

Australian Energy Regulator

By e-mail: InflationReview2020@aer.gov.au

APA submission on regulatory treatment of inflation

APA Group (APA) appreciates the opportunity to make this submission on the discussion paper, *Regulatory treatment of inflation*, which was published by the Australian Energy Regulator (AER) in May 2020.

The discussion paper asks seven questions about the current regulatory treatment of inflation. In this submission, we focus on one of those questions: whether the current approach to the setting of network service provider revenues can deliver a target ex ante expected real rate of return.

We are of the view that the current approach – the scheme of the Roll Forward Model (RFM), the Post-tax Revenue Model (PTRM), and the annual price adjustment mechanism – cannot deliver a targeted ex ante real rate of return in a given regulatory period. Moreover, we find that, whenever actual inflation is, subsequently, different from expected inflation used in the PTRM, there is either an under-recovery or over-recovery of capital over the life of the regulated asset. The scheme of the RFM, the PTRM and the annual price adjustment mechanism is inconsistent with a prior requirement for NPV = 0 over the life of a regulated asset.

We are of the view that, before proceeding, the question of how regulated price determination and annual price adjustment should work, in an inflationary environment, to contribute to achievement of the objectives of the national energy laws, must be addressed. Only when this question has been answered can we answer more specific questions about the best methods of estimating expected inflation, including the best approach to dealing with inflation expectations in the trailing average return on debt.

Understanding the current approach

To better understand the current approach to the treatment of inflation in the setting of network revenues, we have linked roll forward models, post-tax revenue models and annual price adjustment mechanisms over a span of 10 regulatory periods, each of 5 years duration.

Sapere has adopted a similar modelling strategy for its report to the AER, *Target return and inflation: Input to the AER Inflation Review 2020*.

In our linked modelling we have assumed:

- demand for the service provided by the regulated asset is 1 unit per year, and is known with certainty at the commencement of the first regulatory period
- no capital expenditure beyond the initial investment in the regulated asset.

The first of these assumptions is simplifying, and allows us to view modelled revenues as prices.

New capital expenditures add "shocks" to the time paths of return, depreciation, total revenue and prices. Our second assumption – no new capital expenditure – allows us to see clearly – without these "shocks" – the time paths of key variables generated by the RFM, PTRM and annual price adjustment mechanism.

First year effect

We observe the "first year effect" noted by Sapere: the revenue in the first year of a regulatory period locks in expected inflation for that year, rather than substituting actual (lagged) inflation. This results in a deviation from $NPV = 0$ which persists across the regulatory period.

We think that this first year effect is not easily corrected because it flows through to revenues and taxes. It is a result of both the difference between expected and actual inflation, and the smoothing of total revenue. When total revenue is smoothed, and prices are set using the smoothed revenue, the tax on forecast revenue will be different from the cost of tax included in total revenue even when expected inflation and actual inflation are the same.

In our modelling, like the modelling reported by Sapere, the first year effect produces relatively small deviations from $NPV = 0$. These deviations may be small, but they are a signal that the current approach to the setting of network service provider revenues is not consistent with the principle of $NPV = 0$ on which regulated revenue and price setting are based.

Does the current approach deliver the target ex ante expected real rate of return?

Our modelling indicates that the current regulatory approach to inflation does not, in general, deliver a target ex ante real rate of return, although it might do so in very specific circumstances.

If actual inflation turns out to be the same as expected inflation, and if the expectations of inflation incorporated in nominal rates of return on equity and debt are the same as expected inflation, then the current approach – implemented via the RFM, the PTRM, and the annual price adjustment mechanism – can deliver a target ex ante expected real rate of return.

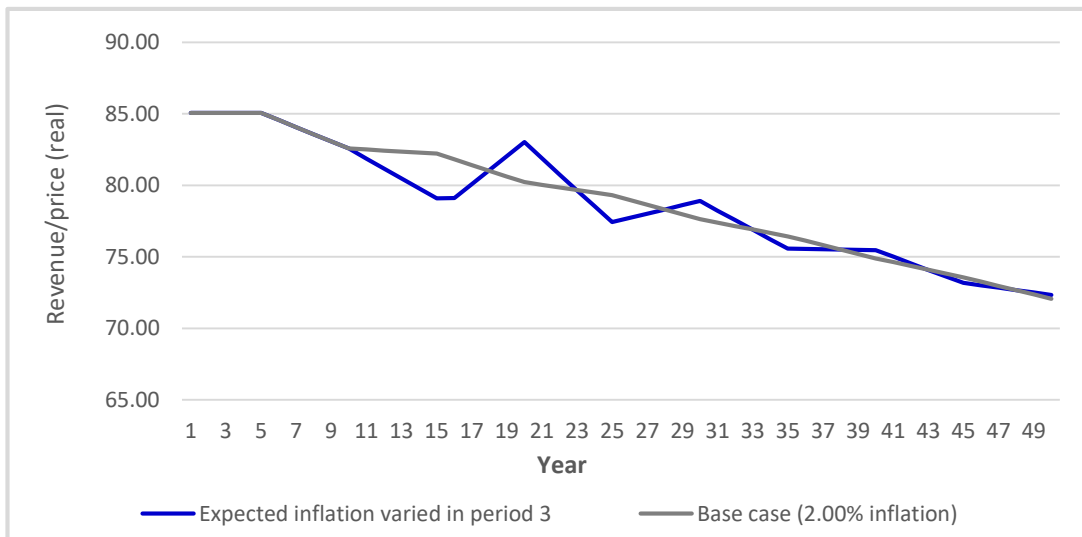
Since 2017, however, the regulatory treatment of inflation has been an issue because actual inflation has been less than expected inflation as determined using forecasts published by the Reserve Bank of Australia (RBA) for two years combined with the mid-point of the RBA's target band for inflation for a further eight years.

We have modelled, for a single regulatory period within our span of 10 periods, a case in which the estimate of expected inflation made for that period is higher than previous and subsequent actual inflation. The current approach does not, it seem to us, deliver a real rate of return which is equal to the target ex ante expected real rate of return.

Furthermore, when expected inflation for a regulatory period is higher than subsequent actual inflation for the same period, depreciation, as calculated in the PTRM, is lower than depreciation as subsequently calculated in the RFM. The return of capital via the PTRM and the annual price adjustment mechanism is less than the return of capital recognised in the RFM, and taken into account when setting the opening capital base for the next regulatory period.

There is nothing in the scheme of the RFM, PTRM and annual price adjustment mechanism which corrects for this under-recovery of capital. Moreover, the error is passed into the opening capital base for the next regulatory period, whereby it, and its effects on delivered returns, persist over the remaining life of the regulated asset.

This is shown clearly in Figure 1 (drawn from the results of our modelling of a case in which the estimate of expected inflation in a single period (period 3) is higher than previous and subsequent actual inflation).



A similar pattern of variation in revenue (and, given our assumptions, in price) over the remaining asset life is observed when expected inflation is less than actual inflation. However, when expected inflation is less than actual inflation, there is an over-recovery of capital.

The scheme of the RFM, PTRM and annual price adjustment mechanism does not return the service provider's investment over the life of the asset. The scheme is inconsistent with a prior requirement for NPV = 0 over asset life.

We observe that the NPV effect of a difference between expected inflation and actual inflation is small. Sapere reports similar results for a number of scenarios, and attributes them to the first year effect noted above. We think this is incorrect. The linkages between the RFM, PTRM and annual price adjustment mechanism induce, over time, an error in capital recovery whenever expected inflation is different from actual inflation. This error is not the same as first year effect.

The discounting in an NPV calculation, made over an extended period, masks the significance of this capital recovery effect. Our modelling, which is intended to resemble current practice, indicates that, with current inflation at around 2%, investors could lose some 1.5 per cent of their investment as a result of expected inflation being set "high" using current RBA forecasts for two years combined with the mid-point of the RBA's target band for inflation for a further eight years. When the regulatory asset base is large, this represents a large absolute loss to those investors.

Where do we go from here?

As we have explained above, we think the current approach to the setting of network service provider revenues produces incorrect results when expected inflation is different from subsequent

actual inflation. The error might be reduced, but cannot be eliminated, by a better method of determining expected inflation.

Even if a better measure of expected inflation can be found, the current approach to the determination of network service provider revenues – the scheme of the RFM, the PTRM, and the annual price adjustment mechanism – will not, in general, deliver a targeted ex ante real rate of return, and will not, in general, be consistent with a prior requirement for NPV = 0 over the life of a regulated asset.

It may be that there is no way of improving current practice. But this is a conclusion which should be drawn only after more extensive discussion of the issues of what regulated price determination is intended to achieve – a target real rate of return, a target real rate of return on equity (and a nominal rate of return on debt), or a nominal rate of return – and how the achievement of that outcome is to be assessed.

We doubt that ex ante targeting of a real rate of return is feasible, in part because the cost of debt is a nominal cost. A hybrid approach may be required, but we have not seen and have not, ourselves, developed such an approach. We do not yet know how a hybrid approach might deliver a target ex ante real rate of return on equity.

Even if we were to consider development of a hybrid model, a question arises as to whether NPV = 0 remains a guiding principle for that model development, or whether the principle is a theoretical ideal unattainable in practice. Approximation may be the best that can be achieved. If it is required, how it might be achieved, can only be resolved by further discussion among all stakeholder – the AER, service providers, users of regulated network services, and end users of electricity and gas.

APA would be pleased to elaborate on any of the views in this submission. Our work on rate of return is being undertaken by John Williams, who is in our Perth office and can be contacted directly on [REDACTED] or at [REDACTED].

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