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29 January 2021

Mr Charles Millsteed
Chief Executive Officer
Queensland Competition Authority
GPO Box 2257
Brisbane QLD 4001
Via email: charles.millsteed@qca.org.au

Dear Mr Millsteed

Rate of Return Review

Thank you for the opportunity to provide input to the Queensland Competition Authority's Rate of Return Review.

Queensland Cane Growers Organisation Ltd (CANEGROWERS) is a not-for-profit public company with the sole purpose of promoting and protecting the interests of sugarcane growers since inception in 1925.

Representing over 70per cent of Australia's sugarcane growers, CANEGROWERS is the peak body for the sugarcane industry. With 13 district offices in Queensland, our strong regional presence ensures that services and advocacy are provided in local communities as well as at the highest levels of industry and government decision-making.

The Queensland sugar industry relies on services provided by several monopoly providers. Electricity and water services are provided by statutory monopolies. Because each of these monopolies prices their services on the basis of the regulated pricing model employed by QCA and federal regulators, CANEGROWERS has a vital interest in the QCA's Rate of Return review and application in the regulatory pricing model.

CANEGROWERS engaged Sapere consulting to assist its response to the QCA review. Sapere's report is attached.

Both the Queensland government and Australian Energy Regulator use a cyclical model of regulation, which has as an essential element a feedback loop to assess an entity's actual revenue performance against target performance. This cyclical process is applied to all cost building blocks except the Return on Capital.

As noted in the *Queensland Government Program Evaluation Guidelines* (Queensland Treasury 2020), *'Evidence-informed program decision-making is strengthened by well-planned, timely evaluations.*'

The Queensland Competition Authority Act 1997 requires QCA to have regard to the need to protect customers from the abuse of market power. The QCA ROR Review should take account of this requirement and explicitly compare the actual rate of return achieved by regulated monopolies with the target rate of return set in the regulatory pricing process, applying the NPV=0 principle. Where evidence is found that NPV>0, this should be taken an indicator of where regulated businesses are earning monopoly rents in response to a signal to over invest.

Consistent with Queensland Treasury's performance evaluation guidance, CANEGROWERS recommends QCA:

1. Apply the cyclical model of economic regulation to all aspects of the rate of return calculation by collecting and reporting on actual rates of return achieved by regulated entities during each regulatory price control period and using this to inform forthcoming regulatory pricing decisions.
2. Delay the present review until it has collected and analysed the actual rate of return achieved by the monopolies it regulates.

Please do not hesitate to contact Warren Males, CANEGROWERS Head-Economics, at Warren_Males@canegrowers.com.au if you require further information.

Regards

Dan Galligan
Chief Executive Officer

Queensland Competition Authority's rate of return review

Comments on scope of review and effectiveness of economic regulation of statutory monopolies by QCA

Authors: Simon Orme and Dr James Swansson

Date: January 2021

Contents

Glossary

Abbreviation	Stands for
ACCC	Australian Competition and Consumer Commission
AER	Australian Energy Regulator
AROR	The actual rate of return – see The ROR
CAP model	Capital asset pricing model – a theoretical model used by Australian regulators to set the TROR
EBIT	Earnings before interest and tax – the common numerator used for deriving allowed and actual percentage returns before interest and tax
Economic profit (loss) before interest and tax	The difference between actual and allowed or efficient returns on equity (per centage or dollar). If systematic, material, and persistent, economic profits are super-normal and reflect monopoly or other sources of pricing power.
Economic profit (loss) margin after tax	The economic profit or loss after tax, as a percentage of the *ex ante* TROR, excluding assumed allowed interest.
Incentive regulation	A form of economic regulation where firms may outperform or underperform efficient cost and performance benchmarks across all major cost building blocks.
QCA	Queensland Competition Authority
Parameter estimation error	Errors arising from the fact the CAP model requires inputs that are not observable and therefore applies proxy parameters, likely to diverge from unobservable parameters
RAB	Regulated Asset Base at a given point in time. The RAB varies over a regulatory year but typically the closing RAB is higher than the opening RAB, reflecting capital expenditure investment.
Return on capital before interest & tax (*ex ante*)	The allowed or target rate of return (TROR) before interest and tax times the RAB
Return on capital before interest & tax	The actual (ex-post) rate of return (ROR) times the RAB

Rate of return regulation	A form of regulation where returns are directly controlled, even if outcomes exceed (or are lower than) efficient benchmarks
TROR	Target (*ex ante*) ROR
ROC	Return on capital – rate of return times RAB (usually a midpoint between opening and closing).
SL CAPM	Sharpe Lintner version of the CAP model preferred by QCA
The ROA	The percentage or dollar return on assets – EBIT divided by RAB, as defined.
The ROR	The percentage or dollar rate of return on assets – EBIT divided by the RAB, as defined
WACC	Weighted average cost of capital

Executive summary

Introduction

This report has been prepared to assist CANEGROWERS to respond to a request for comments from the Queensland Competition Authority (QCA) on its *Rate of return review – request for comments paper* ('the QCA ROR Review paper'), dated November 2020. CANEGROWERS members are exposed to prices set by monopoly infrastructure suppliers. These include prices set by monopoly rural water and transport infrastructure suppliers that are regulated by the QCA, as well as electricity network prices regulated by the Australian Energy Regulator (AER).

Reasonable doubts as to effectiveness of economic regulation

In recent years, Australian economic regulators, including QCA, have seldom if ever undertaken comparisons of the actual rate of return (ROR) relative to the *ex ante* target rate of return (TROR), relying on the refuted SL CAP model in place of ROR data. For example, in its *Electricity network performance report 2020*, the Australian Energy Regulator (AER) appears to focus on revenue adequacy and whether future returns are sufficient to support future investment, rather than whether actual returns are consistent with constraining monopoly pricing power.[1]

Related to this focus is a widely held but inaccurate view that any exercise of monopoly power by regulated entities results in over-investment ('gold plating').[2] This overlooks the fact that the volume and value of new investment is an input to the derivation of cost building blocks summing to the estimated revenue requirement, and hence are themselves subject to regulation. In the energy network sector, constraints on the volume of new investment also include a capital expenditure efficiency incentive scheme. The incentive scheme penalises inefficient capital investment and rewards improvements in investment efficiency.

The risk of over-investment therefore does not appear relevant to the present review. The available evidence from for example AER regulated electricity network data (see Figure 2 below) indicates that monopoly returns may be extracted by equity holders and not reinvested.[3] In some instances, excess returns are likely to flow to overseas investors.

Without any assessment of timely data being made available on whether market power has been constrained, it is very difficult for relevant governments, legislators, consumers and other market participants to assess whether the economic regulation of a given sector or region is effective. Without such comparisons, economic regulators cannot readily be held accountable for the performance of their core function – constraining the market power of monopoly suppliers.

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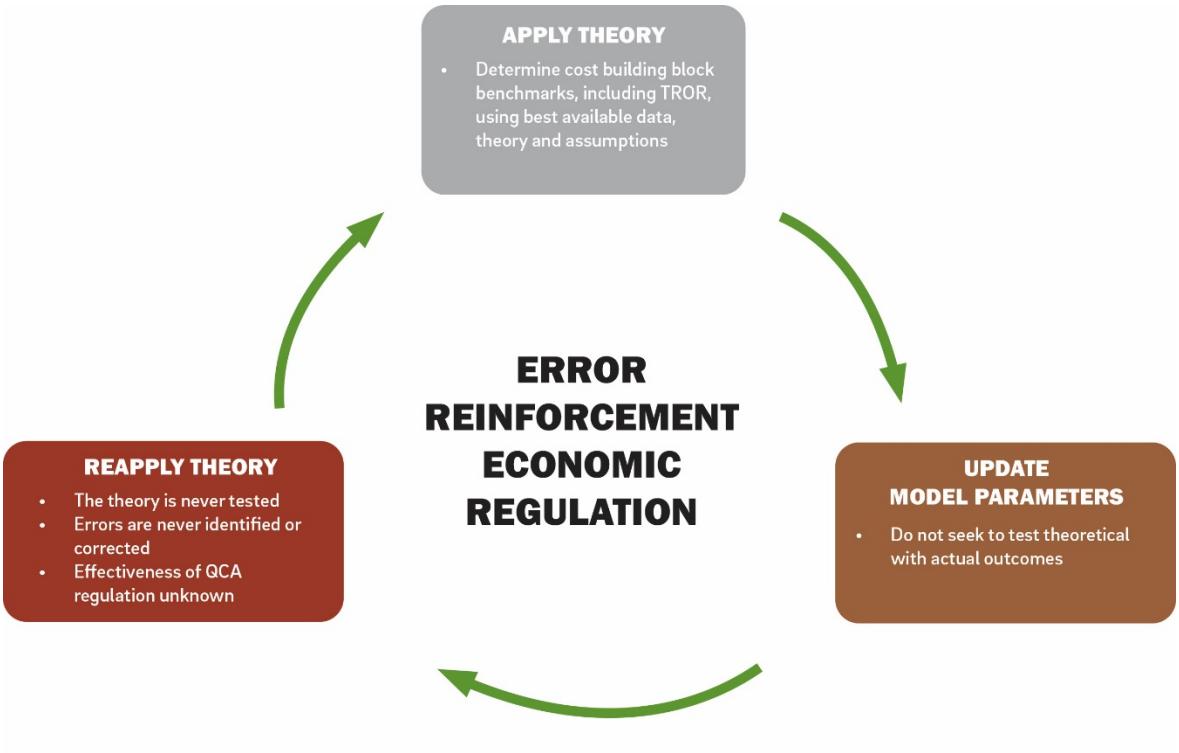
[1] See page 40 of the *Electricity network performance report 2020*, AER.
[2] See page 146, *State of the Energy Market Report*, AER, 2020.
[3] This reflects the substantial and persistent extraction of economic profits alongside lower rates of new investment following reduced demand growth.

Error reinforcement instead of error correction

The current error reinforcement model of economic regulation of returns by the QCA and others, underpinning the ROR Review, is illustrated in Figure 1 below. The current QCA ROR Review error reinforcement model can be contrasted with the AER's cyclical model of regulation illustrated in Figure 2 below.

Figure 1 Error reinforcement cycle proposed by the QCA ROR Review



There is no point in the cycle illustrated in Figure 31 where the *ex ante* theory and assumptions are tested and subjected to standard performance evaluation processes. Under this regulatory model, there is no reason for stakeholders or Parliament to have any confidence in the effectiveness of the QCA's performance under its Act.

Remainder of the ROR Review should be deferred

In the absence of data on the ROR for QCA regulated entities, it is not possible for QCA ROR Review to draw any evidence-based conclusions as to validity of its method for estimating the TROR. This is because the QCA ROR Review would lack any evidence as to market expectations and would be relying instead on an empirically refuted theory – the Sharpe Lintner Capital Asset Pricing Model (SL-CAPM).

Unless and until the effectiveness of the economic regulatory approach is confirmed, the ROR Review should be deferred. Continuing the ROR Review in the absence of this information would be inconsistent with the *Queensland Competition Authority Act* and Queensland Treasury's performance evaluation guidance.

The QCA should at the earliest opportunity release consolidated ROR data, along with supporting analysis and commentary comparing this with the corresponding TROR, for the entire sector regulated by the QCA. This should include a decomposition of the ROC so that benchmark Return on Equity (ROE) estimates (allowed vs actual ROE) can be identified, possibly drawing on recent work by the AER to assess the actual cost of debt.[4] The TROR and ROR data should be for an extended period to assess whether any systematic errors in setting TROR are being corrected as part of regulatory reset processes, or whether they are persistent.

The objective of releasing this information is to address present, reasonable, and well-founded stakeholder doubts as to the effectiveness of economic regulation of the entities regulated by QCA. The release of such information would also ensure that the performance of the statutory framework and QCA itself may be assessed and evaluated by Parliament, customers and others.

To be clear, the proposal to defer the QCA ROR Review does not represent a proposal to move toward rate of return regulation. Rather, the proposal is to move to the cyclical model of regulation that is an essential feature of incentive regulation.

[4] For example, the UK regulator Ofgem releases ROE data, albeit using benchmark rather than actual gearing ratios. Refer to *RIIO-2 Sector Specific Methodology Decision – Finance*, May 2019, Ofgem

1. Introduction and context

This report has been prepared to assist CANEGROWERS to respond to a request for comments from the Queensland Competition Authority (QCA) on its *Rate of return review request for comments paper* ('the QCA ROR Review Paper'), dated November 2020. CANEGROWERS members are exposed to prices set by monopoly infrastructure suppliers. These include prices set by monopoly rural water and transport infrastructure suppliers that are regulated by the QCA, as well as electricity network prices regulated by the Australian Energy Regulator (AER).

Along with the regulatory asset base (RAB), the *ex ante* target rate of return (TROR) determines the future value of the return on capital (ROC) cost building block, making up the total forecast revenue requirement over a given regulatory control period. The TROR therefore helps determine the level of prices payable by users of the regulated monopoly services, subject to economic regulation by the QCA, over the revenue control period in question. As the supply of such services is typically capital intensive, historically, the ROC was typically the largest single cost building block.

The focus of this report is the limited scope of the QCA ROR Review relative to the *Queensland Competition Authority Act* (1997). The current scope is not based on sound empirical underpinnings necessary for such a review, as required by effective economic regulation and current Queensland Treasury performance evaluation guidelines.

Chapter 2 consists of a brief summary of the QCA ROR Review paper, focusing on its scope and empirical and theoretical foundations.

Chapter 3 provides a brief overview of the role of the ROR in economic regulation, including a discussion on the implications of ROR data released by the Australian Energy Regulator in September 2020. It includes a set of comments on each topic or issue identified.

Chapter 4 draws out a set of conclusions and recommendations for the remainder of the QCA ROR Review.

2. Selected summary of the QCA ROR Review request for comments paper

This brief selected summary of the ROR Review request for comments paper highlights points referred to in the following discussion, with our emphasis added. The ROR Review paper states that the:

> *'rate of return is the return expected by investors to compensate them for investing their capital in a firm.*

It notes that

> *Determining a rate of return is an important aspect of economic regulation, as it can have major impacts on the revenues of regulated entities and on prices paid by their customers.*[5]

The ROR Review paper also states that:

- *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.*

The ROR Review paper observes that the most common approach to determining rates of return [on capital] is the weighted average cost of capital (WACC). The WACC is the weighted average of a firm's estimated costs of debt and equity and is the estimated or expected return on investment. For regulated entities, it is an input to price setting.

The QCA also states that

> *'In more light-handed frameworks, it [a WACC estimate] is used by regulators and policy makers to determine if firms may be earning excess returns.'*[6]

The paper also notes that

> *WACC is a topic about which policymakers, service providers, services users, end consumers and regulators have expressed a variety of different views.*

Page 12 of the ROR Review paper states that

> *To estimate the cost of equity, we have historically used the Sharpe Lintner capital asset pricing model (SL-CAPM).*

The remainder of the ROR Review paper is concerned with setting out a series of questions regarding technical aspects of setting the *ex ante* or target rate of return (TROR) on capital (ROC),

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[5] See *Rate of Return Review Request for Comments Paper*, Queensland Competition Authority, November 2021.
[6] Op. Cit., page 5.

apparently using SL CAP model. There is no discussion as to the empirical status of the SL CAP model. There is no further discussion of the role of the *ex ante* ROC in effective incentive regulation of statutory monopolies to identify whether firms may be extracting excess returns.[7] There is no discussion or assessment as to whether the TROR, derived from the current methodology used by the QCA, diverges materially, systematically and persistently from the ROR, potentially indicating an abuse of market power under the Queensland Competition Authority Act (1997).

[7] By their very nature, excess returns by statutory monopolies are extracted, not earned.

3. Review of rate of return under incentive regulation

3.1 What is the rate of return?

The rate of return, or return on assets (ROA), is conventionally defined as Earnings Before Interest and Tax (EBIT), divided by the Regulatory Asset Base (RAB.[8] The EBIT is then applied to the remaining 'below the line' cost building blocks, consisting of the Return on capital (ROC) and Tax.

The return on capital is the rate of return times the RAB. The ROC itself consists of debt financing costs and returns to equity holders (ROE). The efficient ROC is related to exposure of regulated revenue to systematic (non-diversifiable) risk.

Where the RAB is indexed for inflation, as is usually the case for Australian entities subject to economic regulation, the ROR (or ROA) is automatically adjusted for inflation. This means investors are compensated for actual inflation outcomes, preserving the purchasing power of regulated entities and their investors.

The ROR may of course diverge from the TROR, for a range of reasons and across all cost building blocks. Under incentive regulation, regulated entities may outperform or underperform efficient cost benchmarks across all major building blocks. The potential divergence between the ROR and the TROR is a key attribute of incentive regulation, distinguishing it from pure rate of return regulation.

3.2 Reliance on refuted theory over evidence and data

The assertion contained in the ROR Review paper that the ROR is the *expected* return[9] does not appear to be based on any evidence or authority. The assertion is heavily theory laden and relies on the SL CAPM.[10] In empirical testing, the SL CAPM has been refuted. There is therefore no sound basis for the QCA ROR Review to rely on the SL CAPM, or to redefine the rate of return as the expected instead of the actual rate of rate of return.

Outside the refuted SLP CAP theory, debt and equity funders are not compensated by target future returns on their debt and equity. They are instead compensated principally by the cash returns they receive over time.[11]

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[8] See for example, page 1 of the AER's *Profitability Measures Explanatory Note – Return on assets*. Alternative metrics used for measuring returns may exclude amortisation (e.g. ACCC airport monitoring), depreciation or tax. ROR and ROA appear to be used interchangeably, with ROR explicitly incorporating indexation for inflation by the AER (but not ACCC airport monitoring).

[9] See page 6 of *Rate of Return Review – request for comments paper*, Queensland Competition Authority, November 2021.

[10] See page 12 of the RORR paper which states that *'[T]o estimate the cost of equity, we have historically used the Sharpe Lintner capital asset pricing model (SL-CAPM).'*

[11] Interest payments, dividends and retained earnings balances – and potentially included total returns inclusive of price changes in secondary equity markets where equity rights are traded.

When making an investment decision, and forming views on future returns, debt and equity funders are likely to rely principally on the historical rate of return by the business, including the extent of historical volatility in these returns relative to alternative investments. Among other things, this behaviour reflects prudent investor scepticism regarding the empirical status and explanatory power of the CAP model in general and the QCA's preferred version of that model, in particular.

The CAP model is technical and complex. As noted by Fama and French, *'The version of the CAPM developed by Sharpe (1964) and Lintner (1965) has never been an empirical success.'*[12] All versions of the CAP model have two well-known limitations:

- Model error. The model is a simplified representation of reality with limited explanatory power due to missing explanatory variables.
- Parameter estimation error. The model requires estimation of parameters for which there is either no data or only limited data, requiring use of proxy parameters.[13]

More fundamentally, the CAP theory may not meet the widely adopted test for whether it qualifies for the status of an empirical theory – the possibility of empirical refutation or falsifiability.[14] The problem is that the market portfolio at the heart of the theory is theoretically and empirically elusive.

As a result, empirical testing of the CAP theory is forced to use proxies for the market portfolio and transaction data availability substantially limits the assets that are included in empirical testing. The continued use of the CAP theory by the QCA and other Australian regulators suggests the theory is resistant to falsifiability. It may therefore may not qualify to be an empirical theory.

QCA's ROR Review focus on the TROR instead of the ROR relies on the empirically discredited SL CAP model. The QCA ROR Review should spell out the distinction between the TROR and the ROR and not conflate the two.

The scope of the ROR Review should focus on the ROR. This is the pre-requisite for determining the TROR, under the best practice cyclical model of regulation (see below) adopted by the Australian Energy Regulator (AER).

Alternatively, a complementary review setting out proposals for releasing and analysing ROR data vs TROR benchmarks should be developed promptly in a follow up review. In the meantime, the TROR review should be deferred, pending the outcome of the ROR review.

3.3 Cyclical model of regulation (feedback loop)

Under incentive regulation, regulated entities may outperform (underperform) the TROR by reducing one or more of operating expenditure, depreciation, debt financing and tax cost building blocks, relative to regulatory allowances, or exceeding performance benchmarks, where performance incentive schemes apply. In doing so, regulated firms reveal efficient costs and any errors in the *ex*

[12] See page 44 Fama, E.F. and French, K.R. (2004) 'The capital asset pricing model: theory and evidence', *Journal of Economic Perspectives*, Vol. 18, No. 3,

[13] See for example *'Setting the WACC percentile for Vector's price-quality path'*, a report by Kieran Murray and Tony van Zijl, May 2014.

[14] See for example karl Popper's 'Conjectures and refutations; the growth of scientific knowledge, 1963.

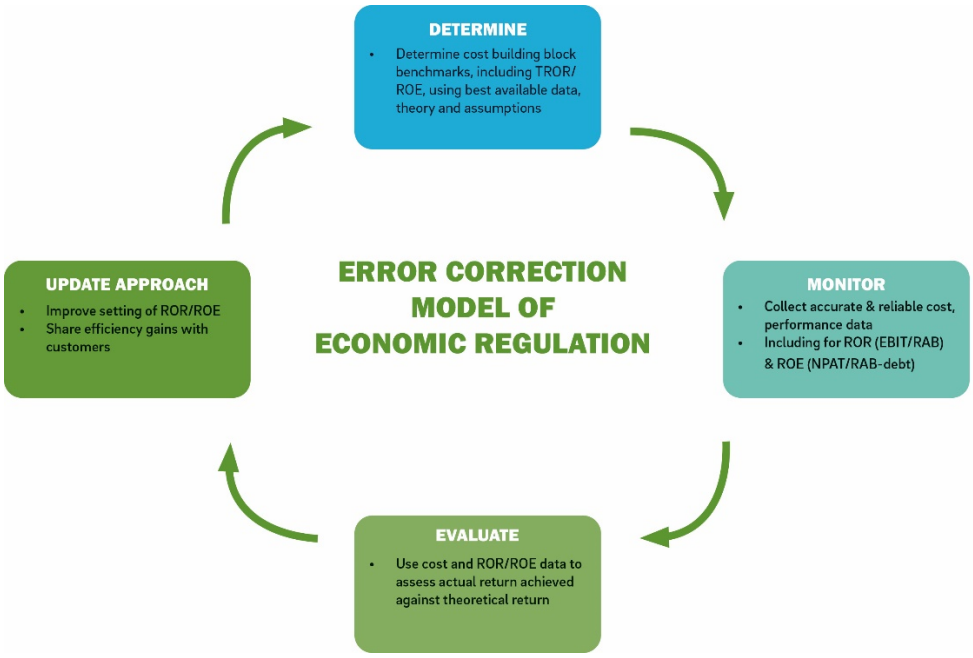
ante setting of performance targets (both over and under-estimates of efficient costs). Provided this information is monitored, actual performance data can be reflected in decisions for setting new efficient cost benchmarks for the following regulatory price control period.

The AER describes the process as a cyclical model of regulation consisting of a repeated cycle of three steps.[15]

> *1. Determining the NSPs' revenue allowances based on the best available information, recognising that the NSPs can outperform (underperform) those targets and keep (lose) some of the benefits.*
>
> *2. Collecting accurate and reliable data on the networks' performance against those targets.*
>
> *3. Using that information to inform future revenue setting processes, sharing the benefits of network efficiency gains with customers.*

The key feature of this model is there is a 'feedback loop.' This is illustrated in Figure 2 below.

Figure 2 Error correction model of economic regulation



The feedback loop means that any errors or changes over time in step 1 will be identified from data collection and analysis in steps 2 and 3. The outcome of this error correction process (step 4) is then applied to the following regulatory control cycle (step 1).

The cyclical model of regulation can be applied to all major cost building blocks, including the ROC and its sub-components. The return on equity (ROE) is the most critical sub-component because

[15] See page 13 of *Electricity network performance report*, 2020, Australian Energy Regulator.

variations between *ex ante* and ex-post returns across all cost building blocks accumulate in the ROE. The ROE is the net profit after tax (NPAT) divided by the portion of the RAB that is funded by equity.[16]

The cyclical model can also be applied to the inflation component of regulated costs. For example, in its 2020 review of the regulatory treatment of inflation, the AER notes that the RAB is indexed using actual inflation. An error correction step is applied to the *ex ante* inflation estimate in such a way as to avoid double counting with respect to *ex ante* inflation expectations.[17]

3.4 The cyclical model is not applied to the rate of return

In contrast to the three step cyclical process for setting and revising the benchmarks for all other cost building blocks, QCA and other Australian regulator decisions on the TROR (and hence the ROC once the RAB value has been set) typically make no reference at all to ROR outcomes. The basis for the inconsistent treatment of the ROC building block is unclear. It appears to reflect a decision to privilege the discredited SL-CAPM over empirical evidence.

The main exception appears to be the inflation component of ROC that is reflected in the TROR and corrected in the ROR via indexation of the RAB. An encouraging development is that the AER appears to be moving toward applying the cyclical model to the cost of debt.[18] Significantly, in November 2020, it acknowledged that an index of energy infrastructure credit spread (EICSI) remained below the AER's cost of debt for the entirety of the series.[19]

A complication is that the ROR (and ROE) accumulate errors across the cost building blocks. For example, the data in Figure 4 below refer to errors in the setting of operating and maintenance, and depreciation expenditure benchmarks, and do not reflect errors in the setting of tax and debt financing costs.

Nevertheless, errors are also possible in the setting of debt cost benchmarks, a major component of the TROR.[20] These errors arise where the exposure of the regulated entity to systematic risk is over or under-estimated, potentially resulting in a margin (positive or negative) between allowed and actual debt financing costs.

It is possible that errors in estimates of debt financing costs may also point to errors in equity financing costs. Other relevant data on equity financing costs include any otherwise premia in equity prices, including in equity valuation premia embedded in transactions (RAB multiples). ROE data and by implication normalised actual debt financing costs were not made available in AER releases of ROR data during 2020.

When setting the TROR, there is no sound theoretical or practical basis not to apply the cyclical model. Applying the cyclical model to the ROR does not represent reversion to rate of return regulation. This

[16] As discussed further below, for comparison purposes, a benchmark balance sheet structure may be applied by regulators, where ROR data are provided.
[17] See page 35-36, *Final Position; Regulatory treatment of inflation*, AER, December 2020.
[18] See *Final Position; Regulatory treatment of inflation*, AER, December 2020.
[19] See page 15, *Final Position; Regulatory treatment of inflation*, AER, December 2020.
[20] See for example page 16 of Energy Network debt data – position paper, AER, November 2020.

is because there would be no *ex post* claw back or compensation for divergences between the TROR and the ROR.

The QCA ROR Review should therefore seek to apply the circular model to its process for estimating the TROR. This would align with likely widespread practice by debt and equity markets.

Applying the circular model requires explicitly capturing ROR and ROE data in a timely manner and analysing the sources of variances between *ex ante* and actual ROE. Where debt financing costs (as set in private markets) diverge from *ex ante* target assumptions, this should lead to a reconsideration of the data and assumptions on which the *ex ante* equity component of the WACC is estimated.

3.5 Best practice public sector performance evaluation

A form of the cyclical regulatory model is routinely applied under best practice public sector performance evaluation. This can be seen in the *Queensland Government Program Evaluation Guidelines, Second Edition 2020*, published by Queensland Treasury.

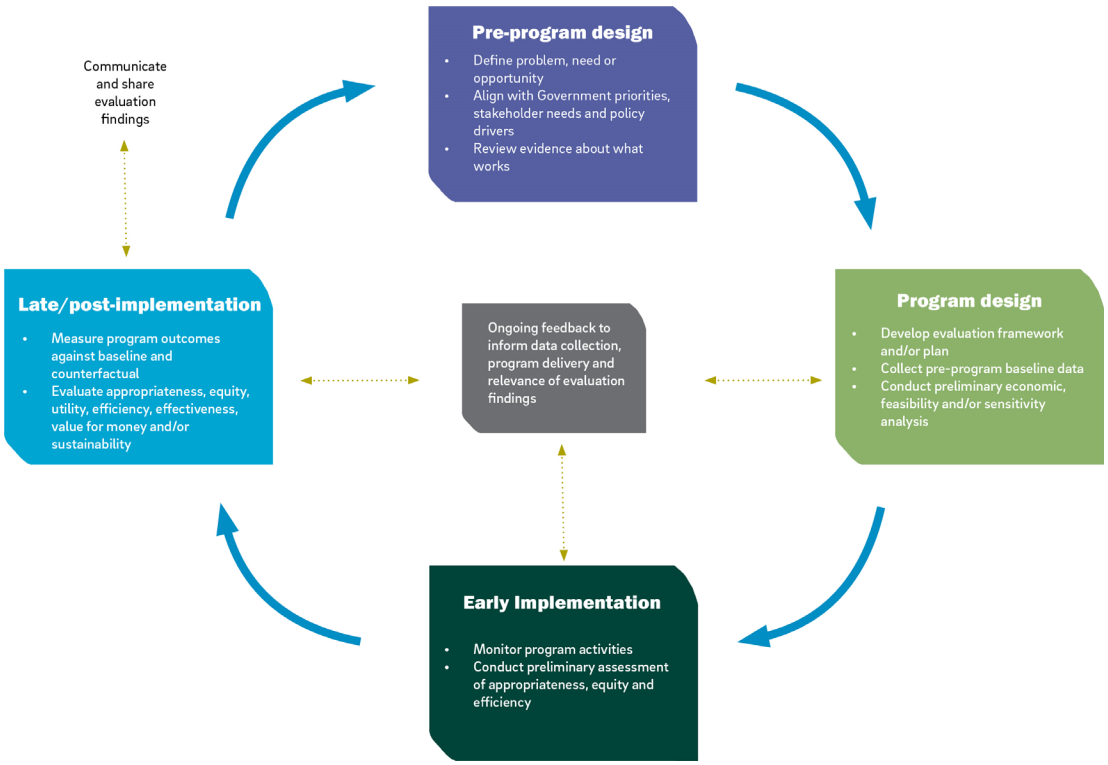
The Guidelines note that 'Evidence-informed program decision-making is strengthened by well-planned, timely evaluations.' It notes that *'Evaluation plays an essential role in the development, implementation of government programs by helping stakeholders to understand* [among other things] *whether a program is working as intended … whether a program is achieving its objectives … whether a program is generating any unintended consequences and whether a new set of activities is required to respond to any opportunities, risks or needs identified.'* [21]

The focus of the guidelines is budget funded programs under the *Financial Accountability Act 2009*. The majority of QCA funding is from industry levies but also includes significant budget funding.[22] There is no reason in our view why the Queensland program evaluation guidelines are not relevant to assessing the performance of the QCA itself. The Queensland Project Assessment Framework appears to apply to QCA itself and evaluation principles may also be applied to interventions other than budget funding, such as economic regulation of statutory monopolies.

The Queensland Treasury Guidelines sets out a cyclical evaluation model. This is illustrated in Figure 3 below. At the program design stage (equivalent to a forward-looking regulatory review of monopoly pricing proposals) pre-program baseline data should be acquired. Following this program activities should be monitored (equivalent to ongoing expenditure and rate of return performance by a regulated monopoly). Late/post implementation (equivalent to the following regulatory price reset) program outcomes should be measured against the baseline and counterfactual. Evaluation findings on appropriateness, equity, utility, efficiency, effectiveness, value for money and/or sustainability should be communicated and shared with stakeholders (equivalent to the users of the regulated monopoly).

Figure 3 Integrating evaluation throughout a program's life cycle[23]

[21] See page 1 of the Treasury Guidelines.
[22] See Note 2 of the QCA's Annual Report 2019-2020.
[23] See figure 1 of the Treasury guidelines.



3.6 Cyclical model essential for confidence in integrity of economic regulation

Provided the cyclical regulation model is applied diligently to all cost building blocks, then over time economic regulation should be effective in constraining the market power of the statutory monopolies subject to economic regulation. This type of outcome would also be consistent with the QCA Act.[24]

Under effective regulation, for the typical regulated entity in the typical year, the actual return on assets would be enough, but no more than enough, to recover total efficient costs. This means that, for the average entity in the average year, the ROR (EBIT) should more or less equal total tax and efficient financing costs.

In this case, net profit after interest and tax would also be enough, but no more than enough, to compensate equity owners for the opportunity cost of capital. There would be no systematic, material margin between efficient equity returns, on the one hand, and actual equity returns, on the other, where both are properly and consistently measured. Investors would continue to have incentives to invest new capital to meet asset replacement, capacity expansion and other requirements.

[24] See discussion in following section.

Under this principle, the economic profit, after interest and tax,[25] for the typical regulated entity in the typical year, would be around zero. This is consistent with the financial capital maintenance or NPV=0 principle.[26] Similarly, investments in sunk assets are protected to the extent they continue to be financed and operated efficiently.[27]

Under incentive regulation, more efficient regulated entities may be able to earn economic profits while less efficient entities may experience economic losses. This is the key difference from rate of return regulation. Under ROR regulation, any divergence between the TROR and the ROR may be subject to over or under recovery arrangements in following regulatory periods. Under pure forms of ROR regulation, equity holders are not rewarded for outperformance or penalised for under-performance.

The QCA ROR Review should explicitly link the TROR and the ROR with the NPV=0 principle, and the reference in the *Queensland Competition Authority Act* to the requirement for the QCA to have regard to the need to protect customers from the abuse of market power.[28] Related to this, the QCA should withdraw the assertion made in the QCA ROR Review Paper that the main impact of an ROR that exceeds the NPV=0 principle is over investment, and note that circumstances where NPV>0 are an indicator that regulated businesses are exercising market power. If additional constraints on the volume of capital investment are required, QCA should consider implementing or redesigning capital expenditure quality and volume controls.

3.7 Concerns over effectiveness of economic regulation are well founded

For regulated sectors, while data on TROR is made available, ROR data is typically not made available, or certainly not made available on a timely basis, such as before regulatory resets.[29] For sectors subject to 'light handed' regulation, such as airports monitored by the ACCC, the focus of available reporting and data is the ROR, but any TROR estimates for the corresponding periods are typically not made available.[30] This means there is no TROR reference point against to which to assess the ROR. Under both partial performance evaluation models, there is no error correction step or process as required by the cyclical model of regulation.

[25] If material, systematic and persistent, the term 'economic profit' is interchangeable with 'super-normal return', 'monopoly return' and 'economic rent'.

[26] See page iv of the QCA information paper *Financial capital maintenance and price smoothing*, dated February 2014.

[27] Thereby also satisfying an alternative view of the rationale for monopoly regulation put forward by Darryl Biggar at the ACCC Annual Regulatory Conference, 2008. Under the National Electricity Rules, asset stranding risk is currently borne by consumers, not NSPs.

[28] See 170ZI of the QCA Act 1997 regarding matters to be considered by authority in making water pricing determination.

[29] For example, following its Better Regulation reforms finalised in 2014, until the AER's 2020 *Electricity Network Performance Report*, only provisional (later substantially changed) ROR data for the 18 regulated electricity network service providers had been available.

[30] See for example, Section A4. Methodology; *Airport monitoring report 2018-19*, ACCC

If the cyclical model of regulation is not applied comprehensively, and over an extended period, there is a substantial risk that regulated entities both individually and as a group could exercise market power and routinely extract ROE that substantially exceeds the NPV=0 principle. If such outcomes were observed over multiple regulated entities and regulatory control periods, this implies that the applicable regulatory regime is not effective in constraining the market power of the regulated entities.

It would also indicate that prices exceed efficient costs on a structural and persistent basis. If the entities the QCA regulates were extracting such outcomes, this may be inconsistent with the *Queensland Competition Authority Act* guidance (in the case of water pricing) that the QCA must have regard to: efficient resource allocation, and protection of consumers from abuses of monopoly power, among other things.[31]

The diligent application of the cyclical model of regulation is essential for assessing the performance of the economic regulator and accompanying regulatory framework. This includes the relevant statutory powers and objectives governing the regulator's exercise of its powers. For example, if the statute does not empower the regulator to acquire the data necessary for Step 2 in the model, then the regulator has an impossible task. A performance evaluation process would identify any such shortcomings and provide a basis for seeking remedies, including changes to the regulator's statutory powers, if required.

The diligent application of the cyclical model is not only essential for ensuring that regulated prices correspond to efficient costs. It is also essential in order for consumers and other stakeholders to have confidence that economic regulation is effective and that prices are fair. The current absence of the regular and timely publication of data and analysis on the ROR vs. the TROR, for the sectors regulated by the QCA, contributes to stakeholder concerns as to whether economic regulation by the QCA is effective in constraining regulated monopolies from exercising their market power and protecting consumer welfare and economic efficiency.[32]

3.8 Significance of 2020 release of electricity network rate of return data

Data released along with *The AER's 2020 Electricity Network Performance Report 2020* is notable in that it allows meaningful comparison between actual allowed returns for 18[33] electricity network service providers (NSPs) over a six (6) year period and 108 data points, ending 31 December 2019.[34] This is the first reporting on this data by the AER and follows completion of the AER's profitability measures review in December 2019. No ROR data is available for gas NSPs.

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[31] See 170ZI of the QCA Act 1997 regarding matters to be considered by authority in making water pricing determination.

[32] From a search of both the RORR paper and the QCA website, it appears that ROR data is not routinely published and is not referred to in the process leading up to decisions on the TROR.

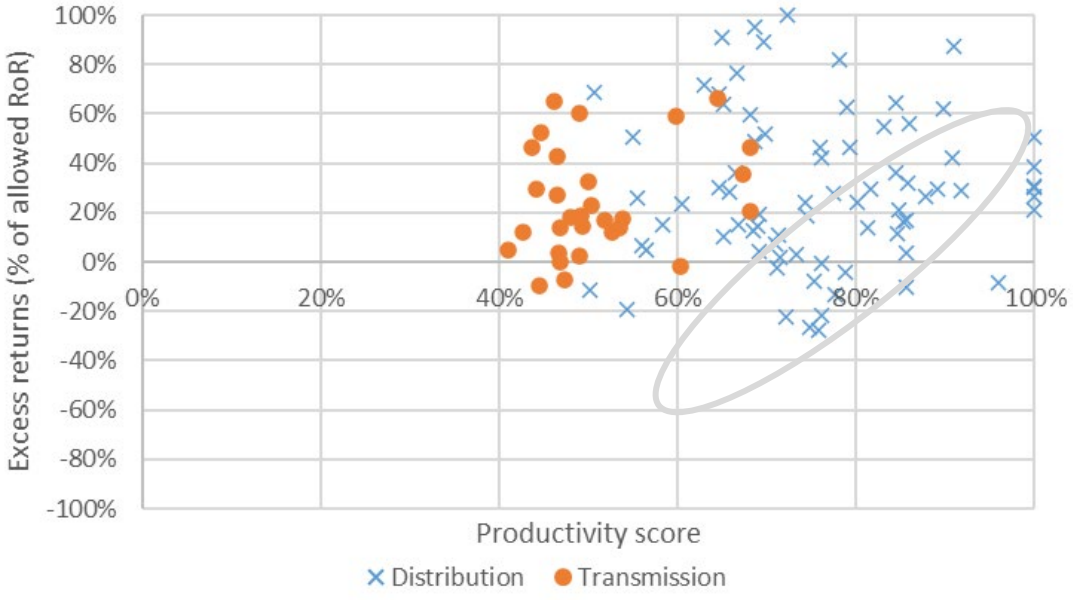
33 Some entities such as Ausnet and TasNetworks hold separate licences for regulated distribution and transmission NSPs.

[34] Most but not all NSP data are for years ending 30 June. However, all Victorian NSP data are for years ending 31 December and some NSP data are for years ending 31 March.

The data reveals that excess returns by regulated electricity NSPs are material, persistent and systematic. Over the six-year period, spanning parts of at least two regulatory control periods, excess net returns before tax sum to $6.4 billion or 23 per cent higher than allowed returns. Excess returns are therefore both 'systematic and material'.

The AER ROR data are summarised in Figure 4 below, which compares the AER's Total Multilateral Factor Productivity (TMFP) index scores[35] with excess return margins over the period.[36]

Figure 4 Comparison of electricity NSP excess returns with productivity benchmarking scores[37]



If economic regulation of the sector had been effective over the period, returns should have been distributed more or less evenly above and below the NPV=0 line (zero on the y axis) and economic profits and losses would be related to productivity scores.[38] The expected distribution of outcomes under effective regulation is indicated by the grey ellipsis.

Instead, there is a substantial, persistent, and systematic bias toward excess returns. Moreover, there appears to be no relationship between TMFP and return outcomes. Poor TMFP performance does not appear to be a barrier to extracting excess returns.

[35] Note that the MTFP data above incorporate the reweighting of the index completed by Economic Insights in 2020 and applied retrospectively to the period represented. The mismatch between estimated productivity and economic profits was uneffaced by that reweighting. The transmission and distribution indices are presented in a single chart for convenience, but the two sets of MTFP results are not comparable.

[36] The excess return margin is the ratio of the actual return (ROR) over the allowed return (TROR) over the TROR.

[37] The authors' analysis of AER ROA assets data released in September 2020 together with annual MTFP data from the AER's Annual Benchmarking Reports for NSPs dated November 2019.

[38] The AER report acknowledges that over 2014-19 actual returns have typically exceeded allowed returns but does not comment on the implications for the effectiveness of economic regulation to constrain monopoly pricing power.

No data on returns on equity, after interest and tax, are available. [39] Nevertheless, the available data imply that actual NSP returns will substantially exceed the level of returns necessary to compensate NSP investors for the regulatory and commercial and risks involved in providing the direct control network services. Economic profits after interest and tax are likely to exceed $4.5 billion over the six-year period.

While higher pre-tax returns increase the tax liability, they either reduce or leave total debt financing costs unchanged. The AER has also acknowledged that it most likely over-estimates the debt component of financing costs. Accordingly, a substantial portion of the increase in returns before interest in tax strongly implies the existence of material economic profits.

It follows that ROE margins would in most cases exceed ROR margins. This in turn implies that ROE substantially exceeds the opportunity cost of equity, even before inclusion of the November 2020 AER evidence that NSPs as a group may have been over-compensated for their debt costs.

For the three Queensland NSPs, the value of the excess returns before interest and tax over the six year period on a per customer basis appears to be similar to the amount being claimed in litigation against CS Energy and Stanwell Corporation.[40] The excess returns over the period are $843 per customer for Energex and $1,382 for Ergon, inclusive of excess returns from Powerlink.[41]

The AER ROR data for electricity networks, summarised above, lends further urgency to the need for the QCA to provide timely data on the ROR for the entities regulated by the QCA. In the absence of such data, all Queensland consumers with an interest in the present review can reasonably be sceptical that QCA's economic regulation is effective in avoiding abuses of monopoly pricing power by QCA regulated entities.

[39] The AER appears to acknowledge that it has yet to acquire additional data to estimate return on equity. See page 41 of *Network performance report 2020*.

[40] See *'Australia's largest energy class action' filed against Queensland power companies accused of driving up prices illegally*, ABC, 20 January 2021.

[41] Sapere analysis of AER data accompanying the AER's *Network performance report*, 2020

4. Conclusions

4.1 Reasonable doubts as to effectiveness of economic regulation

In recent years, Australian economic regulators, including QCA, have seldom if ever undertaken comparisons of the actual rate of return (ROR) relative to the *ex ante* target rate of return (TROR), relying on the refuted SL CAP model in place of ROR data. For example, in its *Electricity network performance report 2020*, the Australian Energy Regulator (AER) appears to focus on revenue adequacy and whether future returns are sufficient to support future investment, rather than whether actual returns are consistent with constraining monopoly pricing power.[42]

Related to this focus is a widely held but inaccurate view that any exercise of monopoly power by regulated entities results in over-investment ('gold plating').[43] This overlooks the fact that the volume and value of new investment is an input to the derivation of cost building blocks summing to the estimated revenue requirement, and hence are themselves subject to regulation. In the energy network sector, constraints on the volume of new investment also include a capital expenditure efficiency incentive scheme. The incentive scheme penalises inefficient capital investment and rewards improvements in investment efficiency.

The risk of over-investment therefore does not appear relevant to the present review. The available evidence from for example AER regulated electricity network data (see Figure 2 above indicates that monopoly returns may be extracted by equity holders and not reinvested.[44] In some instances, excess returns are likely to flow to overseas investors.

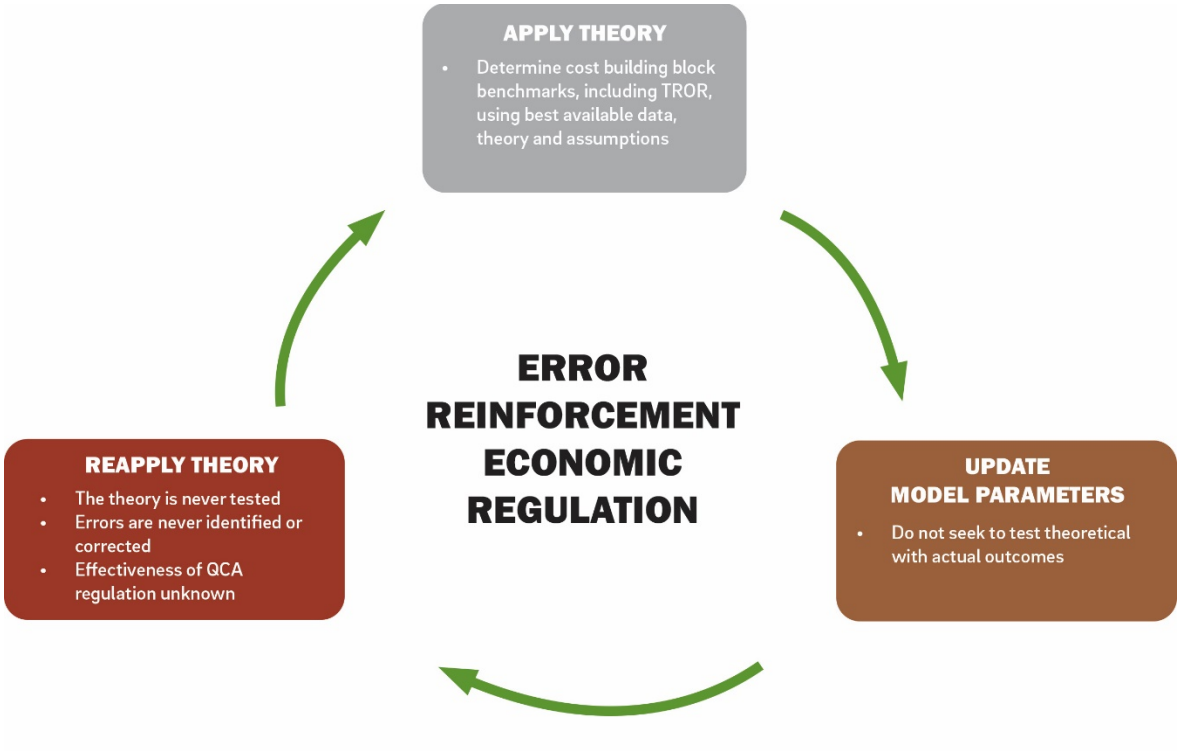
Without any assessment of timely data being made available on whether market power has been constrained, it is very difficult for relevant governments, legislators, consumers and other market participants to assess whether the economic regulation of a given sector or region is effective. Without such comparisons, economic regulators cannot readily be held accountable for the performance of their core function – constraining the market power of monopoly suppliers.

4.2 Error reinforcement instead of error correction

The current error reinforcement model of economic regulation of returns by the QCA and others, underpinning the ROR Review, is illustrated in Figure 5 below. The current QCA ROR Review error reinforcement model can be contrasted with the AER's cyclical model of regulation illustrated in Figure 1 above.

Figure 5 Error reinforcement cycle proposed by the QCA ROR Review

[42] See page 40 of the *Electricity network performance report 2020*, AER.
[43] See page 146, *State of the Energy Market Report*, AER, 2020.
[44] This reflects the substantial and persistent extraction of economic profits alongside lower rates of new investment following reduced demand growth.



There is no point in the cycle illustrated in Figure 5 where the *ex ante* theory and assumptions are tested and subjected to standard performance evaluation processes. Under this regulatory model, there is no reason for stakeholders or Parliament to have any confidence in the effectiveness of the QCA's performance under its Act.

4.3 Remainder of the ROR Review should be deferred

In the absence of data on the ROR for QCA regulated entities, it is not possible for QCA ROR Review to draw any evidence-based conclusions as to validity of its method for estimating the TROR. This is because the QCA ROR Review would lack any evidence as to market expectations and would be relying instead on an empirically refuted theory – the Sharpe Lintner Capital Asset Pricing Model (SL-CAPM).

Unless and until the effectiveness of the economic regulatory approach is confirmed, the ROR Review should be deferred. Continuing the ROR Review in the absence of this information would be inconsistent with the *Queensland Competition Authority Act* and Queensland Treasury's performance evaluation guidance.

The QCA should at the earliest opportunity release consolidated ROR data, along with supporting analysis and commentary comparing this with the corresponding TROR, for the entire sector regulated by the QCA. This should include a decomposition of the ROC so that benchmark Return on Equity (ROE) estimates (allowed vs actual ROE) can be identified, possibly drawing on recent work by the AER

to assess the actual cost of debt.[45] The TROR and ROR data should be for an extended period to assess whether any systematic errors in setting TROR are being corrected as part of regulatory reset processes, or whether they are persistent.

The objective of releasing this information is to address present, reasonable, and well-founded stakeholder doubts as to the effectiveness of economic regulation of the entities regulated by QCA. The release of such information would also ensure that the performance of the statutory framework and QCA itself may be assessed and evaluated by Parliament, customers and others.

To be clear, the proposal to defer the QCA ROR Review does not represent a proposal to move toward rate of return regulation. Rather, the proposal is to move to the cyclical model of regulation that is an essential feature of incentive regulation.

[45] For example, the UK regulator Ofgem releases ROE data, albeit using benchmark rather than actual gearing ratios. Refer to *RIIO-2 Sector Specific Methodology Decision – Finance*, May 2019, Ofgem

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