The AER's Inflation Review

A report prepared for Ausgrid

June 2020

FIRST
ECONOMICS

1.   Introduction

On 25 May 2020, the AER published a consultation document on the regulatory treatment of inflation. This paper is intended to give an assessment of the strengths and weaknesses of the AER's current approach to inflation and to identify where there might be possible options for change.

The paper is structured into three main parts:

- section 2 starts by looking from first principles at the way in which energy network returns are structured and at investors' resulting exposure to inflation risk;
- section 3 works through some of the issues which might merit particular attention during the AER's work; and
- section 4 provides a one-page summary of our conclusions.

2.   Nominal vs Index-linked Returns

2.1   Preliminaries

The returns that investments pay can be structured in one of two main ways.

Some investments provide an annual % payout on a fixed principal amount. This produces a stream of $ payments that has a steady, constant value in nominal terms.

Other investments provide for the principal to index in line with inflation. The profile of annual $ payments in this set-up also indexes in line with inflation – i.e. applying a given % rate of return to a principal that is growing with inflation results in a series of $ payments that grows over time.

Figure 1 plots the two possible profiles side by side.

Figure 1

Fixed principal   Index-linked principal
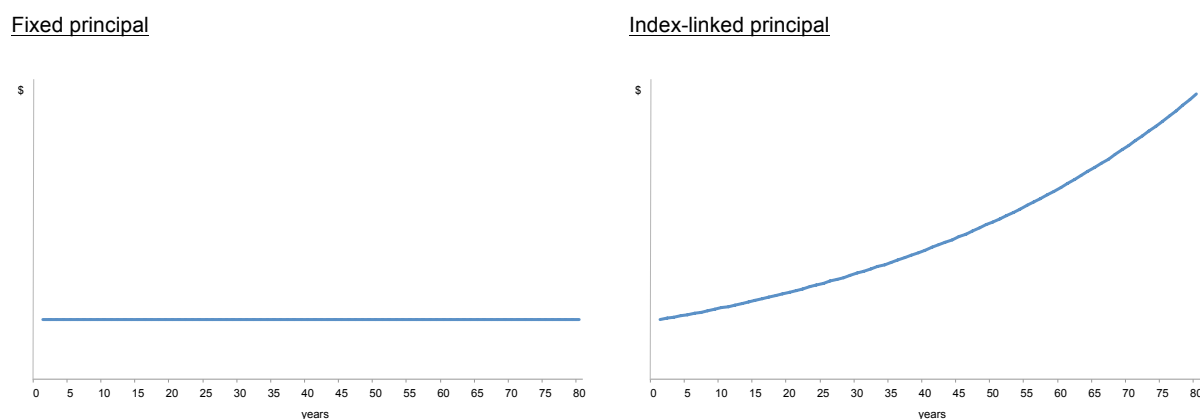
Generally speaking, the annual % rate of return in these two structures will not be the same.

In the case of an investment with a fixed principal, the return that the investor makes comes solely from the annual receivables. By contrast, in the case of an investment with an index-linked principal, the investor benefits from both the annual cash payouts and also the increase in the value of the underlying principal. The % rate of return in the right-hand side of figure 1 can therefore be set lower than the % rate of return in the left-hand side of figure 1 in recognition of the value that the investor obtains from the growth in the value of his investment.

To illustrate this point with a simple numerical example, suppose that inflation is expected to run at 2% per annum. Suppose also that the investment with a fixed principal pays a return of 5% per annum. If the two investments are otherwise very similar, one might expect that the index-linked alternative would pay a return of only ~3% per annum.[1] In the end, the holder of this investment would expect to earn the same aggregate 5% return, only in this case 3% comes from the annual cash return and 2% comes from the indexation of the principal.

Figure 2 shows the resulting profile of $ payments on a hypothetical $1,000 investment.

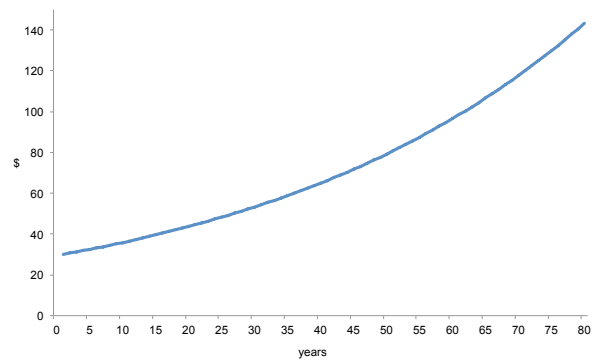[1] The exact equivalent amount can be computed using the Fisher equation (1 + real return) = (1 + nominal return) / (1 + inflation). In the case where the nominal return is 5% and inflation is 2%, the equivalent real rate of return is 2.94%.

Figure 2

Fixed principal, 5% rate of return
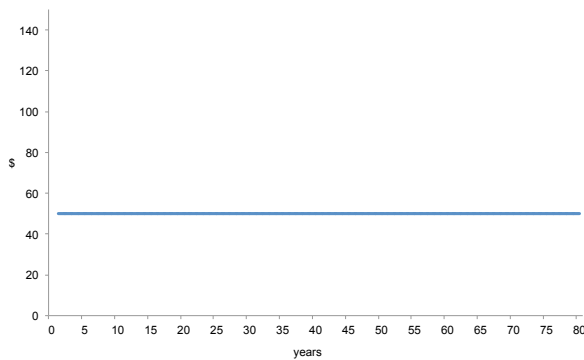

Index-linked principal, ~3% rate of return

Importantly, the net present value of the returns that the investor receives in these two cases – inclusive of all of the annual $ payments and the terminal repayment of the investor's investment – will be identical. As shown in the above charts, a series of 5% payouts on a fixed $1,000 is initially more valuable than a ~3% annual payout, but, over time, the growth that comes from inflation indexation increases the value of the underlying investment to such an extent that the investor starts to collect more from index-linked returns than he does from the investment with the fixed principal. When discounted back to year 0, it can be shown that the unders and overs in individual years net off to exactly zero.

2.2 Regulatory design

Economic regulators are able choose how they wish to structure the returns that regulated businesses pay to investors.

It so happens that the AER and Ofgem in the UK both choose to provide investors with an index-linked return.

Figure 3
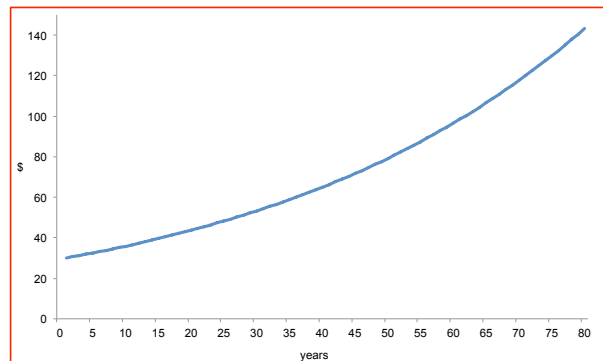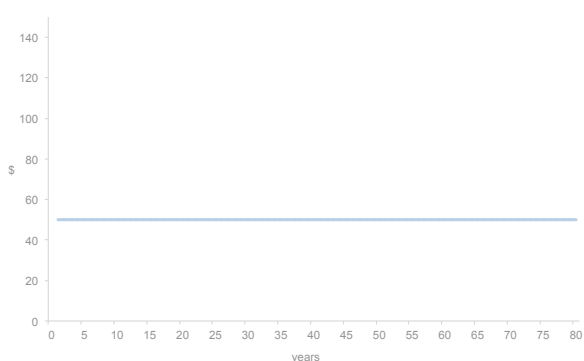
The algebra that the two regulators use is slightly different but produces the same end result:

• Ofgem provides directly for a real rate of return on RABs that index in line with out-turn inflation. Therefore, the rates of return that it calculates in its published documents are real rates of return – e.g. the 6.0% return on equity, the 1.78% return on debt and the 3.26% vanilla WACC that electricity DNOs are collecting in revenues during 2020/21 are all real rates of return; and

- the AER's arithmetic is somewhat more convoluted. The rates of return that the AER specifies are nominal rates of return – e.g. the 4.60% indicative return on equity, the 2.69% indicative return on debt and the 3.84% indicative vanilla WACC in the AER's December 2019 rate of return update are all nominal rates of return. The return line item in the AER's allowed revenue calculation is calibrated to be a nominal rate of return on an inflation-indexed RAB. Because this constitutes double compensation for inflation – once via the use of a nominal rate of return and once via indexation of the RAB – the AER then has a separate line item to deduct the annual value of RAB indexation from a company's permitted revenues.

The workings below show that these two apparently quite different calculations give equivalent revenue entitlements

Table 1

Assumptions:

Initial RAB = $1,000
New capex is exactly matched by annual depreciation
RAB is indexed for inflation
Inflation = 2% per annum
Nominal WACC = 5%
Real WACC = (1 + 5%) / (1 + 2%) – 1 = 2.94%

Ofgem approach

Year	0	1	2	3	4	5
A: Starting RAB, $		1,000.0	1,020.0	1,040.4	1,061.2	1,082.4
B: Closing RAB, $	1,000.0	1,020.0	1,040.4	1,061.2	1,082.4	1,104.1
Return, $ = B x 2.94%		**30.0**	**30.6**	**31.2**	**31.8**	**32.5**

AER approach

Year	0	1	2	3	4	5
A: Starting RAB		1,000.0	1,020.1	1,040.4	1,061.2	1,082.4
B: Closing RAB	1,000	1,020.0	1,040.4	1,061.2	1,082.4	1,104.1
Return = A x 5%		50.0	51.0	52.0	53.1	54.1
Inflation indexation = A – B		(20.0)	(20.4)	(20.8)	(21.2)	(21.6)
Total revenue entitlement		**30.0**	**30.6**	**31.2**	**31.8**	**32.5**

The box overleaf outlines how Ofgem and the AER, in practice, calculate the real-life values in such calculations.

Box 1

| Ofgem	AER
Ofgem's cost of equity calculation uses a risk-free rate set equal to observed yields on UK government index-linked bonds – i.e. Ofgem's risk-free rate is from the outset a real risk-free rate. Ofgem then adds an equity premium in accordance with its estimates of the market-risk premium and beta.	The AER's cost of equity calculation uses a risk-free rate set equal to observed yields on conventional Commonwealth government bonds – i.e. the AER's risk-free rate is from the outset a nominal risk-free rate. The AER then adds an equity premium in accordance with its estimates of the market-risk premium and beta.
Ofgem's calculation of the cost of debt starts from the reported nominal yields on two third-party corporate bond yield indices. Ofgem converts these nominal yields into real-terms equivalents by deducting gilt market readings of future inflation.	The AER's allowance for the cost of debt is set in line with the reported nominal yields on a basket of third-party corporate bond yield indices.
	The AER's separate inflation deduction is set equal to the geometric average of the Reserve Bank of Australia's (RBA's) forecast of inflation for the next two years and the mid-point of the RBA's target band for inflation for a subsequent period of eight years.

For completeness, and to aid the discussion that follows in section 3, we can note that some regulators in other sectors and/or in other countries provide in their price control regimes for companies to earn a flat, unadjusted nominal rate of return. Companies that are regulated in this way earn a nominal rate of return on a RAB that does not index with inflation and without any inflation deduction from allowed revenues.

Figure 4
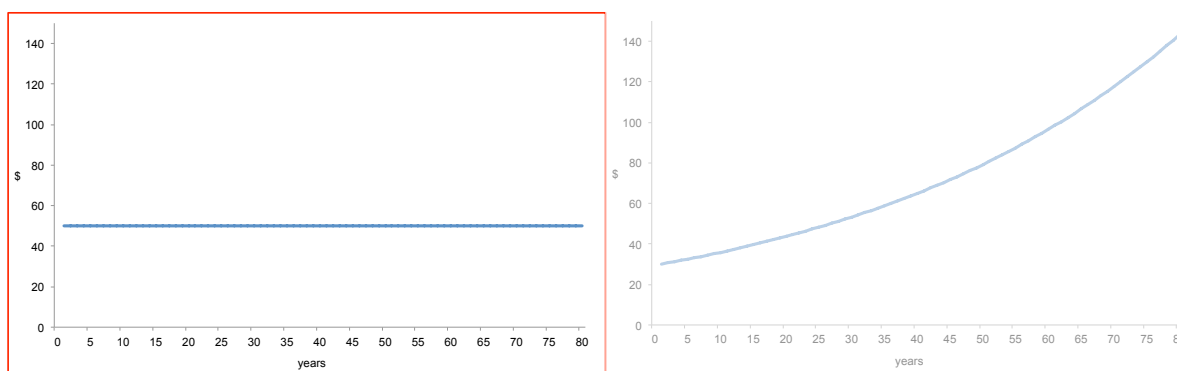
2.3   Investor exposure to inflation risk

The exposure that investors in energy networks have to inflation risk comes from the scope that there is for the AER to under- or over-estimate future inflation when it makes its price control determinations.

In table 1 and box 1 above, we explained that the AER deducts the value of annual RAB inflation indexation from regulated networks' revenue entitlements. The size of this annual deduction is fixed upfront for a period of five years according to the RBA's inflation forecast/target. As the regulatory period unfolds the AER will then index the RAB in line with actual, out-turn inflation. This way of structuring the returns that regulated companies earn means that the total nominal return that investors make – inclusive of the annual $ return in allowed revenues and the indexation of the RAB – will increase in value when inflation rates

are high and decrease in value when inflation rates are low. However, the total out-turn real rate of return will remain constant irrespective of the rate of inflation.

Suppose, for example, that the AER estimates that the nominal cost of capital is 5%, assumes that inflation will run at 2% per annum, and, hence deducts revenues equivalent to 2% per annum RAB indexation from a company's revenue entitlements:

- if out-turn inflation is in line with expectations at 2% per annum, the company will make a return ≈ nominal cost of capital – upfront RAB indexation deduction + actual RAB indexation ≈ 5% – 2% + 2% ≈ 5%;
- if inflation runs below expectations at, say 1% per annum, the company will ultimately make a return ≈ 5% – 2% + 1% ≈ 4%; and
- if inflation turns out to be higher than expected at, say, 3% per annum, the company will ultimately make a return ≈ 5% – 2% + 3% ≈ 6%.

The rule of thumb is that every one basis point by which the AER under- or over-estimates inflation translates into a total return that sits below or above the estimated nominal WACC by one basis point.

Note that in real terms, the total return (deliberately) does not change. Using the same numbers as above, the real rate of return is ≈ nominal out-turn return – actual inflation ≈

- 5% – 2% ≈ 3% when inflation is in line with prior forecasts;
- 4% – 1% ≈ 3% in the low inflation scenario;
- 6% – 3% ≈ 3% in the high inflation scenario;
- and so on.

The perspective that shareholders have on this regulatory framework then depends, crucially, on the way that a company borrows:

- where a company has index-linked debt, any under- or over-estimation of inflation will also feed one-for-one into a lower all-in cost of debt (specifically, in the form of slower or faster accretion of outstanding principals). This will mean that lower debt returns will be matched dollar-for-dollar by lower debt expense; however
- where a company has conventional debt which pays fixed coupons on fixed principals, the company will incur no additional cost when inflation is higher than forecast and there will be no cost saving when inflation comes in below expectations.

This is a hugely important observation. If a regulated company receives an index-linked return but has a significant proportion of financing costs that are fixed in nominal terms, the real-nominal mismatch that we have just described will hand shareholders lower real and nominal returns when inflation comes in below the AER's forecasts and higher real and nominal returns when inflation is above the AER's forecasts. An illustrative example is given in table 2.

Table 2

Assumptions:

RAB = $1,000
New capex is exactly matched by annual depreciation
Gearing = 60%
Nominal cost of debt = 4%
Nominal cost of equity = 6.5%
Nominal WACC = 5%
Forecast inflation = 2%

	If inflation = 1% …	If inflation = 2% …	If inflation = 3%
A: Nominal return = RAB x 5%	50	50	50
B: 2% expected inflation deduction	(20)	(20)	(20)
C: Out-turn RAB indexation	10	20	30
D: Total out-turn return = A + B + C	40	50	60
E: Debt costs = RAB x 0.6 x 4%	(24)	(24)	(24)
F: Return to equity (nominal) = D – E	16	26	36
G: Return on equity (nominal) = F / (RAB x 0.4)	4.0%	6.5%	9.0%
H: Return on equity (real)	~3.0%	~4.5%	~6.0%

Looking at line D we can see that the company earns the same total real rate of return of ~3% in all three scenarios. However, lines G and H shows that nominal and real returns on equity move higher as out-turn inflation moves higher.

This is the starting position from which all parties will need to review the options in the AER's May 2020 consultation document. As things currently stand, energy network shareholders lose out when inflation is lower than anticipated and make money when inflation is higher than anticipated.[2]

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[2] We note that low/high inflation, especially low/high indexation of the RAB, can have other effects not considered above which further amplify this situation. Most noticeably, when inflation is lower than forecast, the unexpectedly low inflation-linked increase in the RAB can put pressure on a firm's debt-to-RAB ratio. Conversely, when inflation is higher than forecast, the unexpectedly high inflation-linked increase in the RAB has a de-gearing effect.

## 3.	Issues List

### 3.1	Overview

The AER's May 2020 consultation document opens up all aspects of the regulator's treatment of inflation. In this section we work through a 'long list' of issues that we think deserve particular attention in the coming months. We cover the following questions:

- should the AER provide companies with a nominal or an index-linked equity return;
- should the AER provide companies with a nominal or an index-linked debt return;
- is it realistic to transition away from the current approach to inflation;
- is it appropriate for the AER to have a ten-year horizon when it makes its estimate of future inflation; and
- where should the AER look if it wishes to obtain the best possible forecast of future inflation?

### 3.2	Nominal vs index-linked returns

The AER's consultation document asks at a very fundamental level whether the regulatory framework ought to be providing companies with an index-linked return or if there is a case for fixing some or all components of the returns that companies earn in nominal terms.

We think that this issue is best approached by thinking separately about the return on equity (section 3.2.1) and the return on debt (section 3.2.2).

3.2.1 Nominal vs index-linked equity returns

The intent within the current framework is that shareholders should earn a regulator-determined real rate of return on their equity investments irrespective of the rate of inflation in the Australian economy. As a consequence this intent, as shown in section 2, the out-turn nominal rate of return will move up when inflation moves higher and move down when inflation moves lower.

The question to consider is whether shareholders appreciate having inflation-linked returns – i.e. do they value the strong positive correlation that there is between nominal returns and inflation, or would they feel better off knowing in advance that they will get a fixed nominal return each year?

We have not previously had direct contacts with Australian investors. However, our understanding is that existing shareholders are often pension fund investors. Our experience has been that this type of investor places significant value on assets that produce an index-linked stream of returns. One of the key risks that retirees face is the risk that inflation will erode the value of their pension income, so an asset that automatically grows almost exactly in line with the cost of living should naturally be more attractive than an asset whose worth can fluctuate according to the way in which macroeconomic risks crystallise over time.

We would therefore be surprised if existing investors would favour a switch from an index-linked return on equity to a fixed nominal return. This is certainly the attitude that we encounter in our work in the UK (NB: First Economics is a UK-based consultancy). As evidence of this, the last time a UK regulator wondered out loud whether it should switch to a fixed nominal return was in 2018 during Ofgem's early preparations for its RIIO-2 reviews.[3] The pushback that companies gave is illustrated in Box 2.

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[3] Ofgem (2018), RIIO-2 framework consultation, p.95, available at:
https://www.ofgem.gov.uk/system/files/docs/2018/03/riio2_march_consultation_document_final_v1.pdf

Box 2

> "Ofgem notes [a move to a nominal rate of return] would be a significant change to the regulatory framework. We agree. It would, by definition, reduce demand for network assets from investors who value inflation proof investment opportunities. It is of course possible that it may make the assets more attractive to other investors. But at a time when Ofgem is proposing reduced returns to investors, and when potential investment needs are increasing, there is a risk that the sector will not attract the investment it requires."
>
> – Northern Powergrid
>
> "…consideration must be given to the premium that exists for an RPI linked asset. It is clear from the portfolio of investors in utility assets that there is a clear bias for certain large-scale investors such as pension funds for long term assets that provide a hedge to RPI and capital appreciation. Again, removal of this hedge will reduce the premium and explicitly increase the underlying cost of equity for such investors."
>
> – Northern Gas Networks
>
> "… a shift to nominal returns would be a significant change to the regulatory framework and so could have wide-ranging impacts including on investor and rating agency views of the sector and of the stability and predictability of the regulatory framework. An unanticipated change of this kind could have impacts on the financing strategies and positions of network companies that today are the result of multiple decisions taken over many years in expectation that inflation indexation of the RAV will continue as in the past."
>
> – National Grid
>
> *Source*: responses to Ofgem (2018), RIIO-2 framework consultation.

Companies will need to talk directly to their shareholders in order to ascertain whether their views mirror the views set out above.

3.2.2 Nominal vs index-linked debt returns

The position on the debt side of the cost of capital is different because the energy networks have committed irrevocably to make certain payments to lenders – i.e. it is not necessary to ponder whether debt existing investors want index-linked or nominal returns.

Logic would seem to suggest that when a regulated company owes $x, it would prefer not to face the risk that it will be permitted to collect $x ± y% in revenue from customers but would like instead to know that its income will exactly cover its $x cost. This means that the structure of companies' existing and future borrowing is key:

- where a network has issued or plans to issue index-linked debt that pays a real coupon on a principal that grows in line with out-turn inflation, having an index-linked debt return ensures that there will be a short- and long-term match between revenue coming in from customers and costs going out to lenders; however
- where network has issued or plans to issue conventional debt that pays a nominal coupon on a fixed principal, having an index-linked debt return will result in a mismatch between revenue and cost whenever inflation comes in either higher or lower than expected.

Our understanding is that most Australian energy network debt falls into the second of these buckets. This gives rise to the situation that we described in section 2.3 in which the

business enjoys no financial benefit in relation to its debt costs when inflation is low and incurs no additional debt costs when inflation is high yet sees its debt-related revenues adjust down and up regardless.

(NB: The next few years are likely to be instructive in this regard. If CPI inflation comes in significantly below the lower end of the RBA's inflation target band during 2020 and 2021, the energy networks will find that the funding that the regulatory regime provides for its debt expenses falls short of its actual costs. This will require companies to divert equity returns to cover its cost of debt.)

Our feeling looking on from the outside, therefore, is that there is merit in exploring in greater detail the pros and cons of a change in the treatment of inflation as it relates to the cost of debt component of the RAB and WACC. We note that the AER's consultation document refers explicitly to a "hybrid approach", in which:

- the portion of a regulated company's RAB that is financed by equity continues to index with inflation and continues to earn a real rate of return; while
- some or all of the portion of the RAB that is financed by debt is fixed in value and earns a nominal rate of return.

Our view is that there is a natural financial logic to this kind of arrangement in a situation where equity investors have a preference for an index-linked return but debt investors have an entitlement to fixed debt payments.

3.2.3 Transition issues

A related and critically important matter for the parties to the AER's review to take into account as it considers the issues identified under the two previous headings concerns the ease with which Australia's networks could transition from the current framework to any new treatment of inflation.

As we set out at the start of section 2, one important consequence of the AER's current approach to inflation is that the AER is able to 'backload' returns via the partitioning of investors' cost of capital into an in-year real rate of return and the indexation of the RAB. If the AER were to switch unthinkingly in part or in full to a standard nominal rate of return model, returns would become more 'front-loaded' (see figure 2), and network charges and customer bills would go up at the point of any changeover. Regulators and companies might reasonably want to avoid such a price increase, particularly given that the change being made is highly technical in nature and gives customers no service improvement.

Our suggestion, therefore, is that any proposals that are developed in the AER's review will need to recognise the constraints that there are around affordability. This perhaps points towards consideration of phased transition mechanisms that provide for the treatment of inflation to change gradually as and when the other building blocks in the allowed revenue calculation provide 'headroom' for the current inflation deduction to be downsized. Alternatively it might be possible to keep the current nominal WACC / forecast inflation deduction approach – and, hence, the current level of prices – and design some sort of true-up mechanism which tops up / marks down networks revenues to compensate for a desired proportion of any unexpectedly low or unexpectedly rapid RAB indexation.

3.3 Forecasting future inflation

The other main avenue of inquiry in the AER's consultation document, which the parties to the review can look at independently of the discussion in section 3.2, concerns the way in which the AER arrives at a forecast of future inflation.

3.3.1 Forecast horizon

The first thing that we think merits attention is the AER's practice of estimating inflation over a forward-looking ten-year horizon. The AER rationalises its use of a ten-year period by noting that it assumes throughout the WACC calculation that investors invest in regulated networks with a typical investment horizon of around ten years. However, it is not at all clear to us why this is a relevant consideration in the specific context of inflation estimation for the following reasons:

- first, inflation is not, strictly speaking, a WACC parameter in the way that the risk-free rate, market-risk premium, beta, etc. are WACC parameters. As we explained in box 1 in section 2, it is possible to make an estimate of the nominal WACC without at any point having to make an explicit inflation forecast;
- instead, the purpose of the forecast inflation term is to partition the estimated nominal WACC, once its has been calculated, into two parts – (i) an in-year real return, and (ii) the indexation of the RAB, Specifically, the AER seeks via its inflation estimate to ensure that the value that the regulated firm will likely obtain through RAB indexation is netted off its revenue requirement so that there is no double count in the compensation for inflation; and
- insofar as that partitioning is done for regulatory periods that last five years, it seems to us that the natural horizon to have is also five years. Since inflation from year 6 onwards does not impact the indexation of the RAB between years 1 and 5, there is no reason why the AER's inflation deduction should be impacted by the forecast rate of inflation in these later years.

The problem with the AER's ten-year approach can be seen in the following numerical worked example. Suppose that the regulator wishes to provide for a nominal rate return of return of 5% and sees the outlook for inflation depicted in table 3.

Table 3

Year	1	2	3	4	5	6	7	8	9	10	Average
Inflation	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%	1.6%

The AER's current approach of calculating the average inflation rate over a period of ten years tells it to make an annual inflation deduction worth 1.6%. The AER will therefore convert the 5% nominal WACC into an in-year return worth ~3.4% per annum.

Table 4 below shows that the value that the regulated firm expects to obtain from the indexation of its RAB between years 1 and 5 in this illustrative example is worth only 1.2% on average. The gap that there is between the AER's inflation deduction and RAB indexation leaves the average aggregate five-year nominal return around 40 basis points short of the estimated WACC.

Table 4

Year	1	2	3	4	5	6	7	8	9	10	Average
WACC	5%	5%	5%	5%	5%						5%
Expected inflation	(1.6%)	(1.6%)	(1.6%)	(1.6%)	(1.6%)						(1.6%)
Actual RAB indexation	0%	0%	2%	2%	2%						1.2%
Total return	3.4%	3.4%	5.4%	5.4%	5.4%						4.6%

This would be acceptable to the regulated firm if the regulator goes on to set its annual inflation deduction at the same 1.6% per annum in years 6 to 10 (i.e. the under-recovery of the WACC in years 1 and 2 would be fully offset by subsequent over-recovery of the WACC in years 6 to 10). However, this is not the way in which the AER approaches its price control reviews. At the regulatory reset that takes place at the end of year 5, the AER will look at inflation forecasts for years 6 to 15 and make a new inflation deduction that reflects the prevailing economic outlook at that time. If the regulator resets its expected inflation estimate to a new forward-looking value of 2%, table 5 shows that the regulated firm will suffer a permanent and non-recoverable shortfall in its return.

Table 5

Year	1	2	3	4	5	6	7	8	9	10	Average
WACC	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Expected inflation	(1.6%)	(1.6%)	(1.6%)	(1.6%)	(1.6%)	(2%)	(2%)	(2%)	(2%)	(2%)	(1.8%)
Actual RAB indexation	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%	1.6%
Total return	3.4%	3.4%	5.4%	5.4%	5.4%	5%	5%	5%	5%	5%	4.8%

The solution to the problem that we have highlighted is not difficult to identify. Rather than set its deduction for inflation in line with expected inflation over a ten-year period, the AER should really be estimating inflation out only as far as the end of the five-year period which it is setting prices for. This will ensure that the deduction from the nominal WACC exactly matches the value that the AER expects the firm to accrue from RAB indexation within each and every five-year period.

Our advice is that alternative way of allowing for future inflation deserves detailed consideration.

3.3.2 Source of forecasts

A second factor that could potentially cause a regulated firm to under- or over-recover its allowed return would be the presence of any systematic bias in the AER's inflation projections.

The AER notes in its consultation paper that there are five possible places it can go to when it is making forecasts of future inflation:

- the RBA's inflation forecasts;
- analyst forecasts;
- gilt market break-even inflation;
- the inflation swap market;
- the Australian government's inflation target.

The AER's current approach is to calculate the average of the RBA's inflation forecast for years 1 and 2 of each new price control and the mid-point of the ARB's inflation target band for a subsequent period of eight years. The question to consider is whether there is any reason to think that this leads to an upwardly biased estimate of likely inflation.

We would not claim to have the country-specific knowledge that would enable us to discern if there are such factors at play. However, it is noticeable as an outsider that CPI inflation has tended recently to come in below the mid-point of the ABR's target band. Figure 3 plots the annual CPI inflation rate since the global financial crisis. The chart shows that annual inflation has come in below the mid-point of the ABR's inflation band for eight consecutive years. In six of those years, inflation lay below the lower end of the RBA's target band.

Figure 3: CPI Inflation
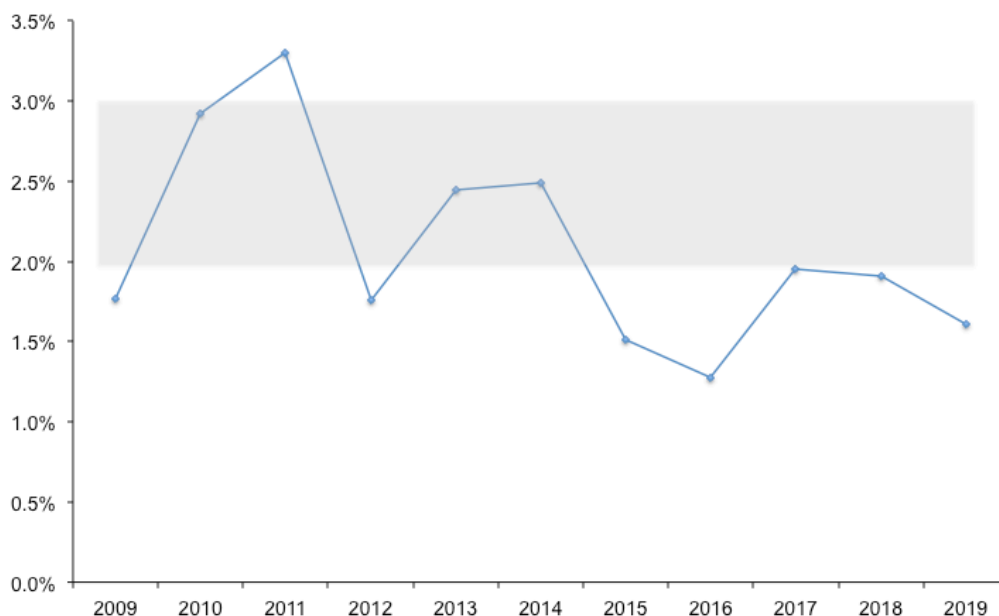
Source: Australian Bureau of Statistics.

At the time of writing, it looks like the pattern of below-target inflation will extend for at least another two years. Prima facie, this suggests that it would be worthwhile to do a piece of work to assess whether one or more of the alternative forecasting approaches could have enabled the AER to more accurately anticipate out-turn inflation, and hence RAB indexation, during the last decade in comparison to the AER's default to RBA values.

We would, however, caution against going back to gilt market break-even inflation measures (as calculated from the difference between yields on nominal and index-linked Commonwealth securities). Ofgem in the UK currently converts uses break-even inflation to convert estimates of the nominal cost of debt into a real terms equivalent, but the experience has been that this measure of 'inflation' is volatile and can be difficult to interpret:

- first, part of the difference between nominal and index-linked yields is attributable to the inflation-risk premium that investors demand in exchange for holding gilts and not to expected inflation. The value of this risk premium is not observable, but the

evidence is that it does not have a constant value and can exert unpredictable upward and downward pressures on break-even rates at different points in time; and

- second, there is evidence of distortions in the supply and demand for UK government gilts, especially as a result of central bank quantitative easing programmes and legislation which heavily incentivises pension funds to buy gilt assets. Both of these things can render so-called break-even inflation rates meaningless.

As support for these observations, figure 4 shows the forward inflation curve at four dates during 2017-20. Commentators have found it hard to offer any economic explanation for (i) the shape of the forward curves; (ii) the level of break-even inflation at any given point along the curves; and (iii) the shifts that there have been in the curves from month to month.

Figure 4: UK break-even inflation instantaneous forward curves
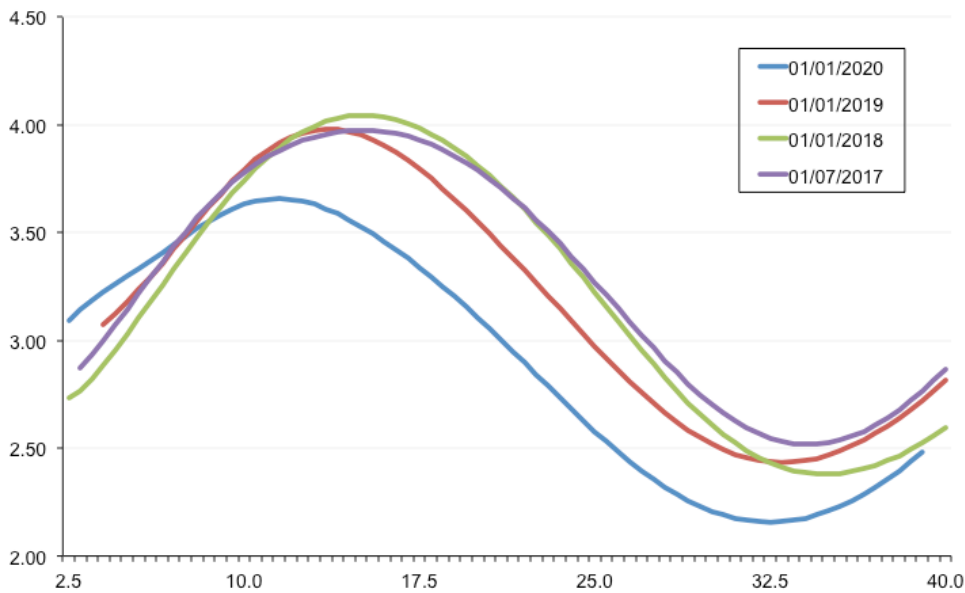
Source: Bank of England calculations.

Ofgem has recently reviewed the way that it converts nominal cost of debt estimates to real terms equivalents in the light of these issues. Its July 2020 proposal is to switch from gilt market break-even inflation to an independent forecast of inflation produced by the UK's Office of Budget Responsibility.[4]

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[4] Ofgem (2020), RIIO-2 draft determinations – finance annex.

4.   Conclusions

The key conclusions at the end of this paper are as follows:

1.   The AER currently awards energy networks an inflation-linked allowed rate of return. The out-turn nominal return moves down when in inflation is lower than expected and moves up when inflation is higher than expected.

2.   The usual line of thinking is that equity investors, especially pension funds, appreciate having inflation-proof returns. It would be a surprise to us if shareholders want anything other than status quo as regards the treatment of inflation for the portion of the RAB that is funded by equity.

3.   The situation in relation to debt funding is different because a significant proportion of companies' borrowing requires the payment of fixed amounts every year. The AER's policy of giving an index-linked debt return can create mismatch between the revenue coming in from customers and the interest going out to lenders in years when inflation is lower or higher than the regulator assumes when it sets price controls.

4.   Moving to a 'hybrid' treatment of inflation, in which networks receive an index-linked equity return but a fixed return on some or all of its debt, would therefore result in more cost-reflective prices and help to eliminate the windfall gains and windfall losses which can arise under the current regulatory framework.

5.   The transition to a new treatment of inflation might involve the introduction of a true-up mechanism rather than a straight switch to a nominal return on debt.

6.   Separately from the question of whether regulatory returns should be index-linked or fixed in nominal terms, there is a clear methodological flaw in the way that the AER currently allows for future inflation in its price control determinations. Instead of forecasting inflation over a ten-year horizon, the AER should switch to a five-year forecasting horizon to match the length of the price control period.

7.   Given experience over the last decade, it is also worth all parties investigating if data from independent forecasters and/or the inflation swap market would have produced more accurate inflation projections in comparison to the AER's automatic default to the RBA's inflation forecasts/target.