20 March 2013

Mr James Cox PSM
Chief Executive Officer and Full Time Member
Independent Pricing and Regulatory Tribunal
PO Box Q290
QVB Post Office NSW 2130

Dear Mr Cox,

IPART Discussion Paper – Review of method for determining the WACC

The Sydney Catchment Authority (SCA) welcomes the opportunity to provide comments on the Independent Pricing and Regulatory Tribunal's (IPART’s) discussion paper Review of method for determining the WACC. The SCA’s comments are in the attached document.

The weighted average cost of capital (WACC) is a key determinant in the prices that a regulated utility can charge and the returns it earns from the provision of regulated services. Given the continual uncertainty surrounding the financial markets, the SCA welcomes IPART review of its WACC calculation methodology to ensure it is robust in the face of changing market conditions.

In developing its submission to IPART, the SCA commissioned Frontier Economics (Frontier) to provide an independent review of IPART’s proposals to assist the SCA in forming its views. Frontier reviewed the proposals against IPART’s stated objectives as well as principles of sound regulations and provided suggestions that would improve the WACC estimation method. Frontier’s independent review report forms part of the SCA’s submission.

The SCA looks forward to participating in the round table discussion and working with IPART in developing a more robust method in calculating the WACC.

Should IPART officers wish to discuss this matter further, please contact Ed Chan, Senior Manager Business and Commercial Development on (02) 4724 2487.

Yours sincerely,

Ross Young
Chief Executive
Sydney Catchment Authority

Submission to the Independent Pricing and Regulatory Tribunal

Response to the Discussion Paper on Review of method for determining the WACC

March 2013
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1. Introduction

The Sydney Catchment Authority (SCA) welcomes the opportunity to provide comments on the Independent Pricing and Regulatory Tribunal’s (IPART’s) discussion paper on the Review of method for determining the WACC.

The Weighted Average Cost of Capital (WACC) set by a regulator is a major determinant of prices that a regulated utility can charge its customers. As IPART acknowledged in its discussion paper, a WACC that is set too low would discourage investment while a WACC that is set too high would lead to over-recovery of revenue. Given the ongoing volatility in financial markets, the SCA supports a review that aims to ensure a WACC estimation method that is robust even in the face of changing market conditions.

In developing its submission to IPART, the SCA commissioned Frontier Economics (Frontier) to provide an independent review of IPART’s proposals. Frontier reviewed the proposals against IPART’s stated objectives as well as principles of sound regulations and provided suggestions that would improve the WACC estimation method.

The SCA’s response to IPART’s discussion paper is in two parts:

- Section 2 contains the SCA’s comments addressing key areas of IPART’s discussion paper
- Section 3 contains Frontier Economics independent review report.
2. SCA comments addressing key areas raised in the discussion paper

2.1. Regulatory objectives

In determining the WACC, IPART uses the concept where it determines the WACC for a benchmark utility that is efficient, faces similar economic risks to the regulated business and is a new entrant. The SCA agrees with Frontier’s assessment that IPART’s objective is consistent with an incentive-based regulatory system that is designed to promote efficiency. However, the SCA also draws IPART’s attention to Frontier’s comment on internal consistency. It is vitally important that the elements within the WACC methodology adopted by IPART are consistent both with one another as well as with broader economic principles.

2.2. Overall assessment of current and proposed approach

IPART proposes to broadly retain its current WACC estimation methodology. The SCA argues that the approach selected by IPART does not fully meet its stated objective and agrees with Frontier that changes are required to improve its robustness. As the selected approach relies on very short-run financial information, utilities that share similar characteristics and whose regulatory period cover largely the same period of time could potentially receive very different WACC determinations as a result of a volatile financial market. The continuation of this approach seems to be at odds with IPART’s rationale in initiating this review, namely to improve the robustness of its methodology in times of financial market volatility.

2.3. Cost of debt

The SCA urges IPART to consider the use of the long run trailing average approach in determining the cost of debt. As Frontier indicated in its report, IPART’s current and proposed approach is at odds with the actual debt management practice of utilities with long average asset lives. Utilities generally borrow over horizons much longer than the regulatory period, and ensure that only a percentage of the total debt is refinanced on a rolling basis. A prudent utility will not allow its entire debt portfolio to be refinanced in a short period of time as this approach brings a significant amount of refinancing risk. For utilities that have a significant amount of debt, this approach is unachievable in the financial markets. The difference between actual debt management practice and regulatory debt cost determination means that utilities cannot fully hedge the risk arising from this mismatch. This could have a material impact on the financeability of the utility.

The long run trailing average approach removes the need for the utility to enter into complex hedge arrangement to reduce its risks. It also significantly reduces the volatility in the cost of debt estimation between regulatory determinations. Long run data and the trailing average approach is supported in a recent consultation by Ofgem in the UK. One of Ofgem’s key motivations for adopting the trailing average approach was to ensure the financeability of the businesses it regulates. Frontier’s report provides several recent examples where regulators have not benchmarked the debt cost allowance to very short-run market data in recognition of financial market uncertainty and in alignment with established business debt management practices.
2.4. **Cost of equity**

IPART proposes to continue using the CAPM as its primary model to estimate the cost of equity and use alternative models as a cross check. The SCA agrees with Frontier’s assessment that this proposal is both reasonable and sensible given the known limitations of the CAPM. Should IPART decide to select a different cost of equity estimate after conducting cross checks with the alternative models, it should publish all its workings and reasoning for the decision in the interest of transparency and regulatory certainty.

In relation to the consistency between the MRP and risk-free rate in the CAPM, Frontier argues that the use of a short-run risk free rate and a long-run MRP would not be internally consistent, and would provide the SCA with an unreasonable financial outcome given the state of the current financial markets. IPART should apply the same approach in estimating the cost of debt and cost of equity to maintain consistency in the estimates of all the parameters of the WACC.

2.5. **Dealing with discretion**

In times of uncertainty, the exercise of discretion by a regulator is sometimes unavoidable. The SCA recognises this need and welcomes IPART’s proposed commitments in establishing a framework on how it exercises discretion when determining the WACC. In particular, the SCA supports a framework where transparent information about models and assumptions are provided and structured engagement with industry professionals are conducted to better inform IPART’s views on market practice.

The SCA shares Frontier’s comment that IPART should not be concerned that structured engagement with investors and debt providers during the course of a specific review process would compromise its decision making process. As an independent regulator, IPART should be able to consider a range of views and evidence and make a decision in an objective and unbiased manner. So long as IPART’s decision making process is transparent and that all outcomes and content of discussions with stakeholders are published openly, then one group of stakeholders would have no more ability than others to influence IPART’s decision making process.

2.6. **Financeability tests**

The SCA draws IPART’s attention to Frontier’s recommendation that IPART should commit to undertake tests to ensure its determination will ensure the financeability of the regulated business. The SCA supports this recommendation and notes that IPART has conducted consultation on financeability tests in price regulation. Frontier also recommended that IPART undertake engagement with rating agencies when performing financeability assessment to better understand the impact of its determination on the regulated business. The SCA notes that this recommendation was discussed during the financeability workshop and there was general support for this engagement to occur.
3. Frontier Economics independent review report
Appraisal of IPART’s Review of method for determining the WACC

A REPORT PREPARED FOR THE SYDNEY CATCHMENT AUTHORITY

March 2013
Appraisal of IPART’s Review of method for determining the WACC

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Executive summary

Frontier Economics has been engaged by the Sydney Catchment Authority to provide an independent assessment of IPART’s Review of method for determining the WACC, which was published in December 2012.

As part of its review, IPART has consulted on five broad areas:

1. Its cost of debt methodology
2. Its cost of equity methodology
3. Its approach to establishing a WACC range and choosing an appropriate value
4. An appropriate framework for dealing with discretion when choosing a final WACC value
5. The impact of the chosen methodology on the tax expense calculation

We have reviewed IPART’s proposals carefully, taking into account principles of good regulation including transparency, predictability, consistency and simplicity as well as regulatory best practice elsewhere.

It is very encouraging that IPART has proactively initiated this review. The GFC has presented significant challenges for regulators around the world, and to regulated businesses operating in an uncertain economic environment. IPART’s willingness to tackle difficult questions about how best to deal with this uncertainty when determining allowed returns is a sign of progressive and responsible regulation.

Whilst a number of the proposals represent commendable improvements to IPART’s approach to estimating WACC, others do not appear to comply fully with principles of best practice regulation. Given the critical role of WACC in the price review process, these proposals need to be modified. We have suggested some possible modifications that would enhance the regulatory framework in this area.

Our key findings on IPART’s proposals under each of the five areas that are the subject of this review are summarised below.

Cost of debt methodology

- IPART’s proposal to base determinations of the risk-free rate and debt spreads on short-run market evidence (40 day averages) is too narrow and formulaic.

- In addition, IPART’s proposed approach on the maturity assumption creates a risk exposure for the businesses that cannot be hedged fully, even by an
efficient firm that manages its debt prudently. This could create a financeability problem for the businesses that IPART regulates. One way of ensuring financeability might be to apply a long-term trailing average of long-dated yields when determining the cost of debt. Such an approach has been adopted by Ofgem in the UK, and has a number of key advantages:

- Under a stable debt maturity profile and borrowing mix over time, the actual cost of debt for the business should approximate the cost of debt provided under a trailing average approach. This should make efficient and prudent debt management more feasible, and also ensure that the business remains financeable.

- The profile of debt costs over time would be much smoother than under the current approach.

If IPART does not adopt such an approach, it should consider estimates using a ten-year maturity assumption alongside estimates based on a five-year maturity assumption, and using long averaging periods as well as short averaging periods. It should then arrive at a determination that is consistent with the evidence and likely to allow firms to finance their activities effectively over the regulatory period.

### Cost of equity methodology

- IPART’s proposal to continue using the CAPM as its primary model is reasonable and consistent with regulatory practice in many jurisdictions. Given the known limitations of the CAPM, IPART’s proposal to use alternative models to cross-check CAPM estimates — the Dividend Growth Model (DGM) and the Fama-French 3-factor Model (FF3M), in particular — is sensible. However, it is important that these models be applied and interpreted carefully. There are a number of models/sources of information apart from those proposed by IPART that are also worth exploring as cross-checks. Evidence from these sources could supplement that offered by the DGM and FF3M.

- IPART has proposed to continue its current approach of using a MRP estimate based on long-term data, coupled with a risk-free rate based on historic data averaged over the short-term (i.e. 40 days). In our view, IPART should not mix a short-run risk-free rate with a long-run MRP.

- IPART appears to dismiss the use of survey evidence on the MRP. IPART states that survey evidence does not meet the most important of its choice criteria, which is “providing incentives for efficient financing”. In our view the dismissal of survey evidence is not justified. Survey data should be used with caution, and we would not put more weight on surveys than historic
Executive summary

and forward-looking evidence on the MRP. However, we would not recommend dismissing survey evidence entirely either. If surveys are recent and designed well, they can provide IPART with useful insights on forward-looking market expectations about risk premiums. A number of regulators in Australia and overseas take into account survey evidence when estimating the MRP.

- IPART has, without explanation, excluded the methodology for estimating beta from the scope of its present review. We see no good reason why IPART should focus its review, which seeks to find a suitable methodology for dealing with changing market conditions, on the risk-free rate and risk premiums, while excluding consideration of beta. Such a review would be incomplete as it would ignore a key source of uncertainty and variability in the WACC.

- The cross-checks on the cost of equity proposed by IPART seem reasonable. We note that another potentially useful cross-check is precedent from recent regulatory decisions by other regulators. It is essential, and consistent with regulatory best practice, that IPART publish the results of its cost of equity cross-checks in a transparent manner. It is also important that it explain clearly how it has taken the results of its cross-checks into account when making its decisions.

Method for establishing a WACC range and choosing an appropriate value

- The five approaches proposed by IPART for developing a WACC range are an attempt to formalise a process for taking into account short-run and long-run evidence on various inputs to the WACC. Whilst IPART’s efforts towards considering a wider range of evidence is commendable, the various permutations and combinations of options for constructing a WACC range proposed by IPART: introduces unnecessary complexity; provides a false sense of rigour; and potentially reduces transparency around how individual WACC components have been determined. This conflicts with a number of the principles of regulation that IPART recognises it should adhere to.

- We suggest that IPART follow the simpler, more transparent three-step approach to establishing a WACC range that a number of regulators overseas employ:

1. First, establish a range around each WACC parameter.
2. Next, calculate a range for the cost of equity and for the cost of debt using the parameter ranges established in the previous step.
3. Finally, combine the cost of equity and cost of debt ranges to determine an overall WACC range.

Framework for dealing with discretion

- IPART has proposed a number of commitments in relation to the use of discretion when determining WACC. These are sensible and broadly consistent with the development of regulatory practice in jurisdictions with mature regimes such as the UK.

- One of these commitments is to undertake structured engagement with groups of investors and debt providers, but only outside the context of specific WACC decisions. We recommend that as well as engagement with these stakeholders outside specific WACC decisions, IPART should also undertake structured engagement with investors and debt providers during specific price reviews. Such engagement would provide IPART:
  - an opportunity to hear the views and concerns of investors and stakeholders directly and more clearly; and
  - more up-to-date evidence on prevailing market conditions and views on how practitioners are dealing with changing market conditions than if engagement occurred only outside specific price reviews.

- IPART should not feel that engagement with these key stakeholders would compromise, or give the impression of having compromised, its decision-making process. To avoid any wider perception that IPART has been influenced unduly, it could publish transparently the outcome/content of discussions with investors and debt providers. This would only enhance the integrity of IPART’s price review process.

- In addition to the commitments proposed by IPART, it would be desirable for IPART to:
  - Publish all models, calculations and underlying data used in its draft and final determinations.
  - Commit to undertake tests that assess if its determination will likely ensure the financeability of the regulated business, and explain clearly how it intends to do this. We note that IPART already conducts such assessments in many of its price reviews, and is currently consulting on proposed changes to its approach to financeability tests. We consider that, going forward, IPART’s financeability assessments should include engagement with the major rating agencies on suitable methodologies for financeability tests, as well as the canvassing of the agencies’ views on...
whether IPART’s price review decisions would likely permit the businesses to remain financeable.

Impact of choice of methodology on calculation of tax expense

- In principle, IPART is correct that when a WACC range is used to determine an allowed rate of return, the WACC value chosen could be consistent with any number of values for the cost of debt.

- However, this should not prevent IPART from being explicit about the values for the cost of equity and the cost of debt that it believes to be consistent with its overall WACC determination. This would aid transparency by allowing stakeholders to evaluate properly the parameter values that underpin IPART’s determinations. The tax expense calculation could then be based on IPART’s final point estimate for the cost of debt.
1 Introduction

Frontier Economics has been engaged by the Sydney Catchment Authority to provide an independent assessment of IPART’s Review of method for determining the WACC, which was published in December 2012.

The purpose of IPART’s review is to determine whether (and if so how) it should change its current WACC methodology to improve its robustness under changing market conditions, such as those since the global financial crisis (GFC). Two key factors appear to have prompted IPART to review whether its current approach is fit for purpose:

- Recent estimates of the midpoint of the WACC range have fallen significantly from historic levels. To date, IPART has dealt with this change by choosing WACC values from the upper end of the range. It considers that this may not be a sustainable approach, going forward.

- The AEMC has recently published some guidance on WACC estimation, which recommends that regulators deal with changing market circumstances by not relying on a single model or approach, but rather setting allowed returns in line with “an overall objective” (i.e. returns that are commensurate with the risk profile of a “benchmark efficient service provider”). This approach would require regulators to consider alternative models, estimation techniques and data.¹

As part of its review, IPART is seeking feedback on five broad areas:

1. Its cost of debt methodology
2. Its cost of equity methodology
3. Its approach to establishing a WACC range and choosing an appropriate value
4. An appropriate framework for dealing with discretion when choosing a final WACC value
5. The impact of the chosen methodology on the tax expense calculation

It is very encouraging that IPART has proactively initiated this review. The GFC has presented significant challenges for regulators around the world, and to regulated businesses operating in an uncertain economic environment. IPART’s willingness to tackle difficult questions about how best to deal with this

¹ Although IPART is not bound by the rules promulgated by the AEMC when regulating water companies, it considers that there is merit in having regard to the submissions, consultant reports, and findings of the AEMC.
uncertainty when determining allowed returns is a sign of progressive and responsible regulation.

In our view, changes to IPART's current WACC methodology are required to improve its robustness to changing market conditions. Whilst a number of the proposals put forward in IPART’s discussion document represent commendable improvements to its existing approach, others do not appear to comply fully with principles of best practice regulation. Given the critical role of WACC in the price review process, these proposals need to be modified. We have suggested some possible modifications that would enhance the regulatory framework in this area.

Chapter 2 explains the framework we have used to assess IPART’s proposals

Chapters 3 to 7 assess IPART’s proposals in each of these areas. For each of the five areas, we first summarise briefly the key elements of IPART’s proposals, and then offer our independent assessment of each proposal.
2 Framework for assessing IPART’s proposals

This section sets the scene for our assessment by discussing two important issues that underpin IPART’s consultation:

- the appropriateness of IPART’s stated objective for the WACC and other important considerations that IPART should take account of when pursuing this objective; and
- the regulatory principles to which IPART should adhere when formulating and implementing proposals.

2.1 IPART’s objective

IPART’s key stated objective when setting allowed returns is to “determine the WACC for a hypothetical benchmark utility” that:

- is efficient;
- faces similar economic risks to the regulated business; and
- is a new entrant.

We consider that this objective is consistent with a system of incentive-based regulation designed to promote efficiency.

However, it is important when adapting its cost of capital framework that IPART recognises that the cost of capital is an essential component of the cost of providing services. Unless investors have a reasonable expectation of recovering this cost, they will be unwilling to commit capital to the firm. This in turn would jeopardise the business’s ability to undertake essential, efficient investments to deliver services to customers.

2.1.1 What is the cost of capital and why is it important?

Kolbe et al (1984) define the cost of capital as “the expected rate of return prevailing in capital markets on alternative investments of equivalent risk”. Their excellent exposition of the concept encapsulates the important features of the cost of capital that a regulator ought to bear in mind when determining an appropriate allowed rate of return. They explain that the cost of capital has a number of key characteristics:

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• **It is forward-looking.** Investment returns are uncertain; actual outturns may differ from expected returns. The cost of capital is an expected rate of return.\(^3\)

• **It reflects the opportunity cost of investment.** Investors face a variety of investment opportunities. Unless the expected rate of return on any investment is sufficient to cover the cost of the next best alternative, investors will not commit funds. Hence, the cost of capital is a *required* return. If regulators wish to incentivise efficient investment by providers, they must recognise that regulated firms are competing for investment capital with a large number of investment opportunities.

• **It is market-determined.** The cost of capital is determined by the balance between supply and demand for capital, so it is an equilibrium rate of return.

• **It reflects the risk of the investment.** In particular, it is the expected rate of return that applies to investments with a similar risk profile (assuming markets are efficient and no arbitrage opportunities exist). The cost of capital reflects the risk of the project, not the risk of the firm that holds the rights to those projects.

If the allowed rate of return is set too high, consumers will pay too much for services. If the allowed rate of return is set too low, the firm will be unable to attract sufficient capital to undertake efficient investment, which would ultimately be to the detriment of customers.

In a regulatory context, setting allowed returns equal to the cost of capital effectively balances the interests of infrastructure owners and consumers. Since the cost of capital is the minimum rate required to attract capital to the investment (i.e. it covers all relevant opportunity costs and risks), it is a fair rate of return that can be used as the allowed rate of return when setting regulated prices. A firm that on average earns its cost of capital will have earned a normal economic return (i.e. just enough to equal the expected return on investments of similar risk, but no more).

In practice, the cost of capital is measured as the weighted average of the cost of equity finance and the cost of debt finance (WACC). The cost of equity finance can be expressed as the sum of the risk-free rate and a risk premium demanded by equity holders. Similarly, the cost of debt can be expressed as the sum of the risk-free rate and a debt risk premium. The capital structure weights in the WACC calculation are determined by the financial gearing of the business.

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\(^3\) The word ‘expected’ is used here in the statistical sense (i.e. the probability-weighted rate of return). It does not refer to a ‘hoped for’ or ‘most likely’ rate of return.
2.1.2 **IPART should apply suitable sense-checks when implementing its hypothetical efficient benchmark approach**

16 IPART has chosen to adopt an efficient benchmark approach to setting allowed returns, rather than matching allowed returns to the actual cost of capital of specific businesses. That is a reasonable approach.

17 However, in practice, it will be difficult to assess exactly the cost of capital of a hypothetical efficient benchmark provider. This is because the benchmark chosen by IPART is a hypothetical one, so no observable market data exist to verify the forward-looking financing costs of such a firm. These costs can only be inferred imperfectly from market data.

18 In order to be confident that the firms it regulates can access the capital required to make efficient investments, and to finance their functions effectively, IPART must ensure that the returns it allows are commensurate with the risks and opportunity costs faced by potential investors in those businesses. This means undertaking sense-checks to ensure that the returns determined for a hypothetical efficient benchmark firm are reasonable for actual firms making real investments. These sense-checks (discussed in more detail in the following chapters) could include:

- cross-checking estimates using different models, estimation techniques and market data;
- engagement with key stakeholders (such as investors, debt providers and rating agencies) to seek views on the reasonableness of regulatory determinations; and
- financeability tests.

19 In addition, the significant challenges associated with estimating the cost of capital of an efficient hypothetical benchmark business suggests that, in the face of changing market conditions and uncertainty, it is reasonable and prudent for IPART to be cautious about setting too low an allowed return.

20 IPART should also recognise that when making long-lived investment decisions, investors generally take a nuanced and forward-looking (rather than mechanical short-run) view of market trends, particularly during periods of significant change and uncertainty. IPART’s cost of capital methodology should reflect investors’ approach to long-lived network assets.
2.2 Regulatory principles underpinning IPART’s proposals

IPART notes that when establishing its methodology for setting a WACC in line with its key objective, it needs to ensure the method is consistent with the broader principles of sound regulation. That is, the method should be:

- transparent;
- predictable;
- consistently applied over time and between utilities; and
- no more complex than necessary.

We agree that these are important principles for sound regulation to which IPART should adhere. We note particularly that predictability and regulatory certainty are important in giving confidence to regulated business and their investors to continue making necessary, efficient investments.

However, predictability should not mean an approach to regulation that is constrained by mechanistic rules that provide no room for flexibility to adapt to changing market circumstances. At the same time, regulators should not exercise unfettered discretion when making decisions as this would quickly cause investors to lose confidence in the regulatory framework. Regulatory discretion should be bounded by clear commitments, and regulators should be held accountable for the decisions they make.

A sound approach to regulation should balance predictability with adaptability to evolving circumstances and needs. This point was made recently by the UK’s Department for Business, Innovation and Skills (BIS) in a recent report on principles for economic regulation.4

IPART interprets the concept of ‘consistency’ as meaning a consistent application of a methodology over time and across utilities. We agree with this principle as this would aid regulatory certainty and predictability.

However, we note that IPART’s WACC methodology should also strive for internal consistency. This means that IPART should endeavour that its approach to the various elements of the WACC are consistent with one another and in coherence with sound economic principles. Proposals that fail the basic tests of internal consistency and coherence should not be pursued.

We note that it is instructive to consider the criteria that other regulators have used recently to evaluate changes to their respective WACC methodologies. In February 2013, the Economic Regulation Authority of Western Australia (ERA)

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4 BIS (2011), Principles for economic regulation, April.
began a process of reviewing its existing methodology for determining the WACC to be applied when calculating floor and ceiling prices under the Railways (Access) Code 2000. In its Issues Paper, the ERA set out the criteria it would use to assess proposals to change its existing WACC methodology. These criteria are reproduced below in Figure 1.

Figure 1. Criteria used by the ERA recently to evaluate proposed changes to its current WACC methodology

**BOX 1 CRITERIA FOR ASSESSING THE FORMULATION OF THE WACC**

The ERA will assess whether proposals for amending the current WACC calculations meet the following criteria:

1) have a strong theoretical underpinning;
   - recognise that the WACC methodologies ideally should be supported by theory;

2) are well-accepted;
   - acknowledge that approaches that have widespread application and acceptability are more likely to enhance the credibility and acceptability of a decision;

3) are supported by robust, transparent and replicable analysis that is internally consistent and is derived from available, current and credible datasets;
   - are derived from analysis and estimation methods that are transparent and replicable;
   - are derived from analysis and estimation methods that are internally consistent;
   - lead to outcomes from quantitative modelling that are sufficiently robust as to not be sensitive to small changes in the data;
   - recognise that while some approaches may be sound, there may be insufficient data to allow their use, or the available data may be out of date;
   - recognise that arbitrary filtering of data, or adjustment to the data, is undesirable;

4) have the flexibility to reflect changing market conditions and new information as appropriate;
   - recognise the need to deal with uncertainty;
   - give confidence that the WACC will reflect actual conditions prevailing in the market over the relevant timeframe;

5) lead to consistent regulatory decisions across industries, service providers and time;
   - recognise the desirability of a common approach to regulation, so as to avoid distortions

We consider that the principles embodied in the criteria above are sound and sufficiently general (i.e. beyond the specific purpose for which the ERA must estimate WACC) as to be useful to IPART in the present context.

### 2.3 Criteria used to appraise IPART’s proposals

When assessing IPART’s proposals, and proposing alternative approaches, we have applied the following criteria:

- Does the approach promote regulatory **transparency**?
- Does the approach balance **predictability** with **flexibility** effectively to deal with changing market conditions?
- Is the approach **internally consistent**?
- Is the approach consistent with **good regulatory practice** in Australia and elsewhere in the world?
- Is the approach consistent with sound **finance principles** and accepted **commercial practice**?
- Is the approach as **simple** as possible?
3 Cost of debt methodology

• IPART’s proposed approach on the maturity assumption creates a risk exposure for the businesses that cannot be hedged fully, even by an efficient firm that manages its debt prudently. This could create a financeability problem for the businesses that IPART regulates.

• One way of ensuring financeability might be to apply a long-term trailing average of long-dated yields when determining the cost of debt. Such an approach has been adopted by Ofgem in the UK and has a number of key benefits. IPART’s proposal to base determinations of the risk-free rate and debt spreads on short-run market evidence (40 day averages) is too narrow.

• When selecting a suitable method for estimating the cost of debt, IPART should ensure an approach that allows it to arrive at a determination that is consistent with the available evidence and likely to allow firms to finance their activities effectively over the regulatory period.

The cost of debt comprises the sum of the risk-free rate and the debt margin. The key issues on which IPART seeks comment relate to:

- the term to maturity it adopts; and
- the averaging period it uses for the risk-free rate and the debt margin (i.e. current versus long-run data).

3.1 Term to maturity

3.1.1 IPART proposal

IPART intends to continue using a five-year term to maturity for the risk-free rate and debt premium. IPART’s stated rationale for retaining a five-year term to maturity is that this will match the length of the regulatory period, which will in turn “ensure NPV-neutrality” of the regulatory model.

3.1.2 Frontier comment

There are benefits and limitations associated with matching the maturity assumption to the length of the regulatory period

In principle, and under certain conditions, IPART’s rationale for matching the assumed term to maturity to the length of the regulatory period is correct. As IPART has noted, there is academic evidence (particularly from Australia and New Zealand) that supports this practice. In addition, this approach has been accepted by some but not all Australian regulators.
However, alongside the theoretical considerations, it is important to emphasise the following points:

- Firstly, the assets regulated by IPART have considerably longer lives than five years. Utilities’ financing practices are driven by asset lives in order to minimise refinancing risk. As Table 3.4 of IPART’s discussion document shows, it is common practice for Australian utilities to issue long-dated debt.

- Secondly, as IPART has noted, the use of 10-year maturities is supported by independent financial practitioners such as TCorp and banks. This indicates that utilities’ preference to match the maturity of debt to the length of asset is within the bounds of reasonable commercial practice.

Given these commercial realities, it would not be unreasonable to conclude that an efficient new entrant would choose a borrowing term that exceeds the length of the regulatory period.

**A number of regulators choose to not match maturities to the length of the regulatory period**

It is worth noting that there is no universally accepted practice amongst regulators on this issue. While some Australian regulators match the term to maturity to the regulatory period, other regulators have chosen to adopt longer maturity periods. For example:

- In its 2009 final determination on WACC parameters for electricity transmission and distribution firms, the AER considered that on average:
  
  - use of a 10-year maturity assumption would overcompensate the regulated firm because the term premium on the base interest rate component of the cost of debt, which via interest rate swap instruments, may be converted to a term matching the length of the regulatory period; and
  
  - use of a maturity assumption that matches the regulatory period because the term premium of the on the credit spread component of long-lived debt, typically issued by utilities, cannot be altered via hedging instrument.

The AER concluded that notwithstanding the possibility of slight overcompensation, it should use a 10-year maturity assumption because the regulatory process should not increase refinancing risk for firms, particularly given the uncertainty caused by the GFC. The AER also emphasised the

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5 AER (2009), *Electricity transmission and distribution network service providers Review of the weighted average cost of capital (WACC) parameters*, May.
“importance of regulatory stability, in order to promote efficient investment”.

- The AER reiterated this position in its recent distribution determination in relation to Aurora Energy.\(^6\)

- In its recent advice to the Treasurer of the Government of South Australia on the regulatory rate of return for SA Water, ESCOSA recommended the use of a 10-year maturity for the risk-free rate. To ensure consistency with the assumption on the risk-free rate, it also recommended the use of a 10-year debt premium. In formulating its advice, ESCOSA noted the discussion on the maturity assumption (with particular reference to IPART) and stated the following:\(^7\)

“...The Commission notes the possible advantages from matching the term of the risk-free rate with the regulatory period. However, in practice, businesses attempt to align the maturity of their financing with the average duration of their assets suggesting that the financing decision should be influenced by the firm’s assets rather than by the imposition of a regulatory period.”

- In its 2008 Water Price Review for regional and rural water businesses in Victoria, the ESC chose to use a 10-year maturity period.\(^8\) In order to maintain regulatory consistency, it adopted the same approach in its 2009 Water Price Review for metropolitan Melbourne water businesses.\(^9\)

\(^36\) In addition, in its final position paper, the AEMC did not see the need to prescribe that regulators ought to match the maturity of the risk-free rate and debt premium to the length of the regulatory period.

\(^37\) Finally, UK regulators such as Ofwat and Ofgem have typically used government bond yield data across a range of maturities (from five years to 30 years) when determining the risk-free rate. In recent times, Ofgem has moved to using a trailing average of iBoxx bond index data on instruments with a maturity of 10+ years when determining the cost of debt.

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\(^7\) ESCOSA (2012), *Advice on a regulatory rate of return for SA Water – Final Advice*, February, p.10.
The businesses cannot hedge fully the risks arising from the proposed approach

As noted above, it is common practice for Australian regulated utilities to issue long-dated debt. However, IPART proposes to assume a maturity term of five years, and use very short-run averaging periods, when determining the risk-free rate and the debt premium. The mismatch between the actual term of borrowing and the term assumed by IPART creates a risk exposure for firms that issue long-term debt.

As recognised by IPART in its discussion paper, the businesses can only hedge this risk partially: the businesses can enter into interest rate swap agreements that allow them to match the assumed term of the risk-free rate; however, there is no practical way for the businesses to eliminate the mismatch of terms in relation to the debt premium.

The businesses could issue five year debt instead of long-dated debt but, as explained earlier, given the length of asset lives, doing so would create an additional cash flow risk exposure.

The inability for the businesses to hedge their risks properly arises as a consequence of the current regulatory approach, and could have a material impact on the financeability of the companies. Therefore, IPART should examine options to address this problem.

One possible approach would be to adopt a long-run trailing average approach to determine the cost of debt. Such an approach has a few key advantages:

- Assuming that the business has a relatively stable debt maturity profile, and that maturing debt is replaced to maintain a roughly similar borrowing mix, the cost of the business’s debt portfolio will approximate the cost of debt provided under the trailing average approach. This should make efficient and prudent debt management easier for the business.

- The profile of debt costs over time would be much smoother than under the current approach. This would have the added benefit of eliminating the inconsistency that can arise under the current approach, where two ostensibly similar regulated businesses facing price determinations a few months apart receive materially different revenue allowances due to large, short term market movements.

As noted above, Ofgem in the UK adopted recently the use of a 10-year trailing average of yields on 10+ year A and BBB rated bonds. We note that:

Cost of debt methodology
A key motivation for Ofgem’s adoption of a long-term trailing average of long-dated yields was to ensure the businesses it regulates “are able to finance themselves”.\(^{10}\)

Another key motivation was to provide to the businesses “greater certainty by using an index for determining the allowed cost of debt”.\(^{11}\) A related advantage is that the trailing average index approach provides for a much smoother profile of debt costs than does IPART’s proposed methodology for the cost of debt.

Ofgem considers that “the introduction of annually updated cost of debt assumption (based on a trailing average index) would protect the network companies from the potential impact of future interest rate movements”.\(^{12}\)

When actually implementing the trailing average approach, Ofgem tested its robustness. It modelled the index and each company’s actual cost of debt based on its regulatory reporting pack under several scenarios in which the market cost of debt rises, falls or remains constant. Ofgem found that the 10-year simple trailing average provides adequate coverage for debt costs in RIIO-GD1.\(^{13}\)

**Conclusion on term to maturity**

There are benefits and limitations associated with IPART’s proposal to match the maturity assumption to the length of the regulatory period. As IPART notes, there is some theoretical support for matching the maturity assumption to the regulatory period. However, there are also valid commercial reasons for matching maturities to expected asset lives. The use of maturities that exceed the length of the regulatory period is supported by independent financial practitioners as well as a number of regulators in Australia and elsewhere.

IPART’s proposed approach on the maturity assumption creates a risk exposure for the businesses that cannot be hedged fully, even by an efficient firm that manages its debt prudently. This could create a financeability problem for the businesses that IPART regulates.

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\(^{10}\) Ofgem (2011), *Decision on strategy for the next transmission and gas distribution price controls – RIIO-T1 and GD1 Financial issues*, March, pp.15-16.


One way of achieving financeability might be to apply a long-term trailing average approach when determining the cost of debt. Such an approach has been adopted by Ofgem in the UK and would have some key benefits:

- Under a stable debt maturity profile and borrowing mix over time, the actual cost of debt for the business should approximate the cost of debt provided under a trailing average approach. This should make efficient and prudent debt management more feasible, and also ensure that the business remains financeable.

- The profile of debt costs over time would be much smoother than under the current approach.

If IPART does not pursue a trailing average approach, it should at least consider estimates using a ten-year maturity assumption alongside estimates based on a five-year maturity assumption, and then arrive at a determination that is commensurate with this evidence and likely to allow firms to finance their activities effectively over the regulatory period. Ultimately, the key objective for IPART should be to determine a cost of capital that would allow a hypothetical efficient benchmark firm to finance itself properly.

IPART should apply suitable sense-checks (on which more below) and explain clearly how it has exercised its judgment when interpreting the evidence available.

### 3.2 Current vs. long-run data

#### 3.2.1 IPART proposal

IPART considers that using current/recent historic data to determine the risk-free rate and debt premium is most consistent with its key objective when determining the WACC, as short-run data (rather than long-run data) “best reflects the financing costs of a new entrant or new investment, and thus provides efficient investment signals”.

IPART proposes to increase the averaging period for the risk-free rate and debt premium from 20 days to 40 days. The rationale for increasing the averaging period is that it would allow firms better opportunity to ‘lock in’ the risk-free rate component of the cost of debt (using interest rate swaps).

#### 3.2.2 Frontier comment

IPART is correct to identify that over the past five years or so, government interest rates (and therefore, risk-free rates benchmarked using government yields) have declined significantly. This may have been driven by:

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**Cost of debt methodology**
Cost of debt methodology

- a ‘flight-to-quality’ as investors shift their holdings away from risky investments towards safer assets in the face of market volatility arising from the GFC; and
- the quantitative easing policies some central banks have pursued, which have driven up the price of government bond and depressed yields.\(^\text{14}\)

Concurrently, corporate debt margins have increased in most economies reflecting, among other things, a higher risk of default on corporate borrowing and, during the severest periods of the GFC, a sharp reduction in market liquidity. However, the rise in debt premiums has generally not offset the significant recent reduction in government bond yields.

Therefore, paradoxically, IPART’s proposed methodology of applying short averaging periods for the risk-free rate and debt margin suggests that the cost of debt for a hypothetical benchmark new entrant has fallen significantly over a period when market uncertainty and general business risk remains high (Figure 2). This is counterintuitive.

**Figure 2. IPART estimates of the real cost of debt**

![Graph showing cost of debt trends](image)

Source: IPART (2012), *Review of method for determining the WACC – Dealing with uncertainty and changing market conditions*, Figure 3.4

The potential problem associated with relying exclusively on short-run data was illustrated in IPART’s recent determination of WACC for SCA, among others.\(^\text{15}\)

There, IPART found that the midpoint of its WACC range estimated using only

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\(^{14}\) Quantitative easing has not been pursued by the Reserve Bank of Australia because interest rates in Australia have remained sufficiently high as to allow the RBA the flexibility to move rates down if necessary.

short-run averages to be 4.6%, whereas the midpoint of a WACC range derived using long-run averages was 5.6%, a full 100 basis points higher and equivalent to the top of its original range. Concerned that the midpoint of the range using short-run averages was inappropriate, IPART adopted the top of that range for its final WACC determination.

**Current data may not always reflect the forward-looking financing costs of efficient new entrants**

IPART’s view that WACC estimates based on the most current data “best reflects the financing costs of a new entrant or new investment, and thus provides efficient investment signals” is consistent with a belief in the Efficient Markets Hypothesis (EMH). This is a concept in finance that says that if capital markets are efficient, all relevant market information about changes in asset prices and future returns should be reflected in current prices.

The EMH implies that if financial markets are efficient, and if all relevant information is not reflected in current prices, arbitrageurs would be able to act profitably on this additional information, and prices would adjust in order to eliminate the profit opportunity. Therefore, if the EMH holds, market participants can do no better than act on current market data.

The implication of the EMH for firms making investments, and for regulators, is that the best guide available for the future is current market data since historic data should add no new, useful information.

However, the evidence on the EMH is by no means conclusive (Malkiel, 2003; Lo, 2008):  

- A key prediction of the EMH is that changes in security prices over time should be random. A number of studies show that security prices do follow a random walk, particularly in the short-run (e.g. Cootner, 1962, 1964; Fama, 1963; Fama and Blume, 1966; Osborne, 1959). However, Fama and French (1988) and Poterba and Summers (1988) find evidence that over longer holding periods (i.e. three to five years), stock returns are mean reverting rather than random.

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A few studies suggest that investors either overreact to the release of new information (DeBont and Thaler, 1985), or underreact to new information about future earnings (Bernard and Thomas, 1990). Disproportionate responses to new information of this kind should not occur if the EMH holds.

A major challenge to the EMH has been evidence of anomalies — regular exploitable patterns, which ought not to exist if markets are truly efficient. For example, Banz (1981) finds that small capitalisation companies have a tendency to earn returns in excess of their risks. Keim (1983), Roll (1983), and Rozeff and Kinney (1976) find evidence that small capitalisation stocks regularly outperform large capitalisation stocks at certain times of the year. Fama and Schwert (1977) find a stable negative relation between stock price changes and short term interest rates.

Several studies have documented that investors often exhibit behavioural biases such as overconfidence, overreaction, loss aversion, misjudgement of probabilities, herding and regret. These behaviours are departures from the assumption of perfectly rational investors that underpins the EMH, and can lead to “predictable and financially ruinous” outcomes (Lo, 2008).

Grossman and Stiglitz (1980) argue that perfectly efficient markets are impossible. If investors can expect no profit from seeking out and exploiting new information, there would be no incentive to engage in trading activity and markets would eventually collapse. The implication is that, since investors do engage in trade they are either persistently irrational or the EMH does not hold (or holds only weakly).

In addition, although the EMH theory suggests that all asset valuation/investment decisions should be based on short-run data, businesses making long-lived investments rarely use ‘spot’ data when evaluating new projects. This is all the more true during periods of high market volatility and uncertainty.

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Furthermore, as IPART itself recognises, there are good economic reasons to believe that interest rates are mean-reverting over time:

“Economic theory suggests that interest rates should have a long-run term equilibrium value based on long-run rate of output growth, population growth, consumer time preferences and risk aversion. Historical interest rate data indicates that interest rates generally remain within a narrow band over centuries. Empirical research finds that there is a stable relationship between the real interest rate and economic growth and real interest rates stay closer to their equilibrium value than nominal interest rates.”

The relationship between business cycles and interest rate movements is less theoretical than IPART suggests. For example, financial authorities around the world intervene regularly in ways that reinforce the relationship between growth and interest rate movements: central banks have been known to ‘cut’ interest rates when economic growth slows in order to stimulate investment and consumption; and central banks have also been known to ‘raise’ interest rates during periods of high growth to prevent the economy overheating and to target inflation.

Using UK data, Lilico and Ficco (2012) recently showed that “movements in UK ten-year index-linked gilts can now be seen to have been highly correlated with movements in average ten-year GDP growth (a relationship that has not been obvious until the recent recession)”.

If rates do mean-revert, then significant departures away from long-run levels should strengthen investors’ expectations of reversals in trend. One way that regulators could reflect these expectations when setting allowed returns would be to take into account long-run averages rather than rely solely on very short-run data.

As IPART has acknowledged in its discussion paper, the empirical academic evidence on the mean-reversion of interest rates is inconclusive: some studies find in favour of reversion while others find against. However, IPART’s preference to use short-term rather than long-term data is consistent with a view that rates are not mean-reverting. In the absence of clear evidence either way, it would be sensible for IPART to take into account long-run and short-run data on the risk-free rate and debt spread when determining WACC.

IPART assumes throughout its discussion paper that short-run data provides the best signals for efficient investment. However, it could be argued that during periods of high volatility, and under expectations that rates may return to more ‘normal’ levels over time, an efficient new entrant would be prudent to make


long-lived investment decisions taking into account long-run data as well as short-run data. Therefore it would be reasonable for IPART to consider (and put real weight on) long-run evidence on WACC parameters.

**European regulators look beyond short-run evidence when setting allowed returns**

Regulatory practice around the world in relation to averaging periods is mixed. Many regulators in Europe do not tie their decisions on the risk-free rate or debt premium rigidly to short-run data as IPART proposes to do. For example:

- **At PR99**, the UK water industry regulator **Ofwat** considered the issue of averaging periods and concluded that it should place more emphasis on short-term data than long-term averages. However, it did not apply very short-run data mechanically in its final WACC determination. Ofwat was explicit that average redemption yields at the time on index-linked gilts were in the range 2.2% to 2.3%, and that deflated nominal yields on conventional bonds were in the range 2.2% to 2.7%. Nevertheless, Ofwat determined that the appropriate range for the risk-free rate ought to be 2.5% to 3.0% — significantly higher in real terms than indicated by short-run evidence at the time. In other words, Ofwat applied some ‘headroom’ above short-run yields.

- **At PR09**, Ofwat took into account the possibility of mean-reversion in interest rates over the medium term, as well as long-run historic evidence on the risk-free rate. When presenting its estimate of the risk-free rate, Ofwat stated that:

  "It is well above the current spot rates for index-linked gilts but consistent with the view that the risk-free rate is expected to increase in the medium term. It is also consistent with the ten-year long-run historic UK index-linked gilts of five and ten-year maturity and consistent with recent regulatory determinations."

- **In its final decision on Bristol Water’s disputed price determination by Ofwat, the Competition Commission** noted that index-linked gilt rates prevailing at the time were approximately 1%. However, recognising that the government bond rates were probably “distorted” downwards temporarily by the GFC, the Commission considered that an appropriate range for the risk-free rate was 1% to 2%.

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In a recent consultation document, the UK energy regulator Ofgem calculated five-year and ten-year trailing averages of index-linked yields, over a range of maturities, as well as recent regulatory precedent from the UK on the risk-free rate. It then used all this evidence to develop a plausible range for the risk-free rate. Finally, it took all the evidence in the round and selected a value from the top of this range for its determination. It gave the following reason for going to the top of its range:29

“In the Strategy Document we also noted the divergence of short-term and long-term estimates of the CAPM components. We considered it appropriate to focus on longer-term estimates, particularly as we are setting controls for an eight-year period. Our experience from previous price controls shows that looking beyond short-term volatility is a prudent approach to take when setting the cost of equity assumption for network companies.”

In another recent consultation, Ofgem committed to “base the cost of debt component of the allowed return on a long-term trailing average of the yield on sterling-denominated bonds.”30 In that same consultation document, when determining the risk-free rate Ofgem applied some headroom over short-run evidence on government yields to take into account the possibility that the recent downward trend in interest rates may reverse itself over the forthcoming regulatory period.31

As IPART notes, the Dutch energy regulator Energiekamer (NMa) uses a combination of the trailing averages of two-year and five-year government bond yields when estimating the risk-free rate.

There are two key reasons why these regulators have chosen to not set WACC mechanically in line with short-run market data.

Firstly, basing determinations closely on very short-run data can lead to very volatile changes in prices from one price setting period to another. IPART’s own analysis shows that a WACC calculated using short-run data is considerably more variable over time than a WACC that uses long-run evidence. One of IPART’s objectives for conducting this review is to develop a framework for dealing with market volatility. Relying too heavily on short-run data would seem to conflict with this objective.

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29 Ofgem (2012), RIIO-GD1: Initial Proposals, September, para. 3.34.
30 Ofgem (2012), Consultation on strategy for the next electricity distribution price controls - RIIO-ED1 -Financial issues, September, para. 2.10.
31 Ibid, para. 2.50.
Secondly, during periods of high volatility, locking firms’ allowed returns in over a lengthy control period, based on very short-run data, could lead to significant under-recovery of funding costs (thus jeopardising financeability of the business) or significant over-recovery of costs (thus imposing unnecessary costs on customers).

**IPART should place greater weight on the views of TCorp and QTC**

In our opinion, IPART ought to have greater regard for the views of debt providers on this issue since agencies such as TCorp and Queensland Treasury Corporation are:

- independent third parties with no vested interest in the outcome of IPART’s price determinations; and
- expert in the financing/debt management of utility companies.

**Conclusion on averaging periods**

IPART’s proposal to base determinations of the risk-free rate and debt spreads on short-run market evidence (40 day averages) is too narrow.

Section 3.1 recommended that IPART consider the use of a long-term trailing average approach. This approach has a number of benefits and would likely allow the businesses to finance themselves properly.

If IPART chooses to not pursue such an approach, it should at least consider estimates using long averaging periods as well as short averaging periods and then arrive at a determination that is commensurate with the evidence and likely to allow firms to finance their activities effectively over the regulatory period. In doing so, IPART should apply suitable sense checks on its final estimates and explain how it has exercised any judgments.
4 Cost of equity methodology

- IPART’s proposal to continue using the CAPM as its primary model is reasonable and consistent with regulatory practice in many jurisdictions.

- Given the known limitations of the CAPM, IPART’s proposal to use alternative models to cross-check CAPM estimates — the DGM and FF3M, in particular — is sensible. However, these models need to be applied and interpreted carefully.

- There are a number of models/sources of information apart from those proposed by IPART that are also worth exploring as cross-checks. Evidence from these sources could supplement that offered by the DGM and FF3M.

- IPART should not mix a short-run risk-free rate with a long-run MRP.

- IPART appears to dismiss the use of survey evidence on the MRP. In our view the dismissal of survey evidence is not justified. Survey data should be used with caution, and should not receive more weight than historic and forward-looking evidence on the MRP. However, if surveys are recent and designed well, they can provide IPART with useful insights on forward-looking market expectations about risk premiums.

- IPART’s review should include an examination of a suitable methodology for estimating beta. A review that seeks to identify a methodology for dealing with changing market conditions, which excludes consideration of beta, would be incomplete as it would ignore a key source of uncertainty and variability in the WACC.

- The cross-checks on the cost of equity proposed by IPART seem reasonable. A potentially useful cross-check not mentioned by IPART is precedent from recent regulatory decisions by other regulators.

- IPART should publish the results of its cost of equity cross-checks in a transparent manner. It should also explain clearly how it has taken the results of its cross-checks into account when making its decisions.

The cost of equity reflects the return required by investors to reward them for investing in the business and comprises a market risk premium associated with the systematic risk of a specific asset, firm or industry, plus the nominal risk-free rate.

The following discussion provides our analysis of several aspects of IPART’s proposals, namely:

- the choice of model (i.e. CAPM or other models);
- consistency between the market risk premium (MRP) and the risk-free rate in the CAPM;

Cost of equity methodology
Cost of equity methodology

- the use (or lack of use) of survey evidence on the MRP;
- the exclusion of a suitable beta estimation approach from the scope of IPART’s review; and
- the cost of equity cross-checks proposed by IPART

4.1 Choice of model

4.1.1 IPART proposal

IPART has proposed to continue using the CAPM as its primary model when estimating the cost of equity. It also intends to consider estimates from other models — e.g. Arbitrage Pricing Theory (APT), Fama-French 3-factor Model (FF3M), Dividend Growth Model (DGM) — as cross-checks on CAPM estimates.

However, IPART notes the APT and DGM models could be difficult to implement, particularly for the companies it regulates.

4.1.2 Frontier comment

Use of the CAPM as IPART’s primary model is reasonable

In our opinion, IPART’s proposal to continue using the CAPM as its primary cost of equity model is sensible. The CAPM is the most common asset pricing model amongst practitioners. This is supported by survey evidence, some of which has been presented by IPART.

Outside North America, the CAPM remains the most common model used by regulators when setting allowed returns. Wright et al (2003) conducted an extensive academic study on cost of capital techniques for a group of UK regulators. That study reviewed a number of alternatives to the CAPM and found that each had its own drawbacks. The authors concluded that “there is no one clear successor to the CAPM for practical cost of capital estimation”. In a 2008 report on regulatory accounting practices, the European Regulators Group (a collection of European telecommunications regulators) noted that: “Even if many different methodologies are available to calculate the cost of equity, the Capital Asset Pricing Model (CAPM) is largely the preferred one in IRG countries”.

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33 ERG (2008), Regulatory Accounting in Practice 2008, September, p.32.
**Use of alternative models as cross-checks on the CAPM is sensible**

However, it is important to recognise that the CAPM does have a number of shortcomings. For example:

- Some empirical studies find evidence that the CAPM is a poor predictor of returns for small firms (even by Australian standards, SCA could not be considered a large firm) and firms with low book-to-market value ratios (Fama and French, 1993; 1996).  

- There is evidence that the CAPM tends to understate the level of systematic risk faced by low beta firms, and tends to overstate the level of systematic risk faced by high beta firms (Fama and French, 2004). As most utilities tend to have relatively low measured betas, use of the CAPM may understate the cost of capital of these businesses.

- The CAPM assumes that stock returns and market returns are normally distributed. However, some forms of regulation can skew the returns of firms by truncating the upside, while leaving regulated firms exposed fully to downside risk (Kolbe et al, 1993; Kolbe and Tye, 1996; Davidson et al, 1997).

- The CAPM reflects only non-diversifiable risks faced by the business. However, there is empirical evidence that firm-specific, or industry-specific, risks do matter to investors (e.g. Duffee, 1995; Malkiel and Xu, 2003; Jiang and Lee, 2006).

Given these apparent limitations, it is sensible to not rely exclusively on a single model and to use other models as sense-checks on the CAPM.

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Of the models proposed by IPART, the FF3M and DGM are generally considered to be the main practical alternatives to the CAPM. Both are used by UK regulators as cross checks on the CAPM, and the DGM is used as the primary cost of equity model by a number of North American regulators.

The DGM can provide useful current, forward-looking evidence on the cost of equity (as well as on the MRP). However, in practice DGM estimates can be very volatile over time and highly sensitive to model inputs, such as earnings/growth forecasts. For this reason, it is important to choose the inputs carefully.

One of the main difficulties with implementing the DGM sensibly is the challenges associated with forecasting the long-term growth in dividends. In practice, earnings/growth forecasts are often obtained from market analysts. Unfortunately, the basis for analysts’ forecasts is often unclear, and the forecasts themselves can vary significantly over time.

Furthermore, Cornell (1999) notes that earnings forecasts are typically available only over the short-to-medium term, and that these growth rates can exceed the long-run rate of economic growth. Projecting these high earnings rates into perpetuity, as the constant-growth version of the DGM does, implies that the company in question will eventually overwhelm the entire economy. This is not a sensible result. Some users implement a multi-stage version of the model, which permits different growth rates to be applied over different periods (e.g. a short-to-medium run growth forecast over the initial years, and a long-run growth forecast over the longer term). Under this approach the growth rate applied over the long-run may be chosen so as not to exceed the long-run rate of economic growth.

The APT is used rarely by regulators, in part because its results can be difficult to interpret (since the identity of the explanatory factors in the model are unknown), and it is technically more difficult to implement than other models.

IPART states that: “The APT and the DGM would be difficult to apply for the businesses we regulate. Most are government-owned and it is difficult to find comparable businesses here or overseas whose shares are publicly traded.” This rationale for dismissing the use of these models is not convincing as it applies equally to the CAPM.

Regulators often employ a peer group approach to estimating CAPM betas. In order to implement this approach, stock price data on a sample of comparator firms are collected and, from these data, betas for peer companies are estimated. These estimates are then combined to obtain a beta for the business in question.

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IPART employs this approach when estimating betas.\(^{39}\) If IPART uses a peer group to estimate the CAPM beta, there is in principle no reason why the same peer group could not be used to implement the APT or DGM.

**Additional models/sources of information could be used by IPART as cross-checks**

There are a number of other models/sources of evidence that IPART could, subject to data availability, consider alongside the cross checks already proposed. These include:

- **Residual Income Model (RIM).** The current equity value of a business comprises of two elements: the book value of equity; and the present value of future residual equity earnings.\(^{40}\) The RIM estimates the cost of equity as the discount rate that equates an expected future stream of residual equity income to the current equity value, given the book value of equity.

- **Market-to-asset ratios (MAR).** The MAR is calculated as the ratio of the market value of core regulated assets to the regulatory capital value (RCV) of the business.\(^{41}\) The closer market expectations of regulated returns are to the actual cost of capital of the business, the closer the MAR will be to a value of one. Assuming that markets value firms accurately, a MAR of less (greater) than one may suggest that the regulator may have set returns that are too low (high) relative to the true cost of capital.

- **Evidence from bond yields.** There is a large body of academic literature that studies the relationship between the returns to debt holders and the returns to equity holders. These studies have found evidence that common factors affect both the equity premium and debt premium on corporate bonds.\(^{42}\) The economic intuition for this result was first proposed by

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\(^{39}\) See, for example, SFG (2011), *Cost of capital parameters for Sydney Desalination Plant*, August. IPART engaged SFG to provide advice on the appropriate cost of capital parameters for Sydney Desalination Plant Pty Ltd. In its report, SFG identified quoted water companies from the UK and US.


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**Cost of equity methodology**
Merton (1974): both debt and equity are contingent claims on the same productive underlying assets. Therefore, the same risk factors that determine the value of the underlying assets must also drive the costs of debt and equity, and the value of these forms of capital to investors.\textsuperscript{43} Exploiting this relationship, Campello et al (2008) show how an estimate of expected returns on equity for a firm may be obtained using observable bond yield data.\textsuperscript{44}

- **Evidence from discount rates from market valuations.** The discount rates used in market valuations of assets or investments should reflect the cost of capital of those assets or investment. Regulators aim to set allowed returns equal to the expected cost of capital of regulated businesses. Thus, the discount rates used in independent project valuations may be used to sense-check the allowed returns set by regulators. The main challenge when using this evidence is that the risks of the project being valued should match closely the risks of the regulated business. Otherwise, the discount rates could provide too low or too high a benchmark for the cost of capital of the regulated business.

**Conclusion on choice of model**

IPART’s proposal to continue using the CAPM as its primary model is reasonable and consistent with regulatory practice in many jurisdictions. Given the known limitations of the CAPM, use of alternative models — the DGM and FF3M in particular — to cross-check CAPM estimates is sensible. However, it is important that these models be applied and interpreted carefully. There are a number of models/sources of information apart from those proposed by IPART that are also worth exploring. Evidence from these sources could supplement that offered by the DGM and FF3M.

**4.2 Consistency between MRP and risk-free rate in the CAPM**

**4.2.1 IPART proposal**

In respect of the MRP, IPART proposes to:


• Continue its current approach of using a MRP estimate based on long-term data, coupled with a risk-free rate based on historic data averaged over the short term (i.e. 40 days).

• Consider cost of equity estimates based on long-term estimates of both the MRP and risk-free rate.

• Consider evidence on the ‘current MRP’ (i.e. MRP estimates based on current data (e.g. using the DGM or option-pricing techniques), perhaps when formulating the overall cost of equity range. IPART notes that current estimates of the MRP can be subject to considerable variability and uncertainty (in comparison to long-term estimates).

The same risk-free rate would be used in the cost of debt and in the cost of equity calculation. Hence, if IPART chooses to use a long-term risk-free rate in the cost of debt calculation, a long-term risk-free rate would also be adopted for the cost of equity calculation.

4.2.2 Frontier comment

IPART’s proposal to continue using a MRP estimate based on long-term data, paired with a risk-free rate based on historic data averaged over the very short-term is a conceptual mismatch. There is no good economic rationale for following such an approach. This point is made by Professor Damodaran (Stern, NYU), whose views IPART refers to in its discussion document when discussing regulatory options for dealing with low prevailing interest rates.45

As discussed in Chapter 2, internal consistency is an essential element of a sound regulatory system.

As a result of the GFC, government yields in many countries have declined significantly. Contemporaneously, risk premiums have increased.46 Therefore, the approach proposed by IPART penalises SCA twice: it couples low risk-free rate estimates (due to the recent decline in government yields) with relatively low risk premiums (due to long averaging periods that capture relatively stable times prior to the GFC). This is an unreasonable outcome.

45 In Risk free rates and value: Dealing with historical low risk free rates (30 September 2011), Damodaran describes the practice of pairing a short-run risk-free rate with a long-run MRP as “dysfunctional” and “internally inconsistent”.

46 IPART (2012), Review of method for determining the WACC – Dealing with uncertainty and changing market conditions, p.55; Franks, J., Lally, M., Myers, S. (2010), Recommendation to the New Zealand Commerce Commission on whether or not it should change its previous estimate of the tax adjusted market risk premium as a result of the recent global financial crisis, April.

Cost of equity methodology
Conclusion on consistency between MRP and risk-free rate in the CAPM

In our view, IPART should not mix a short-run risk-free rate with a long-run MRP.

4.3 Survey evidence on the MRP

4.3.1 IPART proposal

IPART appears to dismiss the use of survey evidence on the MRP with little explanation. IPART states that survey evidence does not meet the most important of its choice criteria, which is “providing incentives for efficient financing”.

4.3.2 Frontier comment

In our view IPART’s dismissal of survey evidence is not justified. Certainly, survey data should be used with caution, and we would not put more weight on surveys than historic and forward-looking evidence on the MRP. However, we would not recommend dismissing survey evidence entirely either. If surveys are recent and designed well, they can provide useful insights on forward-looking market expectations about risk premiums.

We note that a number of regulators in Australia and overseas take into account survey evidence when estimating the MRP. Examples include: ESCOSA; AER; QCA; ERA; New Zealand Commerce Commission; Ofwat; NMa.

It is not obvious to us that MRP estimates based on survey data are incompatible with IPART’s objective of “providing incentives for efficient financing”. As Damodaran (2012, pp.16-17) notes:

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47 ESCOSA (2012), Advice on a regulatory rate of return for SA Water – Final Advice, February.
50 ERA (2008), 2008 Weighted Average Cost of Capital for the Freight (WestNet Rail) and Urban (Public Transport Authority) Railway Networks – Final Determination, June.
52 Europe Economics (2009), Cost of Capital and Financeability at PR09 Updated Report by Europe Economics, October. During PR09, Ofwat appointed Europe Economics as its adviser on cost of capital issues.
53 Oxera, (2011), Cost of capital for GTS: Annual estimates from 2006 onwards, May. NMa appointed Oxera as its advisers on the cost of capital for GTS.
"If the equity risk premium is what investors demand for investing in risky assets today, the most logical way to estimate it is to ask these investors what they require as expected returns. Since investors in equity markets number in the millions, the challenge is often finding a subset of investors that best reflects the aggregate market. In practice, see surveys of investors, managers and even academics, with the intent of estimating an equity risk premium."

Australian regulators have also recognised this point. For example, the AER (2012, p.146) has stated that:

“Survey based estimates of the MRP are relevant for consideration as they are forward looking and reflect actual market practice.”

Similarly the QCA (2012, p.24) notes that:

“Surveys attempt to ascertain investors’ expectations of the market risk premium by seeking an estimate directly from market participants and/or experts, including academics, financial analysts, and company managers. The objective is to find out what they require as a premium for investing in equity as a class relative to the risk-free rate. The advantage of survey-based estimates is that they produce a forward-looking measure of the market risk premium that is suitable for the CAPM.”

Survey data can have limitations. Survey questions can be framed poorly or misinterpreted by respondents. The technique used to canvas potential respondents could introduce sampling biases. Finally, respondents’ views may be subjective, inconsistent or outdated. However, as the AER has noted, these problems can be mitigated by evaluating the quality of the surveys (e.g. in terms of their timing; the type of survey questions asked and the wording of the questions; sample of respondents; and numbers of responses and response rate).

**Conclusion on use of survey evidence on the MRP**

In our view, IPART could draw on survey evidence of the following kind:

- Recent studies that present the views of CFOs and academics that are peer-reviewed and published in a reliable source, and/or conducted by reputable researchers. There are surveys of this kind available, and some are updated regularly (annually, in some cases).

- Surveys of investors, banks and other experts/market participants conducted by IPART. IPART has already proposed to undertake greater structured engagement with market experts. It could leverage such engagement and gather market participants’ views on the MRP. However, IPART should take care to ensure that any such surveys are designed properly to avoid framing and sampling bias.
4.4 **Approach to beta outside the scope of the review**

4.4.1 **IPART proposal**

IPART has specified that the methodology for estimating beta is beyond the scope of its present review.

4.4.2 **Frontier comment**

IPART has not given any reasons in its discussion document for excluding beta from its current review.

The exclusion of an appropriate methodology for estimating beta, which is an important input into the CAPM, from the scope of the present review is puzzling. There are important interrelationships between the various WACC parameters and, in our view, a robust review of the methodology must necessarily consider them all.

The overall WACC estimates can be very sensitive to the beta employed within the CAPM. In addition, betas can be highly variable over time (see, for example, Figure 2) just as government yields and risk premiums can be.

We see no good reason why IPART should focus its review, which seeks to develop a suitable methodology for dealing with changing market conditions, on the risk-free rate and risk premiums, while excluding consideration of beta. Such a review would be incomplete as it would ignore a key source of uncertainty and variability in the WACC.

The measured betas of utility stocks can have a tendency to fall during times of significant market turbulence. Regulation generally ‘buffers’ the returns of utilities, thus ensuring a reasonably stable profile of returns over time. If utility returns remain relatively stable while market volatility increases (as during the GFC), the returns of utility stocks will appear less correlated with market movements, thus resulting in a decline in measured betas. This can be observed in Figure 2: the average beta of quoted utilities in the UK has declined significantly since 2007, which marked the beginning of the subprime mortgage crisis in the US and the GFC that followed.

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55 In 2010 IPART concluded a review that examined various aspects of its WACC methodology, including beta. (See IPART (2010), IPART’s weighted average cost of capital, Research – Final Decision, April.) IPART’s final decision was that “there is no convincing evidence that any of the WACC parameters or the methodologies used in calculating the WACC should be changed substantially”. We note that IPART’s 2010 review examined many of the aspects of WACC considered in the present review (e.g. risk-free rate, MRP, debt premium). There seems to be no good reason why the current review should re-examine those elements but exclude beta.
Figure 3. Rolling median asset beta of five quoted UK utility stocks

Sources: Thomson Datastream, Frontier calculations

Notes: This chart plots the median of the rolling asset betas for five quoted, regulated utility companies in the UK: National Grid, Northumbrian Water, Pennon Group, Severn Trent and United Utilities. The estimated betas are two-year daily betas. Raw equity betas have been Blume-adjusted. For companies with betas less than a value of one, and all else being equal, the Blume adjustment will attenuate any decline in raw betas since the raw betas will always be adjusted towards the beta of the market portfolio. Therefore, this chart presents a conservative view of the recent decline in utility betas.

108 Regulators need to be cautious to not ‘lock in’ unusually low levels of beta which may subsequently rise over the course of the regulatory period as markets recover.

109 There are several methodological choices to be made when measuring betas, including: the appropriate period of estimation; the frequency of returns data employed; the use of post-estimation adjustments (see, for example, Wright et al, 2003). Some of these choices can either exacerbate or mitigate the effect of significant market changes on beta.

Conclusion on exclusion of beta from scope of review

110 For all the reasons above, it would seem appropriate that IPART’s review also consider how best to deal with variability in betas in the face of changing market conditions.

4.5 Cost of equity cross-checks proposed by IPART

4.5.1 IPART proposal

IPART has proposed that it would conduct a number of cross-checks on its cost of equity estimates. These cross-checks are:

- external peer reviews from banks, corporate treasuries or consultants
- monitoring of market reports
- cost of equity estimates obtained from the use of alternative models
- sensitivity analyses

4.5.2 Frontier comment

The cross-checks proposed by IPART seem reasonable. It is essential, and consistent with regulatory best practice, that IPART publish the results of these checks in a transparent manner. It is also important that it explain clearly how it has taken the results into account when making its decisions.

We note that IPART does not explain if/how it intends to use determinations from other regulators when making its own decisions. In principle, it should be possible for IPART to draw on recent regulatory precedent when determining certain WACC parameters (e.g. the risk-free rate, MRP and even the debt premium). Indeed, many regulators in Australia and overseas do this as a matter of course.

If IPART intends to use such evidence as a cross-check on its cost of equity estimates, in the interests of regulatory transparency, we recommend that it be explicit how it has used/what weight it has attached to such evidence.
5 Establishing a WACC range and choosing an appropriate value

- The various permutations and combinations of options for constructing a WACC range proposed by IPART introduces unnecessary complexity, provides a false sense of rigour and potentially reduces transparency around how individual WACC components have been determined. This conflicts with a number of the regulatory principles that IPART recognises it should adhere to.

- We suggest that IPART follow the simpler, more transparent three-step approach to establishing a WACC range that a number of regulators overseas employ:

  1. First, establish a range around each WACC parameter.
  2. Next, calculate a range for the cost of equity and for the cost of debt using the parameter ranges established in the previous step.
  3. Finally, combine the cost of equity and cost of debt ranges to determine an overall WACC range.

5.1.1 IPART proposal

IPART has proposed five different schemes for establishing a WACC range and choosing an appropriate point estimate:

- one based solely on long-term estimates of parameters (scenario 1);
- one based solely on short-term estimates of parameters (scenario 2);
- one that combines scenarios 1 and 2 (scenario 3);
- one that combines scenario 3 with IPART’s current approach (scenario 4); and
- one that uses IPART’s current approach to establish the range, and the midpoint under scenario 1 to choose the appropriate value within the range (scenario 5).

IPART has indicated that it would prefer to use scenario 5 as this is its current approach to establishing a WACC range and choosing a point estimate.

However, it considered that a shortcoming of this approach is that it does not take into account current estimates of the MRP. Therefore, it has proposed as an option an adapted version of scenario 5 that uses:

- IPART’s current approach to establish the WACC range (i.e. based on a short-term risk free rate and debt premium, and a long-term MRP); and
the midpoint values under scenarios 1 and 2 (the latter informed by a short-term MRP estimate) to select a value from this range.

5.1.2 Frontier comment

The five approaches proposed by IPART are an attempt to formalise a process for taking into account short-run and long-run evidence on various inputs to the WACC.

The process of estimating WACC is fraught with uncertainty. There is no one single model that can estimate WACC perfectly, so the estimation process involves so-called model uncertainty. Most of the inputs to the WACC calculation cannot be observed; they must be estimated. This will inevitably result in some parameter uncertainty. There is a great deal of consensus amongst regulators, finance practitioners and academics that in the face of such uncertainty, it is sensible to:

- Consider evidence on individual inputs from a range of (reliable) sources;
- Conduct sense-checks on parameter estimates and model outputs; and
- Use ranges to determine the final estimate.

**IPART’s proposed options are unnecessarily complex, provide a false sense of rigour and potentially reduce transparency**

Whilst IPART’s efforts towards considering a wider range of evidence is commendable, the permutations and combinations of options for constructing a WACC range proposed by IPART:

- introduce unnecessary complexity;
- provide a false sense of rigour; and
- potentially reduce transparency around how individual WACC components have been determined.

This conflicts with a number of the principles of regulation that IPART recognises it should adhere to (see Chapter 2).

IPART has surveyed the practices of a number of regulators overseas and has concluded correctly that all those considered use WACC ranges in their determinations. However, we note that none of the overseas regulators surveyed develop their ranges in the way proposed by IPART.

Whilst the method for constructing the range under each scheme proposed by IPART is largely mechanical, the way in which IPART intends to choose the WACC parameters that form the upper and lower bounds of the range remains unclear. In particular we note that:
It is unclear how multiple pieces of evidence (short-run or long-run) from differing sources would be taken into account/weighted when choosing estimates of individual WACC parameters. IPART should not assume that there will only ever be one valid source of evidence on a given WACC component. In many instances there are multiple sources of evidence that could be considered. Some may be more reliable/useful than others. It is essential that the regulator weigh the different pieces of evidence carefully and make explicit if/how each has been employed.

It is unclear how the various cross-checks proposed by IPART would influence individual parameter estimates or the overall range.

**An alternative approach to developing a WACC range**

A simpler, more transparent approach to establishing a WACC range would be the following:

- **First, establish a range around each WACC parameter.** The parameter range would be formed by presenting all the relevant evidence available on the parameter in question, and explaining clearly the relative weights attached to each piece of evidence. The weights need not be quantitative. They could be based on qualitative assessments of the reliability and relevance of each piece of evidence. This approach would permit the assessment of multiple pieces of short-run and/or long-run evidence from various sources, and the application of cross-checks on individual parameter values. It would also have the advantage of making explicit how IPART has assessed each piece of evidence available.

- **Next, calculate a range for the cost of equity and for the cost of debt using the parameter ranges established in the previous step.** At this stage, further cross-checks could be applied (e.g. by applying alternative models, taking into account evidence from stakeholders and third parties, etc.). Doing this would make explicit the possible values that IPART has in mind for the cost of equity and cost of debt.

- **Finally, combine the cost of equity and cost of debt ranges to determine an overall WACC range.**

The approach outlined above is consistent with how many overseas regulators construct feasible ranges for the WACC. Chapter 7 provides an example of how Ofwat used such an approach to determine its WACC range at PR09.
6 Framework for dealing with discretion

- IPART’s proposed commitments about how it intends to exercise discretion when choosing a final WACC estimate are sensible.
- However, IPART should undertake structured engagement with investors, debt providers and rating agencies as part the price review process as well as outside the context of specific WACC decisions. IPART should not feel that engagement with these key stakeholders would compromise, or give the impression of having compromised, its decision-making process.
- To avoid any wider perception that IPART has been influenced unduly, it could publish transparently the outcome/content of discussions with investors and debt providers.
- Publication of all models, calculations and underlying data used in its draft and final determinations would also help improve the transparency of the regulatory process.
- A firm commitment by IPART to undertake financeability tests, and a clear description of its methodology for doing this, would help strengthen confidence in its framework for dealing with discretion, and the regulatory system more generally.

6.1.1 IPART proposals

IPART has proposed the following commitments to give stakeholders comfort about how it intends to exercise discretion when choosing a final WACC estimate:

- transparent information on the models and assumptions used to estimate the range for the WACC;
- structured engagement with groups of investors and debt providers outside the context of specific WACC decisions to inform IPART’s views on how practitioners are dealing with changing market conditions when making decisions;
- increased monitoring of analyst reports and investors’ presentations and other supporting information on debt and equity market conditions, and management and analyst practice in investment and valuation decision;
- specific objectives/criteria for setting the WACC and clear reconciliation of the decision against these criteria; and
the use of draft reports to seek the views of stakeholders on the WACC value before proceeding to adopt it and the reasons for making this choice.

6.1.2 Frontier comment

It is very difficult for regulators to give firm commitments in advance about how they will exercise discretion under different circumstances. Some degree of discretion is unavoidable and, indeed, desirable in the face of changing market conditions.

However, in the interests of predictability and regulatory certainty, it is important that some bounds are placed on the level of discretion that a regulator can exercise. It is also essential that regulators be accountable for the decisions they make. This means regulators explaining the reasons for their decisions in full, and stakeholders having an avenue to challenge/appeal determinations that are unfair or reasoned poorly.

The commitments proposed by IPART are sensible and broadly consistent with the development of regulatory practice in jurisdictions with mature regimes such as the UK.

However, we note that IPART intends to only engage with investors and debt providers “outside the context of specific WACC decisions”. IPART states that:

“Protocols would be needed to ensure that neither the timing nor the composition of the discussion group compromises us in any decision-making.”

This suggests that IPART is concerned that engagement with investors and debt providers during the course of a specific price review may influence its decisions unduly.

This concern seems unwarranted. Under IPART’s usual price review process there is opportunity for investors and debt providers to present their views through submissions. As an independent regulator, IPART is equipped to assess these representations in an objective and balanced way and then draw its own conclusions on the evidence. Structured engagement during the course of a specific review process would give investors and debt providers no more ability than they have at present to influence IPART unduly. However, such engagement would provide IPART:

- an opportunity to hear the views and concerns of investors and stakeholders directly and more clearly; and
- more up-to-date evidence on prevailing market conditions and views on how practitioners are dealing with changing market conditions than if engagement occurred only outside specific price reviews.

Framework for dealing with discretion
To avoid any wider perception that IPART has been influenced unduly, it could publish transparently the outcome/content of discussions with investors and debt providers. This would only enhance the integrity of IPART’s price review process.

**Additional commitments that IPART could consider**

In addition to the commitments listed above, it would be desirable for IPART to:

- **Publish all models, calculations and underlying data used in its draft and final determinations.** The models and data should be accompanied by clear documentation. Publication of these materials would greatly aid the transparency of the price review process and would not add significant regulatory burden.

- **Commit to undertake tests that assess if its determination will likely ensure the financeability of the regulated business, and publish its proposed methodology for doing this.** A number of regulators in the UK (e.g. Ofwat, Ofgem, Competition Commission) regard such financeability tests as important sense-checks of their determinations and undertake these as a matter of course. IPART has conducted financeability assessments as part of price reviews for water companies, and is currently seeking views on a suitable approach to financeability tests for future price reviews.57

A useful element of the financeability assessments that UK regulators undertake is direct engagement with rating agencies during the course of price reviews on the approach to assessing financeability (see, for example, Ofwat, 2009, pp.135-136).58 This is because investors take into account rating agencies’ assessment of the impact of regulators’ determinations on the creditworthiness of the companies. Therefore, it is sensible for regulators’ financeability tests to align broadly with the approach rating agencies use to assess the financeability of the businesses.59

In addition, the regulators also take into account the views of the main agencies on their draft proposals to assess whether the proposals could cause an adverse change to the ratings of the regulated businesses (which could in turn hinder their ability to raise necessary finance). This is because UK regulators recognise that the rating agencies, whilst not infallible:

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58 Ofwat (2009), Future water and sewerage charges 2010-15: Final determinations
59 It is difficult for regulators to replicate the analyses that rating agencies undertake because rating agencies take into account qualitative factors and apply judgments that reflect their institutional expertise. However, it is useful if at least the quantitative elements of the financeability tests carried out by regulators and the credit assessments undertaken by rating agencies align.
can provide valuable insights on the likely financeability of the companies under a given regulatory settlement; and

do influence potential investors’ views about the risks of committing capital to the regulated business (and therefore, can affect the actual cost of capital faced by companies over the regulatory period).

We recommend that IPART undertake similar engagement with rating agencies when performing financeability assessments and also seek the agencies’ views on the impact of its draft determinations.

**Conclusion on IPART’s proposals for dealing with discretion**

IPART’s proposed commitments about how it intends to exercise discretion when choosing a final WACC estimate are sensible.

However, IPART should undertake structured engagement with investors, debt providers and rating agencies as part the price review process *as well as* outside the context of specific WACC decisions. IPART should not feel that engagement with these key stakeholders would compromise, or give the impression of having compromised, its decision-making process. To avoid any wider perception that IPART has been influenced unduly, it could publish transparently the outcome/content of discussions with investors and debt providers.

Publication of all models, calculations and underlying data used in its draft and final determinations would also help improve the transparency of the regulatory process.

A firm commitment by IPART to undertake financeability tests, and a clear description of its methodology for doing this, would help strengthen confidence in its framework for dealing with discretion, and the regulatory system more generally.
7 Impact of choice of methodology on calculation of tax expense

- IPART should be explicit about the values for the cost of equity and the cost of debt that it believes to be consistent with its overall WACC determination. This would aid transparency by allowing stakeholders to evaluate properly the parameter values that underpin IPART’s determinations.
- The tax expense calculation could then be based on IPART’s final point estimate for the cost of debt.

7.1.1 IPART proposal

Under IPART’s post-tax WACC approach, an estimate of the cost of debt is needed in order to calculate the tax expense allowance. When a WACC range is used to determine an allowed rate of return, the chosen WACC value could be consistent with any number of values for the cost of debt.

IPART is consulting on whether it is reasonable to use the midpoint of the estimated cost of debt range in its tax expense calculations.

7.1.2 Frontier comment

In principle, IPART is correct that when a WACC range is used to determine an allowed rate of return, the WACC value chosen could be consistent with any number of values for the cost of debt.

However, this should not prevent IPART from being explicit about the values for the components of the WACC that it believes to be consistent with its overall WACC determination.

Regulators in the UK use ranges to determine the WACC routinely, but then also specify the cost of debt and cost of equity values that they consider to be consistent with their WACC determination. For example, in PR09 Ofwat’s advisers estimated a range for the post-tax WACC of between 2.9% to 5.4%. In its Final Determination, Ofwat published the parameter values that gave rise to this lower and upper bound (see Figure 4).
Figure 4. WACC range considered by Ofwat in PR09

<table>
<thead>
<tr>
<th>Gearing (debt; RCV)</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk-free rate</td>
<td>55%</td>
<td>65%</td>
</tr>
<tr>
<td>Equity beta</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Equity risk premium</td>
<td>4.1%</td>
<td>5.4%</td>
</tr>
<tr>
<td>Cost of equity (post-tax)</td>
<td>3.5%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Cost of debt</td>
<td>2.5%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Cost of debt (gross of tax shield)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WACC – gross of tax shield (Vanilla)</td>
<td>2.9%</td>
<td>5.6%</td>
</tr>
<tr>
<td>WACC – post-tax</td>
<td>2.5%</td>
<td>4.7%</td>
</tr>
</tbody>
</table>

Marked-up WACC to account for the asymmetry of consequences

| WACC – gross of tax shield (Vanilla) | 3.4% | 6.4% |
| WACC – post-tax                   | 2.9% | 5.4% |

Source: Future water and sewerage charges 2010-15: Final determinations, Table 45.

Ofwat then went on and selected a point estimate from this WACC range of 4.5%. In doing so, Ofwat made explicit the values for the cost of debt and the cost of equity that it believed to be consistent with its determined WACC (see Figure 5).

Figure 5. Ofwat’s final PR09 WACC determination

<table>
<thead>
<tr>
<th>Gearing (debt: RCV)</th>
<th>57.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of equity</td>
<td></td>
</tr>
<tr>
<td>Risk-free rate</td>
<td>2.0%</td>
</tr>
<tr>
<td>Equity beta</td>
<td>0.9</td>
</tr>
<tr>
<td>Equity risk premium</td>
<td>5.4%</td>
</tr>
<tr>
<td>Cost of equity (post-tax)</td>
<td>7.1%</td>
</tr>
<tr>
<td>Cost of debt</td>
<td></td>
</tr>
<tr>
<td>Cost of debt (gross of tax shield)</td>
<td>3.6%</td>
</tr>
<tr>
<td>WACC – gross of tax shield (Vanilla)</td>
<td>5.1%</td>
</tr>
<tr>
<td>WACC – post-tax</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

Source: Future water and sewerage charges 2010-15: Final determinations, Table 46.

There is no reason why IPART could not follow the same approach of making explicit the cost of equity and cost of debt values that underpin its final WACC estimate.60

The tax expense calculation could then be based on its final point estimate for the cost of debt.

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60 Note that Ofwat’s final WACC determination, 4.5%, was a value above the midpoint of its estimated WACC range. Therefore, it is not necessary to always choose the midpoint of the WACC range in order to implement Ofwat’s approach.
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