INCENTA
ECONOMIC CONSULTING

Memorandum

To:	Chorus
From:	[redacted]
Date:	3 August 2023
Subject:	Including a productivity assumption in opex forecasts

1. Introduction and summary of advice

1.1 Issue

I understand that the Independent Verifier (IV) has questioned Chorus's proposal not to include a "productivity offset factor" when deriving Chorus's forecast of operating expenses (using the "base-step-trend" model). The IV has further argued that the absence of a productivity offset will reduce Chorus's incentive to make savings in operating expenditures.

I understand further that Chorus has:

- applied an estimate of the elasticity of operating expenditure to output in its forecasts, in which it is assumed that operating expenditure grows at a slower rate than output, and
- forecast savings in operating expenditure that are expected to flow from certain IT projects.

1.2 Advice

In my view, Chorus's proposal to exclude an explicit "productivity offset" is reasonable because Chorus has already accounted for key sources of expected productivity growth.

Furthermore, the IV's arguments that not applying the "productivity offset" will dilute the incentive for efficiency is wrong – Chorus's incentives (which are to reduce cost where possible) will be unaffected.

2. Elaboration

2.1 Background: sources of productivity change

Productivity growth occurs when the aggregate quantity of outputs grows at a slower rate than the aggregate quantity of inputs. Where the focus is on operating expenditure, the relevant inputs are only the operating-cost-related-inputs.

A wide range of factors may affect the productivity growth that is measured for a period, which include:

- the realisation of economies of scale / scope
- changes in the capital stock that affect opex, but are unrelated to output growth (e.g., IT)
- changes in obligations or similar things that cause a growth in inputs, but are not represented in outputs
- changes to technology / organisation / practices etc that are available for all firms (i.e., efficiency gains that are possible for an efficient firm) (i.e., a shift in the efficient frontier), and
- "catch up" by inefficient firms to the technology / organisation / practices etc of efficient firms (i.e., catch up to the efficient frontier).

Whether all of these factors are represented in an estimate of opex productivity growth depends on the estimation method employed.

- If a large sample of firms is assembled and the productivity change is estimated simply using index numbers, then potentially all of these factors may be embedded in the estimate.
- In contrast, where an econometric method is employed, then some of the factors noted above can be separately identified (e.g., the economies of scale / scope effect can be distinguished), and it may be possible to assemble firms where some of the factors (like "catch up") would not be present.

In addition, it may not be appropriate for all of the possible sources of productivity growth to be reflected in forecasts of operating expenditure, referring here specifically to the "catch up" component.

- This is because whether a particular firm can be expected to achieve "catch up" depends on the starting position of the firm – firms that are already on the efficiency frontier have nothing to "catch up", whereas for firms that are more distant from the frontier it may be appropriate to assume a greater degree of "catch up" than for the average firm. Thus, the extent of catch up that is appropriate will be firm specific.
- For this reason, where the Australian Energy Regulator (AER) applies the "base + step + trend" method to forecast operating expenditure (which I discuss further in section 2.3), the AER goes to some lengths to ensure that its estimate of productivity growth excludes any historically achieved "catch up". Rather, where there is evidence that a firm's level of efficiency is materially inferior to its peers, an adjustment is made directly to the base year for the estimated level of inefficiency.[1]

[1] AER (2019), Final decision paper - Forecasting productivity growth for electricity distributors, March, p.8. There are only a small number of cases where the AER has made an adjustment to the base year to account for deemed inefficiency, which were in relation to government-owned firms and where the AER had a concern that the firms did not respond as strongly to the financial incentives created under the regime as the privately owned firms.

2.2 Chorus has already incorporated key drivers of productivity into its forecast

As noted above, Chorus has already factored into its opex forecast:

- the assumption that opex will grow more slowly than output because of economies of scale / scope via the cost elasticity assumption, and
- the expected benefits (in terms of opex reduction) from a range of IT projects.

Accordingly, Chorus has already factored into its opex forecast two potentially important drivers of opex productivity savings.

In relation to opex savings enabled by IT projects, the practice of whether or not explicit adjustments are made to the forecast is (in my experience) mixed.

- Where very large IT projects are proposed, and especially where it is a new functionality, it is more likely that a regulator would demand a consequential reduction in opex.
- However, routine replacements of IT – many of which would incorporate additional features – would ordinarily be incorporated into the capex forecast (or opex now, with SaaS) without a change to the forecast, and instead to assume that the cost savings are captured in the assumed productivity growth (i.e., because the same routine IT replacements are likely to be responsible for at least part of the historical productivity growth).

2.3 The application of base step trend in NZ is (subtly) different than in Australia

In Australia, where the base-step-trend model is applied, the formula is:

- Opex = OpexBase + Output Growth (%) – Productivity Growth (%) + Input Price (%)

That is, the adjustment for "network scale" is simply a scaling up by the output growth, without any allowance for the cost elasticity. Rather, the adjustment for cost elasticity is embedded as part of the productivity growth term. For example, the Australian approach was described by Economic Insights (an adviser to the AER who also advised the ComCom on the same issue) as follows:[2]

> *The rate of change method for calculating the efficient future opex allowance for regulated DNSPs takes efficient opex for a base year (usually the second last year of the preceding regulatory period) and rolls it forward each year by the forecast rate of change in opex input prices plus the forecast rate of change in output minus the forecast rate of change in opex partial factor productivity (PFP). The idea is that over time more opex allowance will be required if opex input prices increase relatively rapidly and if output increases (as more inputs are required to supply more output). But increases in opex partial productivity over time will normally reduce the quantity of opex required per unit of output, all else equal, and*

[2] Economic Insights (2019), Memo to the AER – Forecast Opex Productivity Growth, February, p.1.

> *so this also has to be allowed for. This requires a forecast of opex productivity growth for the next regulatory period to be made.*

In contrast, the ComCom's standard method is to apply a cost elasticity assumption as the first change (i.e., reflecting the effects of economies of scale / scope), and then to separately consider whether (in effect) there are further factors that may justify an *additional* productivity assumption.[3] Thus, the productivity factors applied in Australia cannot be compared to those in NZ. Rather, in Australia, the productivity factor has more work to do, and so would be expected to be larger.

For comparison, the current opex productivity factor that is being applied to EDBs in Australia is 0.5 per cent (after having been 0 per cent for the past decade or so).

2.4 Changing the productivity factor will not affect incentives

It is regulatory 101 that changes to expenditure forecasts[4] will affect only profits (and, relatedly, whether Chorus achieves real FCM) and not affect incentives. That is, Chorus will have the same incentive to reduce cost and pass the benefit onto shareholders.

Indeed, the AER (during its recent review of its productivity assumption) made this very point in response to industry participants:[5]

> *SA Power Networks stated that we did not articulate the problem we were trying to 'solve via pre-emptive productivity adjustments'. It further claimed that we did not substantiate the view that, 'without pre-emptive productivity adjustments, the regulatory framework provides insufficient competitive pressure on distributors'. However, the purpose of our productivity growth forecast is not to incentivise productivity gains that would not otherwise occur. As we stated in our draft decision, the purpose of forecasting productivity growth is simply to ensure our opex forecasts reflect the efficient costs of a prudent firm going forward. To do this, the forecast opex must reflect the productivity improvements a prudent and efficient distributor can reasonably be expected to achieve.*
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> *…*
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> *Once an opex forecast is determined, the distributor's incentive should be to minimise its opex, regardless of the opex forecast.*

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3 The NZ practice gives more sensible result for the scale effects when the forecast output growth is different to the growth that applied during the period used to estimate productivity.

4 That is, provided the change is independent of anything that Chorus has done or may do, and so does not create perverse incentives.

5 AER (2019), Final decision paper - Forecasting productivity growth for electricity distributors, March, pp.20-21.