

28 January 2021

Charles Millsteed
Chief Executive Officer
Queensland Competition Authority

Dear Charles,

Re: Response to the QCA Rate of Return Review request for comments

DBI welcomes the opportunity to respond to the QCA's recent Request for Comments paper on its rate of return review. DBI considers that the review is timely and that it covers some important elements comprising the rate of return expected by investors to compensate them for investing their capital in businesses the QCA regulates.

In response, please find attached an expert report prepared by HoustonKemp Economists on behalf of DBI, which reflects DBI's position on the relevant matters. While the report largely covers the topics raised by the QCA in its Request for Comments paper, it makes further recommendations for the QCA's consideration on broader issues relating to rate of return matters.

DBI considers that the attached report covers important considerations for the QCA in its current review, such as how the QCA may retain internal consistency in its estimation methodologies and when applying its discretion, as well as the need for a framework to address the inherent uncertainty in the setting of an appropriate rate of return. The report also briefly touches upon the real and rapidly emerging impacts that ESG considerations are having on the cost of capital for firms operating within the coal supply chain.

Yours sincerely,



Jonathan Blakey
General Manager – Commercial & Regulation
Dalrymple Bay Infrastructure Limited

Attached: HoustonKemp Economists expert report - 'QCA's rate of return review'



HOUSTONKEMP
Economists

QCA's rate of return review

A report for Dalrymple Bay Infrastructure

28 January 2021

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1. Introduction

We have been asked to prepare this report by Dalrymple Bay Infrastructure Management Pty Limited (DBI). Its subject is the Queensland Competition Authority's (QCA's) request for comments in the context of the QCA's review of the approach by which it determines reasonable rates of return for the businesses it regulates.

The QCA's request for comments paper poses a range of tightly focused questions concerning particular elements of an estimation methodology for the rate of return. The QCA also indicated that its review process may include 'approaches, models, methods and statistical techniques' applied in determining reasonable rates of return, and invited:¹

...submissions on any aspect relating to the consideration of rate of return matters...

The principal issues raised by the QCA concern the potential implementation of a trailing average estimate of the cost of debt, the set of comparable businesses and sampling questions arising in estimating asset beta and approaches to estimating the market risk premium.

Notwithstanding, the intended scope of the QCA's review omits a number of methodological considerations that have the potential to improve its estimation approach. These considerations are:

- the **form of the rate of return**, including the appropriateness of an internally consistent estimation methodology, such as that applied by the Independent Pricing and Regulatory Tribunal (IPART);
- the effect of **forecast inflation** on the overall rate of return, particularly since the Australian Energy Regulator (AER) recently announced material changes to the methodology by which it forecasts inflation; and
- a framework for addressing **uncertainty** in the estimation of the rate of return.

Important context to the QCA's review, which reinforce the relevance of the above considerations, is:

- the inherent uncertainty associated with estimations of the rate of return;
- that the QCA last reviewed particular elements of its approach in 2014 and 2015 and, before that, last undertook a comprehensive review of its methodology in 2004;² and
- the QCA's recent application of adjustments to the rate of return in some but not other regulatory decisions, without a framework to evaluate their appropriateness, magnitude or implications.

By way of example, around two years ago the QCA cited a range of reasons for adjusting its initial estimate of the rate of return for Aurizon Network (Aurizon), having regard to the factors set out in section 138(2) of the QCA Act. However, the QCA then quantified that adjustment by reference to two alternative regulatory approaches with no apparent link to the cited reasons for making an adjustment.³

In other words, there was no clear chain of logic that linked the concerns that the QCA identified with the measures it proposed to address them. The apparently ad hoc nature of this decision was underlined when Aurizon and its customers subsequently agreed to a yet higher reasonable rate of return, with the potential for further increases.⁴

¹ QCA, *Request for comments – Rate of return review*, November 2020, p 3.

² See: QCA, *Final decision – Cost of capital: market parameters*, August 2014, p 2; and QCA, *Final decision – Trailing average cost of debt*, April 2015.

³ QCA, *Decision – Aurizon Network's 2017 draft access undertaking*, December 2018, pp ii, vii and 74.

⁴ QCA, *Decision – Aurizon Network's Revised UT5 draft amending access undertaking*, December 2019, p 3.

Shortly thereafter, the QCA rejected the application of a similar adjustment to the rate of return for Queensland Rail (QR), but with that decision not apparently informed by the same reasons that led it to apply such an adjustment for Aurizon. Rather, the QCA rejected an adjustment because it had adopted the two alternative regulatory approaches that, separately, had been used to estimate the *magnitude* of an adjustment for Aurizon.⁵

Further, one of the two elements of its approach that the QCA cited as a basis for rejecting an adjustment – the adoption of a ten year term for the risk free rate – actually had a much lesser impact on QR's allowed rate of return than was the case for Aurizon. This is because the QCA separately determined that a ten year term for the risk free rate necessitated a change to the methodology by which it forecast inflation.⁶ We discuss these decisions by the QCA in section 4.1.

In our opinion, this sequence of events highlights the need for a more fundamental rethink of the QCA's approach and, specifically, how it exercises the need for discretion that arises from the inherent uncertainty associated with estimating a reasonable rate of return. The QCA's 2021 rate of return review is therefore a timely and important opportunity to address these issues.

Against this backdrop, there are material benefits to placing consideration of the section 138(2) factors within an analytical framework by which to enable and guide the exercise of discretion and judgement by the QCA. This would improve the consistency, transparency and predictability of its decisions.

Such a framework arises from the approach we propose in this report as to:

- the form for the rate of return, being that similar to the approach applied by the Independent Pricing and Regulatory Tribunal (IPART); and
- the framework for addressing uncertainty, which draws on the approach applied by the Commerce Commission in New Zealand (the Commission).

The remainder of our report is structured as follows:

- in section two we discuss a potential alternative form for the rate of return that draws on internally consistent estimates of the rate of return and provides for the exercise of principle-based discretion;
- in section three we explain the effect of the QCA's estimate of forecast inflation on the achieved rate of return for regulated businesses;
- in section four we describe the need for a framework to address uncertainty in the QCA's estimation of the rate of return, and explain the approach applied by the Commerce Commission;
- in section five we comment on perspectives that could be brought to the QCA's decision as between a trailing average cost of debt and a trailing average debt risk premium; and
- in section six we discuss the selection of comparable businesses by which to estimate asset beta for regulated businesses.

In Appendix A1 we highlight the potential for reference day bias in the estimation of weekly and monthly beta, and explain how to overcome that potential source of bias.

⁵ QCA, *Decision – Queensland Rail 2020 draft access undertaking*, February 2020, p 53.

⁶ QCA, *Decision – Queensland Rail 2020 draft access undertaking*, February 2020, p 75.

2. Form of the rate of return

In our opinion the QCA should consider the adoption of an alternative form of the rate of return, being one that draws on two internally consistent estimates of the rate of return and provides for the exercise of principle-based discretion.

The QCA's current methodological approach reflects a combination of historical and forward-looking perspectives, but has not come about through consideration of the competing objectives implicit in those perspectives.

By way of example, the QCA:

- estimates the MRP using a combination of current and historical data;
- combines that MRP with an estimate of the prevailing risk free rate; and
- applies the resulting cost of equity alongside a prevailing cost of debt and, in potential future decisions, this may be a historical average cost of debt.

The use of historical data reflects a focus on the recovery of a business's historical financing costs, which is relevant to meeting investor expectations associated with past investments in infrastructure services.

By contrast, an emphasis on current market data reflects a focus on the provision of incentives for efficient future investment, which is more relevant to meeting investor expectations associated with upcoming capital programs.

2.1 Proposed alternative approach

An alternative approach that would better reconcile these competing objectives would be to derive two internally consistent estimates of the rate of return, one using current market data, and the other using historical market data. These estimates would establish the bounds of a range from which to select a point estimate for the reasonable rate of return.

In our opinion, the selection of a point estimate for the reasonable rate of return should be informed by a transparent and objective framework. One approach would be to adopt the midpoint unless certain circumstances suggested otherwise, eg, a significant upcoming capital program or atypical market conditions.

Such an approach would be similar to that adopted by IPART,⁷ and would:

- involve internally consistent estimates of the rate of return;
- provide for the transparent and principles-based exercise of discretion by the QCA; and
- give rise to more stable and predictable estimates of the rate of return through time.

IPART's reasons for adopting a similar approach were that:⁸

- investor expectations are informed by historical and prevailing returns;
- a cost of debt that reflects prevailing and historical rates is consistent with the financing outcomes of unregulated businesses;

⁷ IPART, *Review of our WACC method*, Final Report, February 2018. Available at: <https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-administrative-legislative-requirements-sea-wacc-methodology-2017/final-report-review-of-our-wacc-method-february-2018.pdf>.

⁸ IPART, *WACC methodology research — interim report*, June 2013, pp 11-12.

- a cost of equity that reflects prevailing and historical rates is consistent with estimates of the cost of equity by independent experts; and
- market analysts often adopt a similar approach.

3. Forecast inflation and the overall rate of return

A regulated business will only expect to receive the overall rate of return determined by the QCA if the QCA also adopts a best estimate of forecast inflation, ie, a business can expect to be undercompensated relative to the determined reasonable rate of return if the forecast inflation adopted within that same framework is biased upwards.

Box 3.1 – Role of forecast inflation in the QCA's price setting framework

Inflation plays two roles in the QCA's price setting framework, ie: (i) an allowance for actual inflation applicable at the end of each year is added to the regulatory asset base (RAB) of a regulated service provider in the context of the roll-forward process for updating the RAB; and (ii) an offsetting allowance – based on the level of forecast inflation estimated to apply from the commencement of each (typically, five-year) price-setting period – is deducted from each year's allowed revenues.

If forecast inflation incorporates an upwards bias, the forecast 'inflationary gain' that is deducted from each year's allowed revenue will be higher than the forecast 'indexation adjustment' that investors expect to be added to a service provider's RAB.

The consequence is that a regulated service provider will expect to receive less than the overall return reflected in the reasonable rate of return (expressed in nominal terms) determined by the QCA.

The QCA's current methodology for determining forecast inflation does not produce a 'best estimate' and, in the current market conditions, is likely to incorporate an upwards bias.

The existence of bias and its consequences is underlined by the recent decision of the Australian Energy Regulator (AER) – which has to date adopted the same approach to forecast inflation as the QCA – to make changes to its inflation forecast methodology.

The improvements to its inflation forecast methodology announced by the AER as at December 2020 would – on prevailing market data – have the effect of reducing its inflation forecast to 1.80 per cent, from 2.25 per cent.⁹

3.1 QCA's approach

The QCA currently forecasts inflation using the 'Reserve Bank of Australia (RBA) forecast' method, which involves calculating forecast inflation as being equal to the geometric mean of:

- the RBA's headline inflation forecast for the first two years, currently one per cent and 1.5 per cent;¹⁰ and
- the mid-point of the target range for inflation adopted by the RBA (2.5 per cent) for the remaining years of the forecast period.

The QCA's recent extension of the inflation forecast period from five to ten years had the effect of including an additional five observations of 2.5 per cent in the above geometric average, which increased the quantum of the forecast inflation component to be deducted from a regulated business's (typically, five-year) allowed revenue forecast.

⁹ Calculated by reference to inflation estimates of 1 per cent, 1.5 per cent, 1.83 per cent, 2.17 per cent and 2.5 per cent in years one to five, respectively.

¹⁰ RBA, Statement on Monetary Policy – November 2020, p 81.

The stated reason for adopting a ten year inflation forecast period was that:¹¹

...estimating inflation over a 10-year period to match the term of the risk-free rate is appropriate, as it most accurately reflects the relevant term of expected inflation for the regulatory context.

The QCA did not present any further analysis in support of its decision to adopt of a ten year forecast period.

3.2 AER's new methodology

In years gone by, the AER estimated forecast inflation using the same approach as is currently applied by the QCA.

In December 2020, the AER announced changes to its approach that are directed to producing a best estimate of inflation.¹² In particular, the AER concluded that its previous approach can be improved by:¹³

- Shortening the target inflation horizon from ten years to a term that matches the regulatory period (typically five years).
- Applying a linear glide-path from the RBA's forecasts of inflation for years 1 and 2 to the mid-point of the inflation target band (2.5 per cent) in year 5.

In our view, the revised approach by which the AER will now forecast inflation represents a significant improvement to its previous approach.

The reduction in the forecast period to five years reflects advice from Dr Martin Lally – who has also advised the QCA on matters related to forecast inflation and the rate of return – that a five year forecast period:¹⁴

...is appropriate even if a ten year horizon is used to estimate the rate of return.

The AER also explained that the reduction in the forecast period reflects:¹⁵

...the sustained decline in the required rate of return and the increased difference between 5 and 10 year inflation expectations due to short-term fluctuations in inflation expectations.

3.3 Assessment of QCA approach

In our opinion the QCA's current approach does not produce a 'best estimate' of future inflation and, in the current market conditions, is likely to incorporate an upwards bias.

3.3.1 Mid-point of the target range overstates expected inflation

The likely existence of an upwards bias arises from the fact that eight of the ten observations in the QCA's forecast period, as adopted in its most recent decision, are equal to the mid-point of the RBA's inflation target, ie, 2.5 per cent.

Recent statements by the Governor of the RBA, Philip Lowe, indicate that inflation is not expected to be within its target range for an extended period. He explained that:

...Australia is likely to experience a run of years with unemployment too high and wage increases and inflation too low, leaving us short of our goals.¹⁶

¹¹ QCA, *Decision – Queensland Rail 2020 draft access undertaking*, February 2020, p 75.

¹² AER, *Final position – Regulatory treatment of inflation*, December 2020, p 6.

¹³ AER, *Final position – Regulatory treatment of inflation*, December 2020, p 6.

¹⁴ AER, *Final position – Regulatory treatment of inflation*, December 2020, pp 6 and 7.

¹⁵ AER, *Final position – Regulatory treatment of inflation*, December 2020, pp 6 and 7.

¹⁶ RBA, Opening Statement to the House of Representatives Standing Committee on Economics, 2, December 2020, p 2.

...the Board will not increase the cash rate until actual inflation is sustainably within the 2 to 3 per cent target range... Given the outlook, the Board is not expecting to increase the cash rate for at least 3 years.¹⁷

...inflation dynamics have changed. This has made relying on forecasts more difficult. Given this, we have now moved to place much more weight on actual outcomes, rather than forecast outcomes, in our decision-making and in our forward guidance.¹⁸

The RBA's views suggest that an inflation forecast of 2.5 per cent from year three onwards is not a best estimate of inflation. This is reinforced by the AER's introduction of a linear glidepath to 2.5 per cent over the course of its forecast period.

Consistent with this, we recently presented the QCA with empirical evidence that:¹⁹

...the RBA inflation target is a biased estimator of 10-year inflation.

3.4 Summary

In our view, the revised approach by which the AER will now forecast inflation represents a significant improvement to its previous approach, as currently adopted by the QCA. The AER's revised approach involves the application of the RBA forecast method with:

- a forecast horizon that matches the term of the regulatory control period, typically five years; and
- a linear glidepath to a point within the RBA's target range.

For the reasons we explain above, the QCA should carefully consider this revised approach and the reasons for which the AER concluded that a change in approach was necessary.

Further, in our opinion the end point of a linear glide path should be determined by reference to available evidence on medium term inflation expectations. In current market conditions, a linear glidepath to the lower bound of the RBA target range of two per cent – rather than the midpoint of 2.5 per cent – seems more likely to produce a best estimate of forecast inflation.

Unless the QCA alters its approach so that it is more likely to produce a best estimate of forecast inflation, regulated businesses can expect to be undercompensated relative to the QCA's estimate of their reasonable rate of return.

3.4.1 An optional target nominal return

If the QCA maintains the position that its current approach produces a best estimate of inflation, it should allow a regulated business to choose between price setting frameworks that adopt either:

- a target real rate of return, consistent with the QCA's current approach, as applied using its current inflation forecasting approach; or
- a target rate of nominal return, which would require indexation of the asset base on the basis of the same rate of *expected* inflation used to derive the inflation-related deduction from allowed revenue.

The application of one or other of these approaches will be equivalent in present value terms, provided a target real rate of return is applied in combination with a best estimate of forecast inflation.

¹⁷ RBA, Statement by Philip Lowe, Governor, *Monetary Policy Decision*, 1 December 2020.

¹⁸ RBA, Speech by Philip Lowe, Governor, *COVID, Our Changing Economy and Monetary Policy*, 16 November 2020, p 11.

¹⁹ HoustonKemp, *Evaluation of inflation forecasting methods*, September 2019, p 9.

Targeting a real rate of return through cash flows – as implied by the QCA's price setting framework – protects a regulated business from the effect of *unanticipated* consumer price inflation during an access undertaking. Normally, the securing of such protection would be attractive for a regulated entity.

In contrast, the selection by a regulated business of a target nominal return price setting framework would reflect the apprehension that taking on the additional risk of being exposed to unanticipated consumer price inflation was preferable to realising a very likely downside risk, ie, being undercompensated for inflation due to an upwards bias in the QCA's estimate of forecast inflation.

4. Framework to address uncertainty

The QCA highlights in its request for comments that determining reasonable rates of return for regulated entities is subject to uncertainty and the exercise of judgement. It observed that:²⁰

- If the rate of return is *too low*, it could have a chilling effect on investment leading to inadequate capacity and/or service quality and potentially reduce revenues to the point where the financial sustainability of a regulated entity is endangered.
- Conversely, if the rate of return is *too high*, a regulated entity could be encouraged to over-invest, leading to inefficient capital allocation in the economy and higher prices that could reduce consumer welfare or discourage investment in dependent markets.

We agree with the QCA that consideration of the consequences of setting the rate of return *too low* or *too high* is important and that estimating a reasonable rate of return is subject to uncertainties, whether expressed as:

- uncertainty of the approach that should be applied for estimation of the rate of return; or
- uncertainty of the estimates arising out of the application of any particular approach.

In our opinion, provision of an explicit framework for consideration of these consequences would improve the QCA's determinations of reasonable rates of return. The principal benefit of such a framework is that it would provide much greater predictability and transparency to the QCA's exercise of discretion as concerns the overall rate of return. By contrast, the QCA's current approach to exercising discretion is relatively unpredictable and opaque, as evidenced by its recent decisions for Aurizon and QR, which we discuss in section 4.1 below.

The New Zealand Commerce Commission (the Commission) is an example of a regulator with a very well-developed framework for the consideration of uncertainty. The Commission selects a rate of return 'percentile' so as to maximise consumer welfare – through bringing into line:

- the expected costs for consumers resulting from overestimation of the rate of return and thereby charging consumers too high a price for regulated services; and
- the expected costs for consumers resulting from underestimation of the rate of return and thereby potentially foregoing investments that underpin service quality or reliability.

This parameterisation of statistical uncertainty of the rate of return brings discussion of the consequences of underestimating or overestimating the rate of return into a well-accepted framework, which we explain in more detail in section 4.2.

The adoption of a comparable framework by the QCA would likely be different from that applied in New Zealand, both in terms of its ultimate objective and the approach to achieving that objective, as discussed in section 4.3.

²⁰ QCA, *Rate of return review*, Request for comments, November 2020, p 3.

It is important to emphasise that the adoption of such a framework does not require a 'mechanistic, rule-based approach to calculating a rate of return', to which the QCA is opposed.²¹ Rather, it would provide an explicit framework within which the QCA can:

- consider the factors to which it is required to have regard; and
- exercise its discretion in a way that promotes transparent, predictable and consistent future regulatory outcomes.

4.1 QCA's approach

In our opinion, the QCA's current approach to addressing uncertainty involves the exercise of discretion that is relatively opaque and unpredictable. It therefore does not provide any degree of assurance as to how the QCA may seek to approach an issue in the future, and so is unlikely to promote more efficient investment in long-lived assets.

This shortcoming is well-illustrated by reference to the QCA's recent rate of return decisions for Aurizon and QR. In those decisions, the QCA drew upon the factors set out in section 138(2) of the QCA Act to raise the prospect that its 'bottom-up' estimate of the reasonable rate of return might require adjustment.

By way of example, in its final decision on Aurizon's UT5 draft access undertaking, the QCA explained that:²²

...ultimately the QCA must give consideration as to whether the overall WACC is appropriate to approve, having regard to the factors in s. 138(2) of the QCA Act. The QCA considers that simply applying a mechanistic approach to a bottom-up WACC estimate will not necessarily ensure an appropriate overall WACC for the provision of access to the CQCEN.

While the bottom-up WACC assessment provides a means for assessing an appropriate rate of return for Aurizon Network, the QCA's consideration of an appropriate WACC requires judgement to be applied. In considering whether the overall WACC is appropriate to approve, amongst other things, the QCA has taken into consideration the:

- risk of Aurizon Network's legitimate business interests not being satisfied, arising from an estimate of Aurizon Network's WACC using the bottom-up assessment for the proposed averaging period;
- asymmetric consequences of setting a WACC that is not commensurate with Aurizon Network's commercial and regulatory risks; and
- uncertainty inherent in estimating a WACC for the provision of access to the CQCEN.

In this passage, the QCA appears to be laying the groundwork for a framework to adjust the allowed rate of return so as to address the concerns that it raises. However, the QCA's approach to quantifying the adjustment that responds to these concerns is condensed to consideration of two alternative approaches to estimating the allowed rate of return. The QCA explains that:²³

In light of these considerations, and noting concerns raised with applying the QCA's bottom-up WACC assessment for the proposed averaging period, the QCA considers there is merit in considering alternative time-variant parameter estimates. The QCA has exercised judgement with reference to the QCA's bottom-up WACC assessment and given consideration to alternative approaches adopted by other Australian regulators, specifically:

- a 10-year bond term (and not a term-matched bond) to estimate the risk-free rate, which provides for a WACC of around 5.75 per cent; and

²¹ QCA, *Rate of return review*, Request for comments, November 2020, pp 6-7.

²² QCA, *Aurizon Network's 2017 draft access undertaking*, Decision, December 2018, pp 73-74.

²³ QCA, *Aurizon Network's 2017 draft access undertaking*, Decision, December 2018, p 74.

- an average of the interpolated RBA and Bloomberg estimates of the 10-year BBB debt risk premium for the proposed averaging period, which provides for a WACC of around 5.57 per cent.

The QCA notes that a WACC of 5.7 per cent is within the range of estimates derived from adopting either of these approaches.

In our opinion, there is no chain of reasoning that links the concerns identified with the measures the QCA proposes to address them.

The QCA does not explain how its judgement led it to conclude that the use of either a ten year risk free rate (as opposed to a five year risk free rate) or alternatively a BBB credit rating (instead of BBB+) is an appropriate response to the considerations that it raises. A statement that various factors have been taken into account in an exercise of judgement does not, in itself, provide a means for regulated service providers or stakeholders to understand, and be able to predict with some degree of confidence, how uncertainty will be accounted for in the regulatory framework.

These shortcomings were underlined in the QCA's more recent decision in relation to the reasonable rate of return for QR, in which it rejected a similar adjustment to the rate of return on the basis that it had already provided for a ten year risk free rate, ie:²⁴

Queensland Rail considered that our decision to provide a 25 basis point uplift to the bottom-up WACC in the Aurizon Network UT5 final decision was a signal that our bottom-up rate of return may not provide a sufficient rate of return.

The 25 basis point uplift to the bottom-up WACC in the Aurizon Network UT5 final decision was provided by having reference to both a 10-year bond term to calculate the risk free rate, and a cost of debt based on BBB-rated corporate bonds. As part of the Queensland Rail 2020 DAU final decision we have calculated our bottom-up estimate using a 10-year term for the risk free rate and a cost of debt based on BBB and BB-rated corporate bonds. Consequently, we do not consider that this indicates that the rate of return that we have estimated as part of our bottom-up analysis is inappropriate.

In this passage the QCA concludes that because it had relaxed *both* of the factors that, individually, had been used to justify the magnitude of its previous adjustment, no adjustment to its bottom-up rate of return estimate is appropriate. Again, this statement assumes a link (when none had been established) between these adjustments and the factors at section 138(2).

Further, the QCA's stated reasoning did not account for the fact that, in totality, the change from a five year risk free rate to a ten year risk free rate did not have the effect of increasing QR's allowed rate of return by the extent that it cited for Aurizon because:

- moving from a five year term to a ten year term had a much smaller upwards effect on the risk free rate at the time the QCA made its decision for QR, as compared to the time it made its decision for Aurizon;²⁵ and
- a direct consequence of the QCA's decision to adopt a ten year term for the risk free rate was its decision to derive a forecast inflation estimate 15 basis points higher than it would otherwise have estimated,²⁶ which had an offsetting downwards effect on the allowed revenue applicable for QR.

²⁴ QCA, *Queensland Rail 2020 draft access undertaking*, Decision, February 2020, p 53.

²⁵ During Aurizon's averaging period in June 2017, yields on ten year Australian government bonds were 55 basis points higher than for a four year term (matching the term of Aurizon's pricing period). During QR's averaging period (the 20 days to 15 November 2019) yields on ten year Australian government bonds were only 29 basis points higher than for a five year term (matching the term of QR's pricing period).

²⁶ This was because the QCA concluded that it must also adopt a ten year forecast period for forecast inflation, rather than a five year forecast period, as discussed in section 3.1.

Against this backdrop, in our opinion there would be material benefits from placing consideration of the factors at section 138(2) of the Act within an analytical framework that promotes the transparent and predictable exercise of judgement. In section 4.2 below we describe the approach applied by the Commission.

4.2 New Zealand Commerce Commission's approach

The purpose of the regulatory regime that applies to New Zealand electricity and gas network businesses is to promote the long term benefit of consumers, including:

- ensuring suppliers of regulated services have incentives to invest and innovate, which will benefit consumers over time; and
- ensuring suppliers of regulated services are limited in their ability to extract excessive profits.

The Commission adjusts its allowed rate of return through an explicit assessment of the economic costs and risks of under and over investment in regulated networks. It does this as part of its five-yearly Input Methodologies decision.

The Commission seeks to balance the effect of uncertainty in estimating the cost of capital in terms of its positive and negative effects on consumers. To achieve this, it contemplates a departure from its mid-point estimate of the rate of return.

In its initial Input Methodologies final decision, the Commission determined that it would apply a cost of capital that corresponded with its estimate of the 75th percentile in the distribution of estimates of the true cost of capital.²⁷ Subsequently, the Commission reviewed its approach to the 'cost of capital percentile' and revised it downward to the 67th percentile.²⁸ This value is calculated as:

- the mid-point estimate of the cost of capital; plus
- 0.440 multiplied by the standard error of the cost of capital.²⁹

At the time of the Commission's most recent calculation of the cost of capital, the cost of capital uplift from the 50th percentile implied by adoption of the 67th percentile was 0.46 per cent.³⁰

The Commission's revised approach is based on advice it received from Oxera.³¹ The framework that it applies to estimate the cost of capital percentile is to consider the trade-off between:³²

- the costs of setting the allowed rate of return *too high* resulting in consumers being charged too much for regulated services; and
- the costs of setting the allowed rate of return *too low* resulting in reduced incentives to innovate and invest, potentially leading to lower service quality and the deferred introduction of new services or technologies.

As a matter of principle, if the costs of setting the allowed rate of return too high and the cost of setting it too low are similar, it is unlikely there will be much benefit to consumers from departing from a mid-point

²⁷ Commerce Commission, *Input methodologies determination applicable to electricity distribution services pursuant to Part 4 of the Commerce Act 1986*, 22 December 2010, 4.1.9(1).

²⁸ Commerce Commission, *Amendment to the WACC percentile for price-quality regulation for electricity lines services and gas pipeline services*, Reasons paper, 30 October 2014.

²⁹ Commerce Commission, *Electricity distribution services input methodologies determination 2012*, 3 April 2018, 2.4.5(5)(b).

³⁰ Commerce Commission, *Cost of capital determination for disclosure year 2021*, 30 October 2020, p 4.

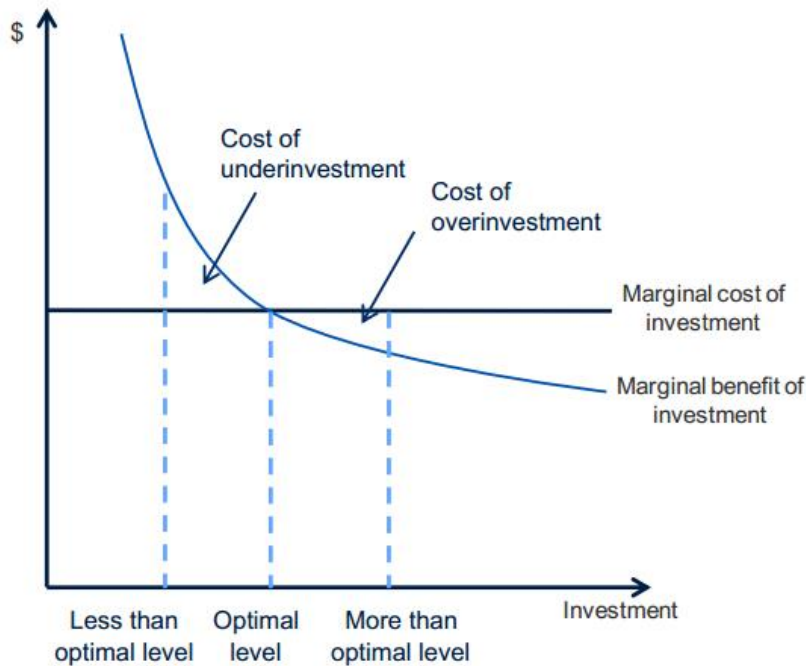
³¹ Oxera, *Input methodologies: review of the '75th percentile' approach*, 23 June 2014.

³² Commerce Commission, *Amendment to the WACC percentile for price-quality regulation for electricity lines services and gas pipeline services*, Reasons paper, 30 October 2014, pp 37-38.

estimate of the cost of capital. However, where there are asymmetric consequences, it may benefit consumers to determine a reasonable rate of return that is either higher or lower than the mid-point estimate.

The figure below, drawn from Oxera's advice to the Commission, illustrates the circumstance in which the cost of underinvestment from setting the allowed rate of return too low exceeds the cost of overinvestment from setting the allowed rate of return too high.

Figure 4.1: Asymmetric costs of over- and under-investment



Source: Oxera

Oxera recommended that the Commission adopt a point estimate of the allowed rate of return at around the 60th to 70th percentile of the distribution of estimates of the true cost of capital, and that an estimate in this range would appropriately balance the costs and benefits described above.³³

4.3 Potential for application by the QCA

The New Zealand framework for addressing the effects of uncertainty would likely require significant modification to be appropriate in the Queensland context. In this section, we outline the principal modifications that would need to be considered for its application under Part 5 of the QCA Act.

The regulatory regimes applied by the QCA are different from those that apply in New Zealand. The Commission administers various regulatory regimes, but each applies to services that are ultimately paid for by mass market customers. This is reflected in the objectives of these regimes, which generally refer to the promotion of consumers' long-term benefit.

There are no equivalent provisions in the QCA Act and, even if there were, it is unlikely they would apply similarly. Access to infrastructure under Part 5 the QCA Act is an intermediate service often provided to multi-national corporate customers involved in the provision of intermediate goods for overseas markets, ie, the service is not used by the ultimate consumer, who is often located outside of Australia.

³³ Oxera, *Input methodologies: review of the '75th percentile' approach*, 23 June 2014, p 73.

The objective applied by the Commission in New Zealand, and by the AER in Australia, is to promote the long term benefit of consumers. This is not an objective that is prescribed by the QCA Act and is not obviously consistent with the various factors to which the QCA must have regard in making an access determination.

The broad range of factors listed at section 138(2) of the QCA Act affords the QCA discretion in approving a draft access undertaking. Many of these factors appeal to economic considerations that, when taken together, lend weight to an economic objective of total welfare maximisation.

In the first instance, factor (a) is 'the object this part', which is:

...to promote the economically efficient operation of, use of and investment in, significant infrastructure by which services are provided, with the effect of promoting effective competition in upstream and downstream markets.

In economics, competition is not an end in itself but, rather, is the means by which welfare is enhanced. Similarly, the concepts of economic efficiency and welfare are intrinsically linked in the economics literature, namely in the field of 'welfare economics'.

An improvement in economic efficiency can be measured by reference to the consequence on total welfare, where optimal economic efficiency is achieved by the maximisation of total welfare.³⁴ The QCA similarly explained in its statement of regulatory pricing principles that:³⁵

...unless otherwise directed by Government, economic efficiency will normally be given priority over other criteria. This is consistent with the interpretation of economic efficiency as a total welfare (economic) or public interest concept.

In general terms, total welfare is maximised when the combined welfare of consumers and producers – weighed on equal terms – cannot be improved. The position of consumers and producers is measured by 'consumer surplus' and 'producer surplus', respectively, and referred to collectively as 'total surplus'.

It follows that the promotion of both economic efficiency and competition are directed at the enhancement of total welfare, ie, the maximisation of 'total surplus'.

The requirement to have regard to the 'public interest' is also consistent with this economic objective, as recognised by the QCA in the statement above. Although the 'public interest' is not a term of art in economics, the field of 'public economics' is also concerned with the promotion of total welfare, which suggests that the economic consideration of the 'public interest' should similarly encompass the welfare of both producers and consumers.

Further, the factors at section 138(2) appeal to the economic interests (or welfare) of both access seekers and service providers, and it is not apparent that they should be applied to give priority to the welfare of one over the other, consistent with an objective of maximising total welfare.

For the reasons we explain above, the broad economic considerations identified in the factors at section 120(1) are all consistent with an economic objective of maximising total welfare. In our opinion, the economic application of these factors should therefore be directed at the maximisation of total welfare, as distinct from the Commission's approach.

³⁴ Through time and subject to resource and technical constraints.

³⁵ QCA, *Statement of regulatory pricing principles*, August 2013, p vi.

Further considerations follow from this conclusion that are also relevant to application of any such framework in Queensland. If total welfare is the objective of the framework, then it follows that, in contrast to the approach in New Zealand:

- the potential harm from setting the rate of return *too high* is likely to arise from a reduction in quantity demanded, and therefore an increase in deadweight loss, caused by setting prices that exceed the value of the service to the user; whereas
- the potential harm from setting the rate of return *too low* is likely to arise from reduction in investment in either additional capacity or enhanced quality, and therefore an increase in deadweight loss, caused by setting prices that fall short of the economic costs of the service provider.

It follows from these observations that the key factors driving the prospect of these outcomes are the uncertainty associated with setting prices that are *at least* equal to the economic costs of the service provider (including the uncertainty associated with the rate of return) and the related uncertainty associated with setting prices that are *at most* equal to the value accrued by users.

4.4 Summary

In our opinion, the QCA's current approach to addressing uncertainty involves the exercise of discretion that is relatively opaque and unpredictable. It therefore does not provide any degree of assurance as to how the QCA may seek to approach an issue in the future, and so is unlikely to promote more efficient investment in long-lived assets.

Adopting a framework for the rate of return that considers the risk of setting the rate of return too high or too low would go a long way to improving the quality of the QCA's consideration of section 138(2) factors, through enhancing the transparency and predictability of its use of discretion and judgement.

It would also provide a route for the QCA to identify factors that drive the need for a specific adjustment to access prices (or the rate of return) and the means by which to estimate the magnitude of such adjustment.

The New Zealand Commerce Commission is an example of a regulator with a well-developed framework for the consideration of uncertainty, although its approach would likely require significant modification to be appropriate in the Queensland context.

5. Trailing average cost of debt

In this section we discuss key questions posed by the QCA in relation to the implementation of a historical trailing average cost of debt.

5.1 Trailing average yield or debt risk premium

The most fundamental question put forward by the QCA on the cost of debt concerns whether it should be set equal to:

- a ten year historical average yield (a trailing average yield); or
- a ten year historical average debt risk premium (DRP), plus a prevailing risk free rate (a trailing average DRP).

If the QCA's objective is to align the regulatory allowance for the cost of debt with that of an efficient benchmark business operating in a competitive market, then it should adopt a trailing average yield. A trailing average yield is more likely to meet this objective, since such a business would stagger the issuance of its debt so as to minimise refinancing risk. Further, a business in a competitive market would have no reason periodically to fix the underlying risk free rate. In contrast, regulated businesses have an incentive to fix the underlying risk free at the time the allowed rate of return is determined, since regulatory revenues act as a hedge against the movement in the underlying risk free rate.

Further, the adoption of a trailing average yield would be expected to reduce the long term cost paid by customers for regulated services because it avoids the need to include in the cost of debt an allowance for the cost of entering 'pay fixed – receive floating' swap contracts, as would be required from the adoption of a trailing average DRP.³⁶

Notwithstanding, we note that both approaches – a trailing average yield and trailing average DRP – would be expected to produce broadly similar estimates of the cost of debt in the long run, putting aside the cost of entering swap contracts under a trailing average DRP.

On a related point, in our view an historical trailing average cost of debt should be estimated by reference to yields on ten-year debt, reflecting that providers of infrastructure services using long-lived assets typically issue long-term debt. Consistent with the assumed issuance of ten year debt by a benchmark service provider, the historical trailing average cost of debt should be calculated over a historical ten year period.

5.2 Implementation

In our opinion, the QCA should immediately adopt a historical trailing average cost of debt.

The absence of any need for a transition reflects that, going forward, each of the methodologies contemplated by the QCA will be equivalent in present value terms over an extended horizon. Similarly, the majority of regulatory authorities in Australasia adopted a trailing average without any form of transition. For example:

- in 2013 IPART incorporated a trailing average yield in its approach, without any transition, and then in 2018 IPART increased its emphasis on trailing averages, again with no transition;³⁷

³⁶ The trailing average DRP assumes that the benchmark business enters 'pay fixed – receive floating' swap contracts to hedge its exposure to the risk free rate for the duration of an access undertaking.

³⁷ See: IPART, *Review of WACC methodology – Final Report*, December 2013, pp 10 and 11; and IPART, *Review of our WACC method*, February 2018, p 24.

- in 2015 the Economic Regulation Authority of Western Australia (ERA) adopted a trailing average DRP, with no transition;³⁸
- in 2016 the Essential Services Commission of South Australia (ESCOSA) adopted a trailing average yield, with no transition;³⁹ and
- in 2016 the Commerce Commission in New Zealand adopted a trailing average DRP, with no transition.⁴⁰

Notwithstanding the weight of such regulatory precedent, the question of transition to a trailing average allowance for the cost of debt often arises by way of reference to an earlier decision by the AER. However, that decision reflects very particular circumstances, as summarised in Box 5.1, that would not apply to the QCA's adoption of a historical trailing average cost of debt.

Box 5.1 – The AER's decision to transition to a trailing average

Following a suite of amendments to the national electricity rules and national gas rules (collectively, the rules), in 2013 the AER decided to transition to a trailing average cost of debt over ten years.

However, this decision reflected explicit requirements in the then-applying rules that:

- regard must be had to the impact on a benchmark business of changing the approach to estimating the cost of debt;⁴¹ and
- any impact must be explicitly provided for in the application of transitional measures.⁴²

The AER explained that the term 'any impact' allowed it to address a wide range of concerns, and its decision to apply transition arrangements drew on the AEMC's guidance as to the purpose of those provisions, which was that:⁴³

Consideration should be given to the potential for consumers and service providers to face significant and unexpected change in costs or prices that may have negative effects on confidence in the predictability of the regulatory arrangements.

Its purpose is to allow consideration of transitional strategies so that any significant costs and practical difficulties in moving from one approach to another is taken into account.

There are no equivalent provisions in the QCA Act and, even if there were, it is unlikely they would apply similarly in current market conditions, or to services provided to multi-national corporate customers involved in the provision of intermediate goods for overseas markets.

5.3 Weighting

The QCA has also asked whether the calculation of an historical trailing average cost of debt should:

- ascribe equal weight to each annual cost of debt observation over the historical period; or
- apply weights to those cost of debt observations to produce a weighted trailing average cost of debt.

³⁸ ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems Submitted by ATCO Gas Australia Pty Ltd*, June 2015, pp 321 and 351.

³⁹ ESCOSA, *SA Water Regulatory Determination 2016 – Final Determination*, June 2016, p 118.

⁴⁰ The Commerce Commission, *Input methodologies review decisions Topic paper 4: Cost of capital issues*, December 2016, p 38.

⁴¹ See: National Electricity Rules (NER), clause 6.5.2(k)(4) and 6A.6.2(k)(4); and National Gas Rules, rule 87(11)(d).

⁴² AEMC, *Final rule change determination*, 29 November 2012, p 85.

⁴³ See: AEMC, *Final rule change determination*, 29 November 2012, p 85; and AER, *Better Regulation Explanatory Statement – Rate of Return Guideline*, December 2013, p 120.

Economic efficiency is promoted by the determination of regulatory allowances for the cost of debt that reflect the cost of debt of a hypothetical, efficient benchmark business operating in similar circumstances.

A benchmark efficient business that staggers the issuance of debt is unlikely to finance broadly equal amounts of debt in each year, with the consequence that its cost of debt may not be best approximated by a simple average of historical debt yields.

One option is to apply weights to the debt yield observations in the historical average that reflect the relative magnitude of a benchmark business's debt financing requirements in each year, such that the resulting cost of debt reflects a *weighted* trailing average.

However, a wide range of factors influence a business's debt financing requirements from year to year, including the level of previously issued debt expiring in that year that requires (or does not require) refinancing and the time profile of capital expenditure.

The determination of a weighting mechanism that reflects the relative extent of a benchmark business's debt financing requirements in each year of the trailing average is a significant challenge.

The additional complexity introduced by the design of a sufficiently robust weighting mechanism may therefore outweigh any incremental improvement arising from a weighting mechanism. In the absence of compelling evidence to the contrary, in our opinion it would be appropriate to adopt an unweighted trailing average cost of debt.

The additional complexity introduced by the estimation of a weighted trailing average cost of debt is also the principal reason that other regulatory authorities have generally not adopted such an approach.

5.4 Credit rating

The QCA explains that its selection of a credit rating can involve consideration of business and financial risk, taking into account gearing, regulatory precedent and the credit rating of comparator firms.⁴⁴ It also highlights that it applies credit metrics to test whether a business is likely to remain financeable over the regulatory control period, based on its credit rating and forecast regulatory cash flows.⁴⁵

The QCA most recently determined the cost of debt for services provided by DBI by reference to two credit metrics.⁴⁶

Of relevance to the application of a similar approach in future decisions, we understand from DBI that environmental, social and corporate governance (ESG) considerations have already presented significant challenges for its financing activities. The effect of these challenges on both a benchmark business' credit rating and the ability to achieve an average yield for a given credit rating is not currently captured by the QCA's analytical framework.

It may therefore be relevant to investigate further the effect of ESG considerations on the cost of capital for a benchmark efficient business – including for its credit rating and cost of debt – and how such effects should be accounted for in the determination of a reasonable rate of return.

We discuss this matter in more detail in section 6.2.2.

We also note that *all relevant information* should be used to assess the cost of debt of a regulated business. One such source of information is the credit rating of comparable, listed businesses by reference to which asset beta is estimated. However, there may be many other relevant sources of information, including the

⁴⁴ QCA, *Request for comments – Rate of return review*, November 2020, p 10.

⁴⁵ QCA, *Request for comments – Rate of return review*, November 2020, p 10.

⁴⁶ These were funds flow from operations (FFO) divided by debt and FFO divided by interest cover. See: QCA, *Draft decision – DBCT Management's 2015 draft access undertaking*, April 2016, pp 55 to 58.

credit rating of comparable businesses that are not listed, and so were excluded from an analysis of asset beta.

5.5 Summary

If the QCA's objective is to align the regulatory allowance for the cost of debt with that of an efficient benchmark business operating in a competitive market, then it should immediately adopt a trailing average yield.

Further, in our opinion the QCA should adopt an equal-weighted trailing average unless there is compelling evidence that a weighting mechanism can be designed to elicit an incremental improvement in efficiency, without introducing disproportionate complexity to the cost of debt calculation.

It may also be relevant to investigate further the effect of ESG considerations on the cost of capital for a benchmark efficient business – including for its credit rating and cost of debt – and how such effects should be accounted for in the determination of a reasonable rate of return.

6. Asset beta

Asset beta is a measure of a firm's unleveraged systematic risk, ie, the underlying business risk of the firm if it were fully equity financed relative to the risk of the wider market.⁴⁷

The QCA's usual approach has been to estimate beta for a benchmark efficient business with a similar level of risk as the business for which it is making a determination. Its approach involves undertaking an assessment of key factors that determine the systematic risk of the business, and then identifying a pool of listed businesses with similar risks.

In this section we make some observations on questions posed by the QCA in relation to its evaluation of systematic risk and identification of comparable businesses.

In Appendix A1 we discuss the potential for reference day bias in the estimation of beta using weekly and monthly data.

6.1 Determinants of systematic risk

The estimation of equity beta should be guided by a forward-looking assessment of the factors that are most pertinent to the *long term* systematic risk of a business. This long term perspective reflects that investors evaluate risk over the life of an investment.

The principal determinants of DBI's systematic risk include:

- the nature of its cost and customer base – which expose DBI to the current and long term risks faced by the coal industry, and establish a reliance on the competitiveness of coal from the Bowen Basin;
- the absence of long-term contractual commitments from its customers, particularly in the context of future capital expenditure on long-lived assets;
- competition from other coal terminals to which its customers could seek access; and
- the specific features of the regulatory regime, such as the extent that DBI is insulated from short term demand and cost risk.

On this last point, we note that economic regulation plays only a limited role in the determination of systematic risk, since regulation may smooth a business's revenue over the short term, but cannot shield a business from long term systematic risk. We comment further on the role of regulation below.

6.2 Selection of comparators

The factors that determine systematic risk are strongly interrelated. For example, the nature of the customer base and the service influences the elasticity of demand and the contracting arrangements, as well as the degree of market power, which is in turn correlated with the application of regulation.

The consequence is that the identification of comparable businesses requires the application of a broad perspective to those factors.

The objective should therefore be the compilation of a pool of businesses that encompasses all the key drivers of systematic risk for the business in question. This pool of comparable businesses can then form the basis for the consideration of how and why the beta of companies with certain characteristics are different from others.

⁴⁷ A firm's *equity* beta incorporates this underlying business risk and the financial risk arising from the additional use of debt to fund the business.

It is unlikely that this approach would produce a pool of businesses from any one industry, or that have one particular characteristic in common.

Adopting this frame of analysis, the starting point should be listed businesses with the same or very similar principal determinants of systematic risk. These comparable businesses need not operate in the Australian market, but it will likely be appropriate to place an emphasis on those that do.

The closest comparators to DBI would be listed businesses providing port terminal services within the coal supply chain. The recent listing of DBI on the Australian Securities Exchange establishes one such comparator.

In the absence of a sufficient pool of comparable coal export terminals, the search should be expanded to encompass businesses that operate in different markets, but which face similar risks in one way or another.

This process should be characterised by a persistent sense-check on whether additional insights could be drawn from expanding the pool of comparators.

An undue emphasis on any one determinant of systematic risk will unnecessarily narrow the analysis and overlook the role of other key factors.

For example, the application of cost-based regulation was a common feature between regulated energy and water businesses and the then unlisted DBCTM (in previous access undertakings). However, an emphasis on regulated electricity and water businesses is likely to overlook a number of key drivers of systematic risk that are not common between these businesses, ie:

- DBI's customer base comprises a small number of large coal exporting companies, rather than a large, diverse group of predominantly small consumers;
- DBI provides a service for which long term demand is strongly linked to the sale of coal in international markets, rather than an essential service like electricity and water; and
- DBI is required to make disproportionately large capital investments to expand and maintain its capacity, and so is confronted with material real options risk.

In light of these differences, there is a strong likelihood that additional insights could be drawn from having some regard to the betas of coal mining companies. This would shed light on:

- whether the long term underlying systematic risk of DBI is above or below that of regulated electricity and water businesses; and
- the extent to which coal exports are sensitive to changes in market returns or real GDP, which the QCA has previously cited as a characteristic in common with regulated energy and water businesses.⁴⁸

6.2.1 Further observations on the relevance of regulation

The QCA previously relied on the existence of economic regulation and the application of regulatory controls on revenue as the primary factor by which to identify comparable companies. This reflected its view that:⁴⁹

...cost-based regulation insulates the business from earnings variations that would otherwise be pro-cyclical, resulting in a lower asset beta relative to the absence of cost-based regulation.

In support of this guiding principle the QCA cited studies that suggested beta was lower in regulated industries, as compared with unregulated industries.⁵⁰ These studies did not examine the effect of regulation *within* a particular industry, eg, with and without regulation.

⁴⁸ QCA, Appendices, *Aurizon Network's 2017 draft access undertaking*, December 2018, p 102.

⁴⁹ QCA, Appendices, *Aurizon Network's 2017 draft access undertaking*, December 2018, p 76.

⁵⁰ Incenta Economics, *Aurizon Network's WACC for the 2017 DAU | A report for the QCA*, December 2017, p 28.

Drawing such a conclusion from these studies therefore conflates the effect of regulation with other industry-specific factors that might contribute to lower beta, eg, the provision of essential services to mass market customers in the electricity industry.

The QCA's reliance on regulation as a guiding factor for the selection of comparators is also at odds with decisions by other regulatory authorities, which have adopted different asset betas for different industries – despite all sharing the common characteristic of 'regulation'. For example:

- the AER and Australian Competition and Consumer Commission (ACCC) have adopted asset betas of 0.375 for electricity networks and gas pipelines,⁵¹ 0.45 for coal rail networks,⁵² 0.5 for coal terminals,⁵³ and 0.5 for fixed line telecommunication services;⁵⁴ and
- the Commerce Commission adopted asset betas of 0.35 for electricity networks, 0.4 for gas pipelines, 0.6 for airports and 0.5 for telecommunications services.⁵⁵

Further, if the application of a control on revenue or prices had such a significant downwards effect on the cost of capital, businesses would be expected to adopt price or revenue mechanisms similar to those imposed by the regulators, or even opt to be price regulated.

By way of illustration, consider circumstances where the risk free rate and market risk premium are equal to one per cent and six per cent, respectively, and the application of a revenue cap could reduce a firm's equity beta from 1.0 to 0.6. In these circumstances the reduction in the cost of capital resulting from a revenue cap would increase by 52 per cent the present value of a constant nominal annuity.⁵⁶ This suggests a business could materially increase its market value from the application of some form of regulatory-style price control that 'insulates the business from earnings variations that would otherwise be pro-cyclical'.⁵⁷

The absence of firms committing themselves to such a mechanism suggests that regulation does not have the proposed substantive impact on beta that has previously guided the QCA's selection of comparators.

6.2.2 Environmental, social and corporate governance considerations

We understand from DBI that an emerging driver of its cost of capital is the effect of environmental, social and corporate governance (ESG) considerations on the risks faced by the coal industry, both now and in the future.

One example of the emerging focus on ESG considerations is the 2020 letter from the Chief Executive Officer (CEO) of industry leader Blackrock to CEOs, entitled 'A fundamental reshaping of finance', in which he explained that:⁵⁸

Climate change has become a defining factor in companies' long-term prospects.

⁵¹ For electricity networks and gas pipelines AER adopts an equity beta of 0.6, and a debt gearing ratio of 60%, which is equivalent to an asset beta of 0.375, see AER, *Rate of return instrument | Explanatory Statement*, December 2018, p 185.

⁵² ACCC, *Position Paper in relation to the Australian Rail Track Corporation's proposed Hunter Valley Rail Network Access Undertaking*, 21 December 2010, p 112.

⁵³ ACCC, *Final Determination: Statement of Reasons Access dispute between Glencore Coal Assets Australia Pty Ltd and Port of Newcastle Operations Pty Ltd*, 18 September 2018, p 148.

⁵⁴ ACCC adopts an equity beta of 0.7, and a debt gearing ratio of 40%, which is equivalent to an asset beta of 0.5, see ACCC, *Public inquiry into final access determinations for fixed line services | Final Decision*, October 2015, p 66.

⁵⁵ Commerce Commission, *Input methodologies review decisions | Topic paper 4: Cost of capital issues*, 20 December 2016 and Commerce Commission, *Fibre input methodologies: Main final decisions – reasons paper*, 13 October 2020, p 334.

⁵⁶ Calculated equal to (six per cent multiplied by 0.6, plus one per cent) divided by (six per cent multiplied by 1.0, plus one per cent), minus one.

⁵⁷ QCA, Appendices, *Aurizon Network's 2017 draft access undertaking*, December 2018, p 76.

⁵⁸ Blackrock, 'A fundamental reshaping of finance', letter to CEOs. Available at <<https://www.blackrock.com/au/individual/larry-fink-ceo-letter>>.

Investors are increasingly reckoning with these questions and recognizing that climate risk is investment risk. Indeed, climate change is almost invariably the top issue that clients around the world raise with BlackRock ...

These questions are driving a profound reassessment of risk and asset values. And because capital markets pull future risk forward, we will see changes in capital allocation more quickly than we see changes to the climate itself. In the near future – and sooner than most anticipate – there will be a significant reallocation of capital.

Most recently, the CEO of Blackrock's January 2021 letter to clients highlighted that:⁵⁹

This year, BlackRock is enhancing our capital market assumptions – long-run estimates of risk and return – to incorporate climate considerations.

We understand from DBI that ESG considerations have already presented significant challenges for its financing and insurance activities, and that in many cases ESG policies do not differentiate between metallurgical and thermal coal.

Importantly, the effect of ESG considerations operate outside the CAPM framework.

The CAPM framework assumes that the only risk that concerns investors is the volatility of a firm's returns in comparison to the market portfolio, with the consequence that investors require the same return from two firms with the same beta risk. However, the existence of ESG considerations gives rise to the possibility that investors have regard to risks that are not encapsulated in beta and, as a result, potentially require higher returns from firms that are the subject of ESG considerations.

In our opinion this is an emerging issue for infrastructure businesses operating within the coal supply chain that should be the focus of further analysis. At this early stage, the QCA's rate of return framework should be open to the existence and the emerging importance of ESG considerations.

6.3 Summary

In our opinion the estimation of equity beta should be guided by a forward-looking assessment of the factors that are most pertinent to the *long term* systematic risk of a business. We highlight the key determinants of DBI's systematic risk in section 6.1.

Since the factors that determine systematic risk are strongly interrelated, the identification of comparable businesses requires a broad perspective to be taken to those factors. The objective should therefore be the compilation of a pool of businesses that encompasses all the key drivers of systematic risk for the business in question. This pool of comparable businesses can then form the basis for considering how and why the beta of companies with certain characteristics are different from others.

It is unlikely that this approach would produce a pool of businesses from any one industry, or that have one particular characteristic in common.

The closest comparators to DBI would be listed businesses providing port terminal services within the coal supply chain. In the absence of a sufficient pool of comparable coal export terminals, the search should be expanded to encompass businesses that operate in different markets, but which face similar risks in one way or another.

This process should be characterised by a persistent sense-check on whether additional insights could be drawn from expanding the pool of comparators. An undue emphasis on any one determinant of systematic risk will unnecessarily narrow the analysis and overlook the role of other key factors.

⁵⁹ Blackrock, '*Net Zero: a fiduciary approach*', letter to clients. Available at <<https://www.blackrock.com/corporate/investor-relations/blackrock-client-letter>>.

For instance, it would be inappropriate to place a strong focus on companies that are subject to economic regulation, since economic regulation may smooth a business's revenue over the short term, but it cannot shield a business from long term systematic risk.

A1. Sampling frequency for beta

Estimates of beta derived by reference to weekly and monthly sampling frequency often draw on data from the last trading day of the frequency period, ie, each Friday for weekly betas and the end of month trading day for monthly betas.

In our opinion, weekly and monthly estimates should be derived for and then averaged across the candidate reference days, being five days for weekly estimates and 20 days for monthly estimates.

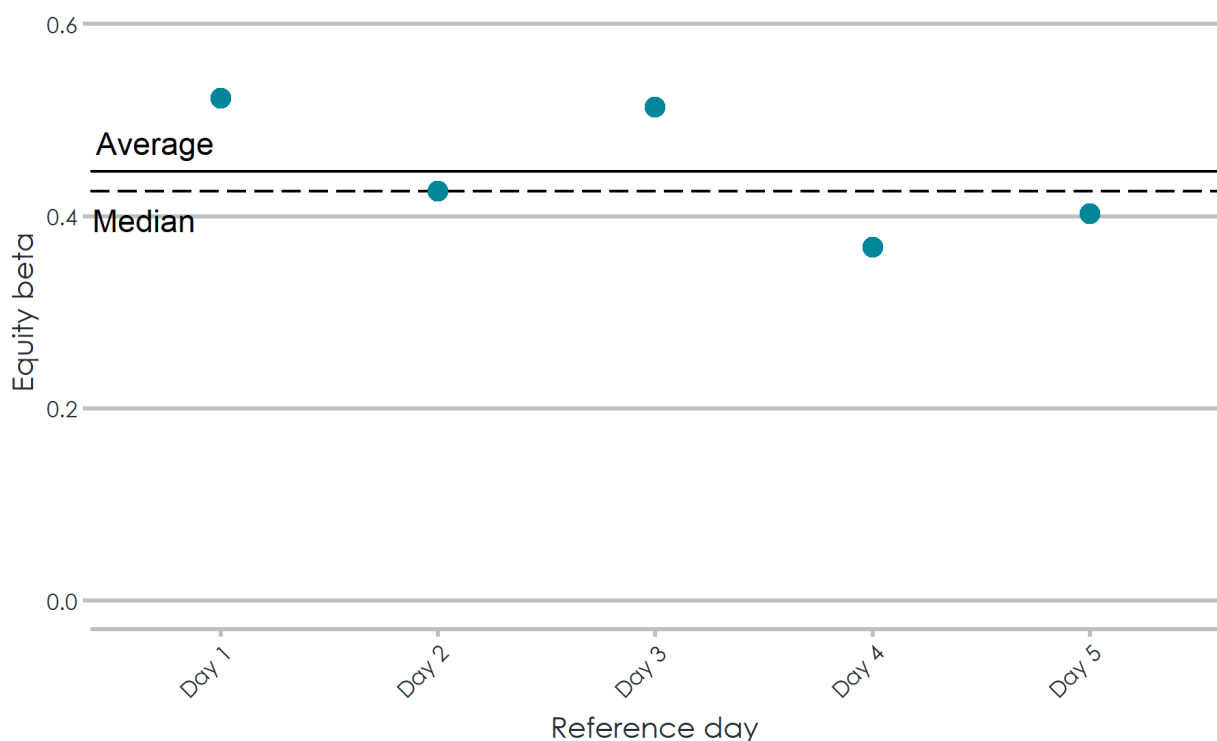
Otherwise, the arbitrary selection of a reference day – being a particular day of the week or month – may introduce a source of bias.

By way of illustration, we present below an analysis using data measured over five years for Spark Infrastructure Group (Spark) to estimate:

- raw equity betas for each of the five possible trading days of the week; and
- as a proxy for monthly equity beta estimates, rolling four-weekly raw equity betas, for each of the 20 possible trading days for the estimation period.

Figure 6.1 indicates that the weekly raw equity beta for Spark can be as low as 0.37 and as high as 0.52 (with a range of 0.16) depending on the selected reference day.

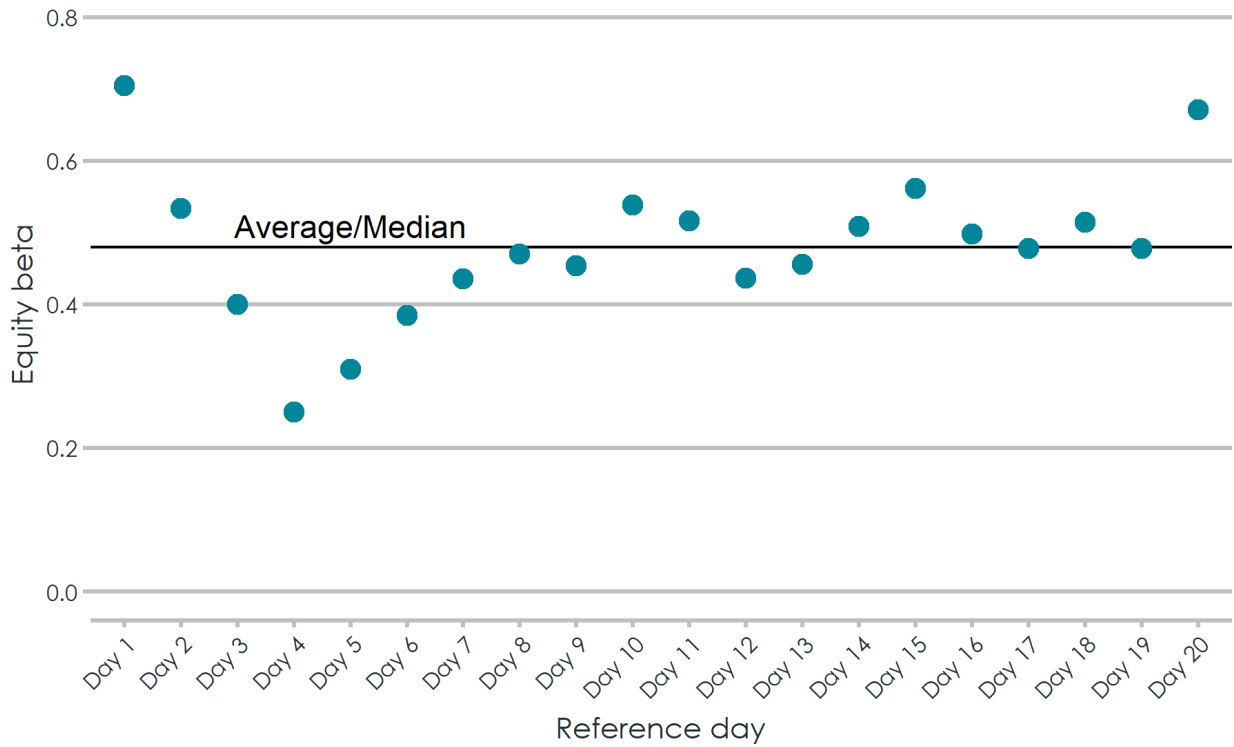
Figure 6.1: Weekly raw equity beta of Spark on different week days



Source: HoustonKemp analysis. Raw equity beta calculations are for Spark Infrastructure Group over the five-year period 30 November 2015 to 30 November 2020, using the ASX 200 as the proxy for the market index and Bloomberg's equity beta estimation methodology and data.

Figure 6.2 indicates that the monthly raw equity beta for Spark can be as low as 0.25 and as high as 0.70 (with a range of 0.45), depending on the selected reference day.

Figure 6.2: Effect of reference day on four-weekly raw equity beta estimate



Source: HoustonKemp analysis. Raw equity beta calculations are for Spark Infrastructure Group over the five-year period 30 November 2015 to 30 November 2020, using the ASX 200 as the proxy for the market index and Bloomberg's equity beta estimation methodology and data.

This indicative analysis suggests that the extent of reference day bias may be more marked for monthly estimates, in comparison to weekly estimates.

Nevertheless, in our opinion both monthly and weekly beta estimates should play a role in the estimation of beta, but where the potential for reference day bias is mitigated through averaging estimates across the candidate reference days.





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