and 14 years of data (as in RP1) for Comparator 4. Once again, all of these data would be used in the estimation process. The regulator would not immediately drop Comparator 4 from the sample simply because it has been delisted, because the co-movement of its returns with market returns is likely to still contribute some useful information about the true equity beta of the benchmark entity.

123 By this approach, the number of observations used in the estimation process would grow with each regulatory period.

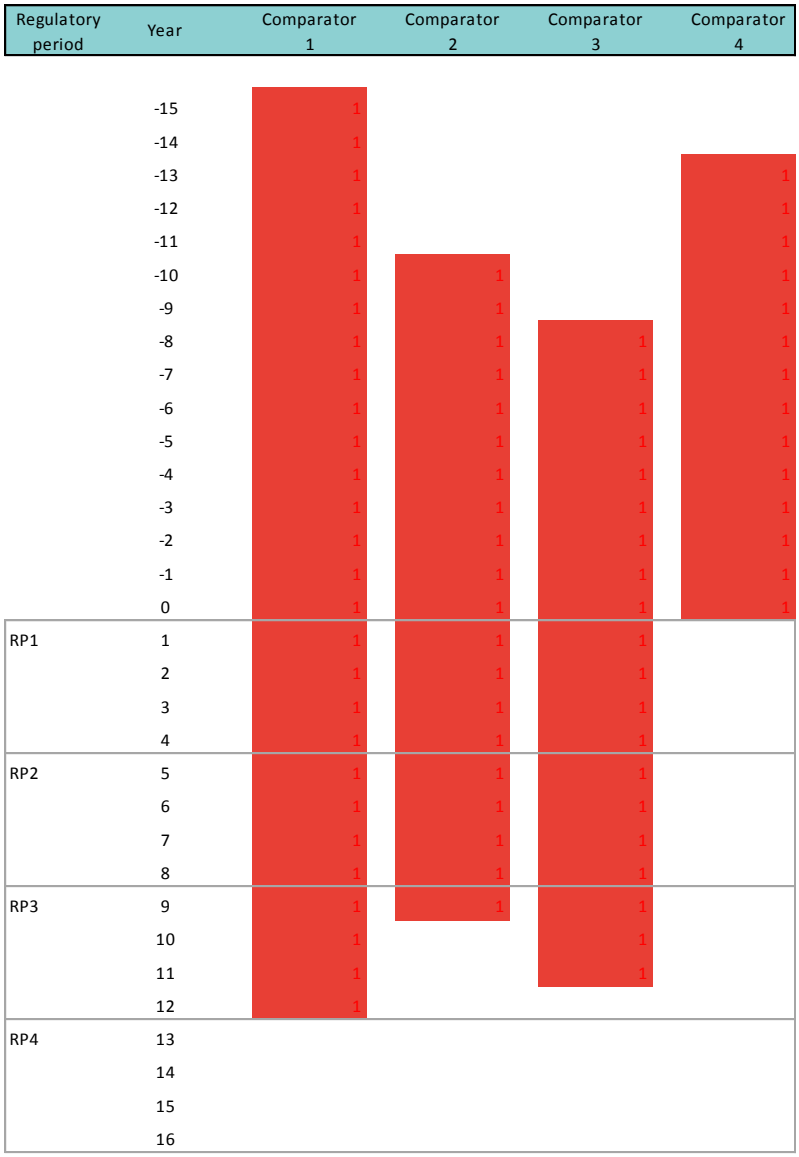
124 The regulator could make use of the full sample of data by:

a. Deriving a single beta estimate for each comparator firm using all of the historical data available on that firm. For example, for RP1, the regulator would use a 16-year estimation window for Comparator 1, an 11-year estimation window for Comparator 2, a 9 year estimation window for Comparator 3 and a 14 year estimation window for Comparator 4; and/or

b. Dividing the historical data into sub-periods (e.g., 5-yearly periods, as the NZCC did), estimating an equity beta for each comparator

for each of these sub-periods, and then averaging the estimates across sub-periods.

Figure 10: Stylised example of sampling periods used in beta estimation process



Source: Frontier Economics.

125 In summary, we recommend that in order to maximise the statistical reliability of its equity beta estimate, IPART should use the largest possible sample of comparators, and the longest history of returns data available for each firm in the selected comparator set.

126 Further, it is worth noting that it can be very challenging in practice to discern whether any variation in estimates from one regulatory period to the next is due to

a genuine change in underlying systematic risk, or simply due to statistical noise (i.e., measurement error). Given the well-understood difficulties associated with estimating equity betas precisely, we recommend that IPART err in favour of stability, and only alter its estimate of beta from one regulatory period to the next if there is compelling statistical evidence to do so.

127 This implies that the beta re-estimation exercise undertaken for each regulatory period should not be conducted in a purely mechanistic way. Rather, IPART should consider the latest statistical evidence available and then exercise judgment as to whether the evidence warrants a change to its beta estimate from the previous regulatory period.

4.1.2 Comparator selection process

128 IPART seeks views on a suitable process for selecting comparator companies.

129 As IPART notes, the main data sources used in Australia for beta estimation are Bloomberg and Thomson Reuters. These data services each have their own industry classification systems. IPART could use a two-stage approach to identify possible comparator firms:

a. Firstly, IPART could generate a preliminary list of companies classified by these data providers as falling within the relevant industry.

b. Secondly, IPART could supplement this list of companies using any additional comparators identified by other Australian regulators.

130 In our view, as a matter of good regulatory process, it would be important for IPART to consult with stakeholders whenever it considers revising its comparator sample.

131 The approach outlined above will tend to favour large, rather than small, comparator samples.

132 IPART notes correctly in the Issues Paper that, in practice, it is difficult to identify perfect comparators, particularly when an industry classification approach is used to identify comparators:

> One of the main weaknesses of our current approach is that the selected proxy companies may not represent a benchmark firm well, leading to an inaccurate estimate of the equity beta. Often, the type of regulated industry will dictate the range of available proxy firms. The more unique the regulated activity, the greater the difficulty in finding suitable proxies.[27]

[27] Issues Paper, p.35.

133 What IPART identifies is a trade-off between the comparability of proxy firms, and the statistical reliability of equity beta estimates:

a. One approach is to use the broadest possible sample of comparator firms. By permitting more firms within the sample, there is a risk of including firms that do not match closely the characteristics of the benchmark entity.

b. An alternative approach would be to use a more selective process for identifying comparators, only permitting those companies that match the characteristics of the benchmark entity closely. However, in practice, such a process never typically yields perfect comparators. Further, the sample size resulting from such a process will tend to be small, and the statistical reliability of the beta estimate using such a sample commensurately low.

134 Of these two approaches, we favour the first. Such an approach has a number of advantages:

a. It is the most objective of the two approaches, meaning that fewer subjective judgments (by IPART or stakeholders) is required in order to compile the comparator sample. This minimises the risk of cherry-picking of comparators;

b. The resulting estimates are likely to be more statistically reliable than those derived using the second approach; and

c. If some companies drop out of the regulator's sample over time (e.g., due to being de-listed) the regulator is unlikely to be left with a sample set that is too small with which to draw meaningful inferences.[28]

135 We do recommend that IPART exclude from the sample any companies identified as thinly-traded stocks. This is because the insensitivity of the share price of thinly-traded stocks tends to result in distorted beta estimates. A well-recognised method for quantifying the illiquidity of a stock is the Amihud measure,[29] which is defined as:

---

28 In this regard, we note that when the AER initially began estimating equity betas for regulated energy businesses, it restricted its analysis to just nine listed comparator companies in Australia. Over time, five of those companies were de-listed, leaving just four companies within the AER's comparator sample. In our view, this is too small a sample for the purposes of estimating beta.

29 Amihud, Yakov, 2002, "Illiquidity and stock returns: Cross-section and time series effects," *Journal of Financial Markets* 5, 31–56.

$$\frac{1}{Number\ of\ days}\sum_{t=1}^{Number\ of\ days}\frac{Absolute\ return\ on\ day\ t}{Dollar\ trading\ volume\ on\ day\ t}.$$

136 A high Amihud score indicates an illiquid stock – whereby stock price movements tend to be large relative to dollar trading volumes.

4.1.3 Raw versus adjusted equity beta estimates

137 IPART seeks comment on its proposed approach (Preliminary view 12) that it should have regard to:

a. the OLS method with no adjustment;

b. the OLS method with the Blume adjustment; and

c. the OLS method with the Vasicek adjustment.

138 Betas derived using the first approach are often referred to as 'raw' beta estimates, as opposed to beta estimates that are 'adjusted' using either the Blume or Vasicek approaches.

139 We agree with IPART that there is an extensive empirical literature that finds raw beta estimates (in a wide range of industries, time periods and countries) are subject to a high degree of estimation bias and sampling error. IPART is also correct that the Blume and Vasicek approaches are commonly used to improve the reliability of raw beta estimates.

140 We therefore support IPART's preliminary view to have regard to raw, Blume-adjusted and Vasicek-adjusted beta estimates.

141 IPART notes in its Issues Paper that:

> Our preliminary view is that we should consider all three methods. If we consider these estimates, we need to decide how to weight them. If all estimates are close, we could weight each estimate equally. If estimates are more dispersed, we could place more weight on some estimates.[30]

142 We recommend that when IPART has regard to estimates derived using these three approaches, it:

a. Explain what weight it has given to each estimate and why; and

b. Explain why its weighting scheme differs (if at all) from that used in previous price reviews.

30 Issues Paper, p.36.

4.2 Gearing

143 IPART seeks views on its proposal (Preliminary view 15) to review the gearing of the benchmark entity at each price review. We agree with this approach.

144 In doing so we endorse strongly IPART's long-standing practice of using in its WACC calculations the gearing of a benchmark entity, rather than the actual gearing of individual businesses regulated by IPART. IPART notes in its Issues Paper:

> We determine the debt and equity weights having regard to the capital structure that a benchmark entity would have, which may differ from the gearing ratio of the actual firm.[31]

145 Such an approach is appropriate as it:

a. Limits the scope for regulated businesses to influence the allowed rate of return by altering its capital structure; and

b. Prevents regulated businesses being rewarded (through a higher return on equity) for taking on excessive quantities of debt that could result in the business facing financial distress.[32]

146 We recommend further that:

a. When reviewing the benchmark gearing level, IPART should have regard to precedent from other relevant regulatory decisions; and

b. IPART should only change its determination of benchmark gearing from one price review to the next if there is compelling evidence to do so.

147 We note that any change in the gearing estimate should also be accompanied by a change in the equity beta (since the equity beta is known to be a function of gearing).

---

31 Issues Paper, p.40.

32 Since the equity beta increases as gearing increases, all else remaining equal.

5 Expected inflation

Summary of views related to estimation of expected inflation:

- IPART has indicated its intention to maintain its current approach to estimating expected inflation (Preliminary view 17).
- As IPART recognises, its preferred approach tends to produce an estimate in all periods quite close to 2.5%. However, actual inflation in any given year can deviate materially from this estimate. This has the potential to either under-compensate or over-compensate regulated businesses.
- We agree with IPART's proposal to change the way it calculates expected inflation to consider the geometric average of the change in the level of prices (Preliminary view 19).

5.1 IPART's current approach to expected inflation

148 IPART's allowed return on capital is set by multiplying the RAB by the post-tax real WACC. The real WACC is determined by deflating IPART's estimate of the post-tax nominal WACC using its estimate of expected inflation.

149 At each reset, the RAB value for each year of the previous regulatory period is updated to reflect actual outturn CPI inflation. The idea is that the regulated business receives part of its required return within the regulatory period in the form of cash revenues, and part later via the increase in the RAB.

150 Thus, there is:

a. A reduction in relation to expected inflation (as the allowed real WACC is reduced); and

b. An uplift in relation to actual outturn inflation (as the RAB is increased).

151 Consequently:

a. If IPART overestimates inflation there would be a loss to regulated businesses – because the real WACC would be reduced by more than the RAB is permitted to grow; and

b. If IPART underestimates inflation, there would be a benefit to regulated businesses – because the RAB will be permitted to grow at a higher rate than the real WACC is reduced.

152 IPART's current and proposed estimate of expected inflation will always be very close to 2.5% because it is calculated as a 10-year geometric average, where the first year is the RBA's published forecast for the forthcoming year, and the remaining nine years within the geometric average is taken to be the midpoint of the RBA's inflation target range, 2.5%.

153 In these circumstances, large mismatches between the actual rate of inflation and IPART's estimate of expected inflation can arise in individual years. IPART notes in its Issues Paper that:

> Our method gives an inflation estimate that is very close to 2.5%, which is the midpoint of the RBA's inflation target band for inflation. However, actual inflation is currently lower than 2.5%. If this low level of inflation persists in coming years, there is a risk that our current approach will over-estimate actual inflation.[33]

154 As a consequence, under IPART's current approach, regulated businesses face under-compensation within the current regulatory period if inflation remains persistently low.

5.2 IPART's proposed approach

155 IPART has proposed to maintain its current approach to estimating expected inflation (Preliminary view 17).

156 We are advised that SDP accepts IPART's maintenance of its current approach, notwithstanding that if inflation continues to run below 2.5%, SDP faces under-recovery of its efficient costs.

157 However, we note that:

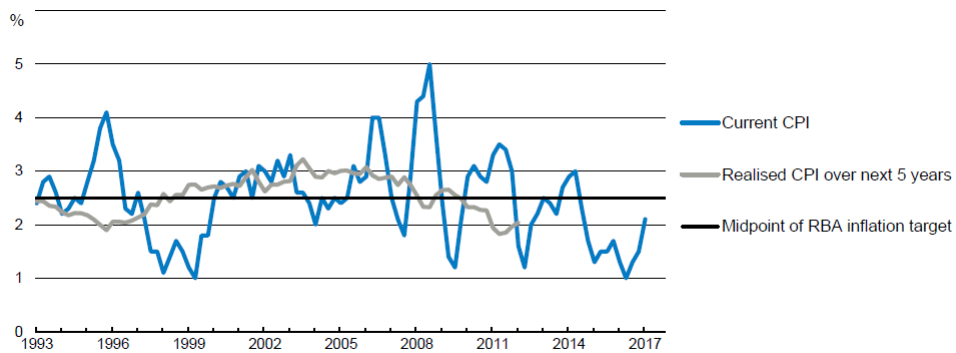
a. There have been a number of years where actual inflation has been materially lower than 2.5% (see Figure 11).

b. During these periods regulated businesses would have faced under-compensation under IPART's current approach.

c. These periods of under-compensation are offset during years when actual inflation has been above 2.5%.

d. In the long-run, these mismatches could be expected to even out.

Figure 11: Annual consumer price inflation



33 Issues Paper, p.43.

Source: Issues Paper, Figure 7.1.

5.3 Change to geometric averaging approach

158 IPART notes that it currently calculates expected inflation as the geometric average of the inflation rate. However, expected inflation could also be measured using the geometric average of the change in the level of prices, with this average converted into an inflation rate separately.

159 IPART's Issues Paper goes on to say:

> The CPI is a price index, and the average inflation rate between two points should be based on the change in the level of prices between those two points. This approach is consistent with the AER's current method. In addition, our current approach would not work in the (unlikely) event that the one-year inflation forecast is negative.[34]

160 We agree with these views.

161 On this basis, IPART proposes to change the way it calculates expected inflation to consider the geometric average of the change in the level of prices (Preliminary view 19). We support this proposal.

[34] Issues Paper, p.46.

6 Gamma

Summary of views related gamma:

- We agree with IPART's proposal to continue to use 0.25 as its estimate for gamma – the value of imputation tax credits (Preliminary view 16).
- There are two competing interpretations of gamma:
  - A market value concept – under this interpretation, gamma represents the economic value of (i.e., the price an investor would be willing to pay for) an imputation tax credit; or
  - A redemption or utilisation concept – under this interpretation gamma represents the rate at which imputation tax credits are redeemed or utilised by taxpayers in order to reduce their personal tax liabilities.
- A recent Federal Court decision found that the Australian Competition Tribunal had erred by *assuming* that gamma was a market value concept. However, the Court was clear that the interpretation of gamma for regulatory purposes should be consistent with the role of gamma within a regulatory framework.
- Within IPART's regulatory framework, gamma is the amount by which the total allowed return on equity is reduced to reflect the imputation credits that investors will receive. It is an exchange rate – the rate at which investors would exchange dividends and capital gains for imputation credits. Thus gamma must reflect the market value of credits relative to dividends and capital gains, and within IPART's regulatory framework, the market value interpretation of gamma is appropriate.
- The best market value estimate of gamma currently available is 0.25.

6.1 The competing approaches for interpreting and estimating gamma

162 Two methods for interpreting and estimating gamma – the value of imputation tax credits – have been proposed in Australia:

a. The *market value* approach posits that gamma should be estimated from the observed prices of traded securities in the same way that other WACC parameters are estimated. This approach produces an estimate of the extent to which investors value credits relative to dividends and capital gains. It is an estimate of the amount of dividends and capital gains that investors would give up in order to receive a dollar of credits.

b. The *redemption* or *utilisation* approach posits that gamma should be estimated as the proportion of credits that are available for investors to redeem. This approach considers the extent to which investors value the credits they redeem less than the dividends or capital gains they receive to be irrelevant.

163 There has been much debate within the Australian regulatory context about which of these two interpretations should be used for regulatory purposes.

164 The Federal Court recently held[35] that the *PIAC-Ausgrid* Australian Competition Tribunal (Tribunal) erred in its decision to vary a number of decisions made by the Australian Energy Regulator (AER).[36] The AER had applied in its decisions a gamma estimate of 0.4. The Tribunal found that the AER had misinterpreted the meaning of gamma, and ordered that the AER remake those decisions using a gamma estimate of 0.25.

165 The Court stated in its decision that:

> The Tribunal appeared to have assumed that other parameters in the WACC calculations were market values that already incorporated investors' tax positions and transaction costs…[37]

and that this assumption had led it to adopt a market value interpretation of gamma (and empirical studies that estimated gamma as the market value of imputation tax credits, to the exclusion of measurement techniques that supported a utilisation rate interpretation of gamma).

166 However, in its judgment, the Court held that the approach that is used to interpret and estimate gamma must be consistent with the role of gamma in the regulatory framework. We agree with that conclusion and understand that this is the very reason for the AEMC revising the National Electricity Rules in 2012 from defining gamma in terms of utilisation to defining gamma to be the value of imputation credits.

6.2 The role of gamma in IPART's regulatory framework

167 IPART's regulatory framework (which reflects closely the AER's regulatory framework in certain key respects) operates in two steps:

a. In the first step, IPART estimates the total required return on equity. This is an estimate of the amount of dividends and capital gains that would be required by investors in a benchmark efficient firm if there were no imputation credits. This estimate reflects personal taxes and personal costs that relate to dividends and capital gains. By way of illustration, suppose the regulated firm has equity of $1,000 and investors require a return on equity of 7%, of which 2% is compensation for personal taxes and personal costs. That is, investors require $70, of which $20 is to compensate them

35 Australian Energy Regulator v Australian Competition Tribunal (No 2) [2017].

36 Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1.

37 Australian Energy Regulator v Australian Competition Tribunal (No 2) [2017] [733].

for the personal taxes and costs that relate to dividends and capital gains.

b. In the second step, the IPART deducts the value of imputation credits and sets the allowed revenues so that the firm is able to pay the difference to investors in the form of dividends and capital gains. This second step occurs in IPART's framework through the determination of the allowance for corporate taxes. Nevertheless, the effect of this step is to reduce the total return on equity by an amount commensurate with the value of imputation tax credits. For example, if IPART estimates that the value of imputation credits is $5, it will allow the regulated business to charge prices sufficient to provide dividends and capital gains of $65.

168 That is, within IPART's regulatory framework, gamma plays the role of determining the amount by which the allowed dividends and capital gains will be reduced to reflect the imputation credits that investors will receive. Gamma is therefore an exchange rate – the rate at which investors would exchange dividends and capital gains for imputation credits. Thus gamma must reflect the value of credits *relative to* dividends and capital gains.

169 There are a number of reasons why imputation credits are less valuable to investors than dividends or capital gains, including:

a. Some credits are distributed to non-residents who cannot redeem them and therefore do not value them at all;

b. Some credits are distributed to resident investors who are prevented from redeeming them by the 45-day rule;[38]

c. Some credits are distributed to residents who simply fail to redeem them;

d. Investors have to wait longer to receive any benefit from the credits – whereas dividends are available to investors immediately, the investor only receives a benefit from credits when their personal tax return is finalised after the end of the tax year;

e. There is a compliance and administration cost involved in tracking and redeeming credits;

f. Resident investors will rationally adjust their portfolios until the last dollar of credits they receive just offsets the cost they bear by concentrating their portfolio into franked dividend paying stocks

[38] Under the 45-day rule, equity investors qualify for imputation tax credits only if they have held the stock "at risk" for at least 45 days (excluding the day the stock was acquired or disposed of). With regards to preference shares, the same rule applies, but the required holding period is 90 days rather than 45 days.

and away from what would otherwise be optimal. Thus, the *net* benefit of the redeemed credits would, on average, be approximately half of the face amount.

170 Anything that equally affects imputation credits, dividends and capital gains will have no effect on the relative value between them, and therefore no effect on gamma. For example, investors pay personal tax on imputation credits at the same rate as on dividends and capital gains.[39] If this were the only factor to consider, the exchange rate would be 1 and investors would value a dollar of imputation credits equal to a dollar of dividends or capital gains because the same tax cost would be imposed on both. It is for this reason that the personal taxes that investors pay on the credits they receive does not appear in the above list.

171 The personal taxes and personal costs that apply to dividends and capital gains are already taken into account in the first step of the regulatory process above. Thus, the second step requires an estimate of gamma that reflects only those personal taxes and costs that apply only to imputation credits, making them less valuable relative to dividends and capital gains.

6.3 Implications of the recent Federal Court decision

172 In our view:

a. The Court has correctly identified that gamma must be interpreted and estimated in a way that is consistent with the regulatory framework in which it operates; and

b. The Court has also correctly identified that the personal costs and personal taxes that relate to dividends and capital gains are taken into account in the first step of the regulatory process. Thus, the $70 in the example above is an estimate of the pre-personal tax and pre-personal costs dividends and capital gains that investors would require.

173 However, having correctly identified that it would be wrong for gamma to reflect any personal taxes or costs that *equally* affect credits and dividends and capital gains,[40] it then ruled that gamma should reflect *no* personal costs or taxes at all – even those that apply only to credits and not to dividends or capital gains.

174 This results in investors receiving no compensation at all in relation to any personal taxes and costs that apply only to imputation credits (making them less valuable to

39 The personal tax rate on short term capital gains is the same as on dividends, and IPART's implementation of the CAPM assumes implicitly that investors view dividends and capital gains as being interchangeable.

40 And which have therefore already been considered in the first step of the regulatory process.

investors than dividends and capital gains). Whereas investors are properly compensated for the personal taxes and costs that apply to dividends and capital gains, they receive no compensation at all for the additional personal costs that apply to imputation credits. The result is an internally inconsistent implementation of the regulatory model whereby investors are properly compensated for all personal taxes and costs that apply to dividends and capital gains, but not compensated at all for the additional personal costs that apply to imputation credits. In our view, this outcome fails the Court's requirement of consistency.

6.4 The AER has provided two rationales for its "utilisation" approach to gamma

175 The proper interpretation of gamma within a regulatory context has been most contested within the AER's regulatory decisions. Given the similarities between IPART's and the AER's regulatory frameworks — in terms of the role gamma plays — it would be instructive for IPART to understand the reasoning the AER has used to support its interpretation of gamma, and why that reasoning is flawed.

176 The AER has provided two mutually exclusive rationales for its approach of providing investors with no compensation for the additional personal costs that apply to imputation credits:

a. The AER's first rationale is that the first step of the regulatory framework estimates the before-personal-tax and before-personal-costs dividends and capital gains that investors would require in the absence of any imputation credits, so the second step of the process must subtract the before-personal tax and before-personal-costs value of imputation credits. Thus, any additional personal costs that apply only to imputation credits (making them relatively less valuable than dividends and capital gains) are not considered. This is the line of argument run before the *PIAC-Ausgrid* Tribunal.

b. The AER's second rationale is that the additional personal costs that apply only to imputation credits *are* relevant, but they have already been taken into account in the return on equity, so to also take them into account when estimating the value of imputation credits would amount to double counting. This is the line of argument run before the Victorian Distribution Businesses (*Vic DB*) Tribunal in November 2016 and in the appeal of the *SAPN* proceedings to the Federal Court in June 2017.

177 Clearly, these two rationales are mutually exclusive. The additional personal costs that affect the market value of credits (relative to dividends and capital gains) cannot be simultaneously irrelevant and already taken into account.

178 In our view, the AER's first rationale is wrong for the reasons set out above – it inconsistently sets the allowed return on equity to be sufficient to cover the personal taxes and costs that apply to dividends and capital gains, but not those additional costs that apply only to imputation credits.

179 In our view, the AER's second rationale is also wrong. The basis of that argument is that investors will reduce their requirement for dividends and capital gains by their assessment of the relative market value of imputation credits. Thus, if there are additional personal costs that relate only to imputation credits, investors will assign a relatively lower value to the credits, and apply a lower reduction in dividends and capital gains. Suppose, for example, that investors require a total return of 7% and are provided with credits with a face amount of 1%, which they value at 35% of the value of dividends and capital gains.[41] In this case, investors will reduce the return that they require from dividends and capital gains to 6.65% (the 7% total return that they require, minus the 0.35% return that they receive from imputation credits).

180 Thus, when the AER analyses the market data it will observe that investors require a return from dividends and capital gains of 6.65%, which properly reflects the market value of credits. The regulatory process then requires the AER to add back the estimated value of credits to produce an estimate of the total (with-imputation) required return. So it is in IPART's case also.

181 However, the AER's second rationale is that because the reduction in the market's required return from dividends and capital gains reflects the market value of credits, using the same market value of credits in the grossing-up step of the regulatory process would amount to double counting. In our view, this is exactly wrong. It is precisely *because* the reduction in the market's required return from dividends and capital gains reflects the market value of credits that the same market value of credits *must* be used in the grossing-up step of the regulatory process. To arrive at a correct estimate of the total required return on equity, the AER must add back the same quantity that the market has deducted.

182 To summarise:

a. Under IPART's approach, the first step is to estimate a total return in equity required be equity investors in the regulated business. This is done entirely using parameters that reflect market data.

b. Next, IPART deducts from these total required equity returns (via the corporate tax allowance) an amount that reflects the value that investors can expect to derive from imputation tax credits.

---

41 For example, of the 65% discount relative to dividends and capital gains, 45% may be due to credits being distributed to non-residents who do not value them and the other 20% may be due to personal costs that apply to credits, but not to dividends or capital gains.

c. Since the total equity returns determined by IPART reflect the market's expectation of the total returns that investors in the regulated business require, the amount to be deducted should reflect the market value of dividends and capital gains that investors would be willing to forego in exchange for imputation tax credits. Any amount other than this would either under-compensate or over-compensate investors.

d. Therefore, within IPART's regulatory framework, gamma must be interpreted as a market value concept.

6.5 Estimation approaches

183 In regulatory proceedings in Australia, three different approaches have been proposed to estimate gamma:

a. The equity ownership approach – Under this approach, gamma is estimated using the value-weighted proportion of domestic investors in Australian equities. The approach assumes that all eligible investors would value fully (i.e., gain 100% of the value of) the credits available. This approach assumes that all eligible investors value imputation credits at the full face amount.

b. Australian Tax Office (ATO) tax statistics of imputation tax credit utilisation – Under this approach, gamma is estimated using the actual rate of redemption of distributed imputation tax credits, calculated using information reported in investors' tax returns.

c. Dividend drop-off studies – These studies use statistical techniques to infer the market value of imputation credits by examining stock prices before and after dividend payouts.

184 In Paragraph 169 above, we set out a number of reasons why investors in aggregate would value imputation credits less than dividends and capital gains. In relation to those reasons:

a. The equity ownership approach provides a noisy estimate of the effect of (a) only – the fact that some credits are distributed to non-residents who obtain no value from them;

b. ATO tax statistics provide an estimate of the effects of (a)-(c) – that approach produces a direct estimate of the proportion of credits that are *actually* redeemed from the ATO; and

c. The dividend drop-off approach provides a direct estimate of the extent to which investors value imputation credits relative to dividends and capital gains. This estimate includes all of the effects

set out in Paragraph 169, and any other reasons why investors would value credits less than dividends and capital gains.

185 Consequently, if one accepts that gamma does properly represent the exchange rate at which investors would exchange dividends and capital gains for imputation credits, dividend drop-off analysis would provide a direct estimate, ATO tax statistics would provide an upper bound, and the equity ownership estimate would be of little relevance because the ATO estimate provides a tighter upper bound. The best dividend drop-off estimate of gamma currently available is 0.25, per the *PIAC-Ausgrid* Tribunal's decision.[42]

42 The latest available study that provides empirical evidence on this issue is: Frontier Economics, An updated dividend drop-off estimate of theta, September 2016. In a 2011 decision, the Australian Competition Tribunal described the methodology used in this 2016 study as "state of the art". (See Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9.) Gamma is the product of two parameters: (1) The distribution rate of imputation tax credits, which based on the latest ATO data, is 0.7. This number is very stable over time; and (2) Theta, which is the value of those distributed credits. The 2016 Frontier Economics study estimates theta to be approximately 0.35. Therefore, a current estimate of gamma is 0.25 (≈ 0.7 × 0.35).

FRONTIER ECONOMICS
BRISBANE | MELBOURNE | SINGAPORE | SYDNEY
Frontier Economics Pty Ltd 395 Collins Street Melbourne Victoria 3000
Tel: +61 (0)3 9620 4488 Fax: +61 (0)3 9620 4499 www.frontier-economics.com.au
ACN: 087 553 124 ABN: 13 087 553 124