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<b>From</b>	HoustonKemp
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This memorandum explains how the cost of capital and the cost of debt in economic regulation has developed through time, paying particular attention to the reasons regulatory authorities have, in the past, applied estimates of the prevailing cost of capital and why, more recently, some jurisdictional regulators have moved away from this practice.

## Origin of the prevailing cost of capital

In this section we explain the genesis of estimating a prevailing cost of capital, including the cost of debt when determining the prices/maximum revenue for regulated entities.

A principle of economic regulation is that it only applies to industries that exhibit “natural monopoly” characteristics. Unconstrained natural monopolies cannot be effectively constrained by competition and so are able to raise prices or reduce production above levels that would be observed in a competitive market and as a result reduces overall social welfare. As a consequence, when economic regulation was first introduced regulators sought to imitate the outcomes of a competitive market. That is, regulators sought to set prices consistent with the theory that in a competitive market prices would be constrained by the entry, or threat of entry, of new providers. This is colloquially known as the ‘new entrant price’.

In practice, regulators sought to estimate the new entrant price by estimating the cost building blocks by reference to costs of a new entrant. Consistent with this paradigm, Australia regulators estimated the annual revenue requirement of infrastructure providers by estimating:

- the depreciated asset value of an efficient new entrant providing regulated services, which was done by periodically revaluing the asset base using an optimised depreciated replace cost methodology;
- the operating expenditure of an efficient new entrant; and
- the prevailing cost of capital for a benchmark efficient entity with similar degree of risk as the regulated entity, consequently the allowance for the cost of debt was estimated using the prevailing cost of debt.

By mimicking the prices of a new entrant, regulators sought to avoid any “market failure” normally associated with unconstrained natural monopoly industries, with prices being set above efficient levels.

However, the practical experience of periodically revaluing sunk assets was found to:

- introduce a high degree of unpredictability with respect to regulated revenues and prices; and

- potentially resulted in windfall gains or losses to regulated entities and exposed them to the risk that efficient expenditure may not be recoverable.

Not surprising, revaluing sunk assets also led to significant disputes between regulators and regulated entities.

Consequently, there was a shift in regulatory practice of adopting a “lock-in and roll forward” approach to setting asset values. Under this approach, an initial asset value was established by the regulator and from that date onwards the asset values were rolled forward for new capital expenditure, depreciation and indexation. By way of example, in 2004 the ACCC ceased periodically revaluing the asset base in favour of rolling forward the asset base.<sup>1</sup> Further, most regulators also used the regulated observed opex to set future opex allowances.

The implication of these changes is that regulated prices no longer reflect those of a new entrant. In turn, the shift away from new entrant pricing means that there is no longer a requirement for the regulator to adopt a prevailing cost of capital and cost of debt.

## The regulatory objective and its implications for the cost of debt allowance

Australian regulators have generally transitioned away from a new entrant pricing objective to an efficiency objective. That is, the core principle embodied in frameworks for economic regulation is to promote efficient investment in, and efficient operation and use of, the regulated service for the long term interests of consumers. Implicit in this objective is that:

- the service provider must have reasonable assurance that costs efficiently incurred – including a return on its capital costs – will be recovered over the life of the investment, to ensure efficient investment in assets necessary to provide regulated services;
- consumers must be protected from the ability and incentive of the service provider to raise prices above the cost of supply in a substantial or sustained manner, to ensure efficient use of regulated services; and
- incentive mechanisms must be put in place that allow the service provider to retain some of the benefit of any improvements in efficiency that it achieves, thereby encouraging the service provider to lower the cost of providing regulated services through time.

Consistent with these overall regulatory principles, regulatory authorities have generally adopted a cost of capital objective that ensures that “*the rate of return for a regulated service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as a firm providing regulated services.*” This objective:

- provides a service provider with a reasonable opportunity to earn sufficient revenue to attract equity and debt needed to finance regulated services;
- protects consumers from any possible costs of poor financing decisions made by the regulated service provider by providing a benchmark rate of return; and
- incentivises the service provider to outperform the benchmark rate of return.

The cost of capital objective provides some limited guidance on how the cost of debt allowance should be set. Specifically, the cost of debt allowance should be set by reference to the debt costs of a benchmark efficient entity. This means that the allowance should:

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<sup>1</sup> ACCC, Statement of Principles for the regulation of electricity transmission revenues – Background paper, 8 December 2004, page vii.

- be set by reference to benchmark debt, ie, the regulator should specify the type, term and credit rating of debt assumed to be issued by a benchmark efficient entity;<sup>2</sup> and
- reduce the extent of debt financing risks faced by regulated entities by reducing the possibility that, over a particular regulatory control period, the cost of debt actually incurred by a benchmark efficient infrastructure service provider differs substantially from its cost of debt allowance.

Reducing debt financing risk will lower the risk of investing in regulated services by decreasing the volatility of the returns on equity.<sup>3</sup>

In addition, in our opinion the relevant reference point is the debt financing practices of a benchmark efficient entity seeking to minimise its debt financing costs *in the absence of potential distortions created by the regulatory framework*. Specifically, practices that are designed to minimise the difference between a firm's actual cost of debt and its debt allowance given prevailing approaches to setting the cost of debt allowance as part of periodic regulatory reviews.

Consequently, setting a cost of debt allowance that reflects the efficient debt financing practices of a benchmark efficient entity absent regulation will encourage a regulated infrastructure service provider to adopt similar practices.

We observe that an efficient infrastructure service provider would in the absence of distortions created by the regulatory framework adopt a debt financing strategy that minimises refinancing risk<sup>4</sup> by:

- issuing longer term debt, thereby limiting the number of occasions that debt must be rolled over; and
- staggering debt maturity dates over time, thereby limiting the amount of debt that must be refinanced in any given time period, and so also limiting the need to potentially refinance debt during periods of financial market stress.<sup>5</sup>

With these benchmark efficient debt financing practices in mind, we turn to considering which of the alternative methods for setting the cost of debt allowance are consistent with this benchmark.

## Alternative methods for setting the cost of debt allowance

Broadly speaking, there are two approaches to estimating the cost of debt allowance, each of which reflects different benchmark debt financing practices, namely:

- the 'on-the-day' approach – providing an allowance for the cost of debt that is equal to the prevailing cost of debt at the time of a regulatory decision, and
- the 'trailing average' approach – providing an allowance for the cost of debt that is equal to an historical average of the cost of debt.

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<sup>2</sup> For example, for regulated energy networks the AER specifies that benchmark debt is Australian denominated corporate bonds issued by Australian entities with a 10 year term to maturity and BBB+ credit rating.

<sup>3</sup> Where the actual cost of debt is greater than its cost of debt allowance, the profitability of the regulated infrastructure provider will be less than the allowed return on equity. Alternatively, where the actual cost of debt is less than its cost of debt allowance, the firm's profitability will be higher than the allowed return on equity.

<sup>4</sup> Refinancing risk refers to the possibility that a borrower cannot repay its debt obligations when they fall due. This may occur even though the firm's assets are greater than its liabilities (ie, a positive net worth) but the firm nevertheless cannot raise sufficient liquid funds to pay creditors as those obligations come due.

<sup>5</sup> An example of stressed financial markets is the period following the failure of Lehman Brothers on September 15, 2008 when debt was difficult to obtain.

We note that both approaches provide the infrastructure service provider with a reasonable prospect of recovering its costs of debt over the long term. However, for the reasons set out below, the on-the-day approach is unlikely to reflect the debt financing practices of an efficient infrastructure service provider.

### The on the day approach

The on-the-day approach assumes that a benchmark entity finances all of its debt at the time of a regulatory decision, and so the allowance for the cost of debt is set equal to the prevailing cost of debt at the time of a regulatory decision. As we explained earlier, regulatory authorities have generally adopted a prevailing estimate of the cost of debt, ie, the on-the-day approach, to ensure compliance with the objective of setting prices consistent with the new entrant objective.

However, in the absence of the new entrant objective it is apparent that an efficient infrastructure service provider would not expose itself to the substantial refinancing risk of rolling over all its debt over a 5-40 day window.

Furthermore, the on-the-day approach may result in a mismatch between the allowed cost of debt and an efficient infrastructure service provider's actual cost of debt over a regulatory control period, thereby resulting in greater equity volatility. As a matter of principle, reduction in equity volatility is likely to provide a better environment for investment and so be in the long term interests of consumers.

It is for these reasons that some regulatory authorities, including the AER, have decided to move away from the on-the-day approach in favour of the trailing average approach.

### The trailing average approach

In our opinion, a benchmark efficient infrastructure service provider will minimise its refinancing risks by periodically issuing longer term debt to stagger debt maturity dates over time. As a result, the debt costs of a benchmark efficient infrastructure service provider at any point in time will reflect a historical average of debt costs.<sup>6</sup> However, the trailing average approach can be applied in different ways and requires decisions as to:

- whether to estimate a historical average of debt yields or, alternatively, debt risk premia;
- whether to apply a constant weight to all observations when calculating the historical average;
- whether to annually update the cost of debt allowance;

We address each of these matters in turn below.

#### Debt yields or premium

Under the trailing average approach, the cost of debt can be calculated equal to a historical average of two different variables, where each approach implies that the benchmark efficient entity adopts a different debt financing practice, ie, the cost of debt can be estimated equal to:

- the historical average debt yield – which implies that the benchmark efficient entity periodically issues fixed rate debt; or
- the historical average debt premia plus the prevailing risk free rate at the time of a regulatory decision – which implies that the benchmark efficient entity periodically issues floating rate debt and, at the time of a regulatory decision, enters 'pay fixed – receive floating' swap contracts to hedge interest exposure for the duration of a regulatory period.

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<sup>6</sup> The historical average is calculated over a period equal to the term to maturity of the debt.

In the absence of regulation it is unlikely that a benchmark efficient entity would adopt the latter approach. However, it is relevant to note that some electricity network businesses periodically issue floating rate debt and enter swap contracts in response to the 'on-the-day' approach that was used by the AER to set the cost of debt allowance prior to the 20014-19 regulatory control period.<sup>7</sup>

In addition, it would also be impractical to set a forward looking cost of debt allowance on the basis of floating note debt because of the uncertainty as to the future yield of that debt.

Consequently, the AER apply the trailing average approach by averaging historical debt yields over a period equal to the term of debt, ie, ten years.

### Weighting

Second, implementing the trailing average approach requires a decision as to whether to apply equal weights to each annual observation of the cost of debt and, in the contrary, what weights to apply to each observation. We note that the AER calculates an arithmetic average of the cost of debt over a ten year period and so applies an equal weight to each year. However, applying an unequal weight may be appropriate in circumstances where debt was not raised smoothly through time, eg, due to lumpy investments.

### Annual updates

Finally, a regulator must decide whether to update the trailing average cost of debt in each year of a regulatory period, ie, to include the most recent annual observation in the calculation and remove the oldest observation.

Annually updating the cost of debt is likely to give rise to a cost of debt allowance that better reflects that of a benchmark efficient entity that adopts the trailing average approach since it would have to raise debt in each year of a regulatory control period. Consequently, annually updating the trailing average avoid exposing network businesses to the unnecessary risk that the actual debt cost for a benchmark efficient firm is significantly different to the regulatory allowance during a regulatory control period.

We note that the AER annually updates the cost of debt, while IPART does not.

### Transitional measures

Consistent with regulatory best practice, a regulatory authority should seek to avoid imposing windfall gains or losses as a result of regulatory changes. A regulatory change that imposes windfall gains or losses will be to the detriment of regulatory certainty and will likely increase the perceived level of regulatory risk, and so the cost of capital.

A network business' actual debt portfolio is likely to have been influenced by the regulatory approach to determining the cost of debt allowance and cannot be easily restructured to reflect a new regulatory approach. Therefore, replacing an on-the-day approach with any form of trailing average will involve a substantial change to the debt financing risk of a network business and is likely to raise a number of

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<sup>7</sup> See: CitiPower, Powercor Australia and SA Power Networks, Response to the AER's Draft Rate of Return Guideline, 11 October 2013, page 7; SP AusNet, Rate of Return Guideline Consultation Paper, 21 June 2013, page 1; and Jemena, Submission on the Rate of Return Guidelines– AER Issues Paper, 15 February 2013, page 15.

transitional issues. Consequently, it is important that, prior to implementing a trailing average approach, a regulatory authority undertakes a consultation process that:

- allows all businesses, as well as other stakeholders, to analyse the implications of adopting the new framework;
- provides an opportunity for businesses to raise any implementation issues, specifically where the framework penalises a business for its current approach to mitigating debt refinancing risk; and
- develops transitional measures that allow businesses to, where relevant, unwind current debt financing arrangements without penalty or reward.