Industry wide forecasts and default price paths

A report for Vector

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1. Introduction and summary

1. The Commerce Commission (the Commission) has set out a proposal to use industry wide cost forecasts within the structure of a give cost model. In combination, these are used to determine starting price adjustments that are consistent with a firm having an expectation of earning a present value of revenues that is equal to the present value of costs over five years.

2. Vector has asked CEG to review the industry wide cost forecasts and the internal consistency of those forecasts with the cost of model being used by the Commission. We have two initial observations:

   - The annualised industry wide capex forecast does not reflect the largely upfront profile of the underlying capex forecast. As a result, its use in the Commission's present value cost model underestimates the present value of costs for the industry. That is, even if the industry exactly followed the industry wide cost forecast on which the annualised capex growth estimate is based, the industry would still have higher present value of costs than the Commission's model estimates;
   - The modelling of depreciation fails to give the asset value back over the life of the asset. In the presence of inflation the Commission's cost model has the effect of never fully depreciating an asset. Specifically, the Commission's cost model only delivers depreciation of the asset in nominal terms over its life. In the presence of inflation, this will be less than the real value of the asset. In order to depreciate the real value of the asset over its life depreciation needs to be adjusted upwards for inflation (and revaluation would need to not apply to depreciation); and

3. We discuss each of these issues in turn in the next section.

2. Suggested amendments

4. We discuss each of these issues in turn in the next section.

2.1. Capex forecasts

5. The Commission has taken two steps to estimate industry wide capex growth rates:

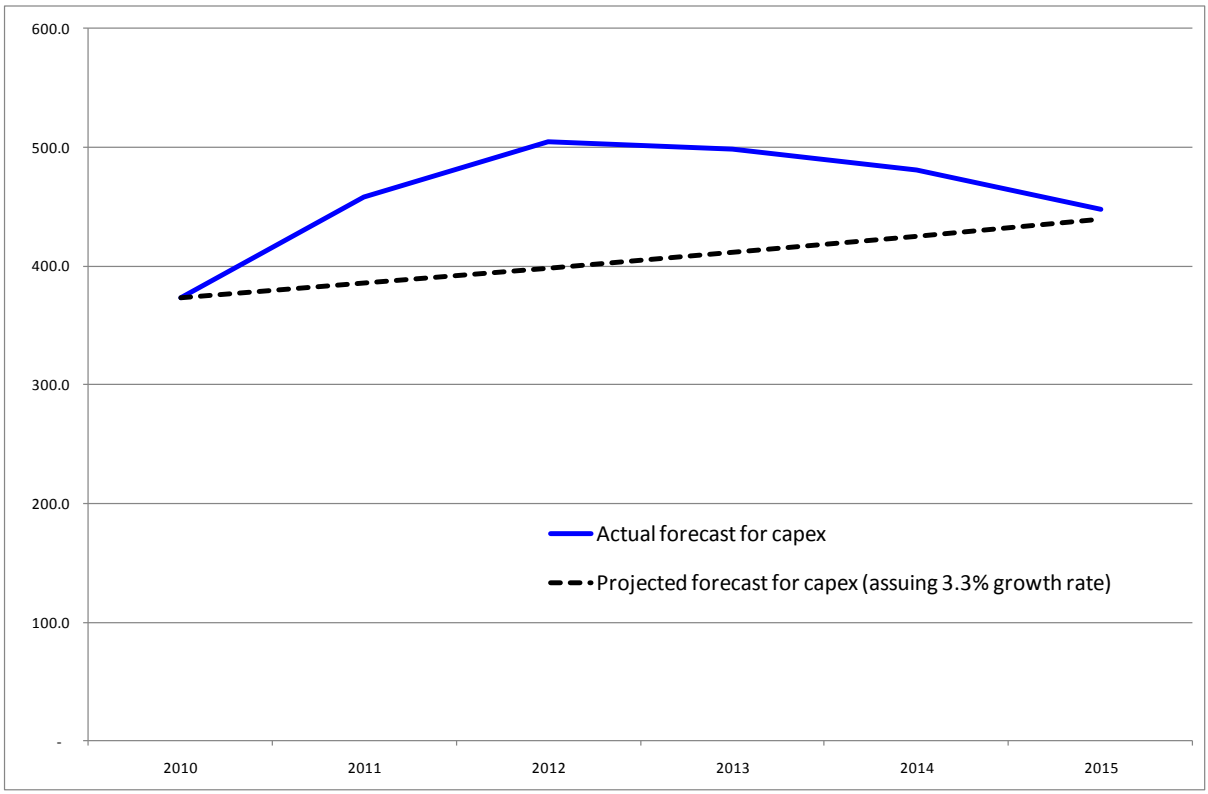
   i. First the Commission forecasts industry wide capex in each year between 2010 and 2015 (these are set out in Table 8 from paragraph C1.23 of the Commission's Update Paper);[1] then

   ii. The Commission derives a smooth annualised rate of growth estimate from this data.

6. The problem with this approach is that the forecasts in embodied in step i) are not smooth but instead involve a very steep increase in capex between 2010 and 2012 (35% increase in two years) followed by negative growth in capex. However, by adopting a smoothed annual forecast for capex growth the Commission's cost model starts and ends at approximately the right place but underestimates capex in all of the years in-between (2011 to 2014). This is shown diagrammatically in the figure below.

[1] 2010-15 Default Price-Quality Path Starting Price Adjustments and Other Amendments, Update Paper, April 2011

Figure 1: Actually forecast capex versus smoothed annually projected capex



Source: Table 8 from paragraph C1.23 of the Commission's Update Paper, April 2011

7. This means that the Commission's smooth annualised estimate underestimates, and materially so, the forecast actual level of industry capex on which the smooth annualised estimate is based. This is true in both absolute and present value terms.

8. This can be corrected in the Commission's cost model by using five discrete annual forecasts rather than one single smoothed forecast. These are set out in the table below.

Table 1: Implied annual growth in capex

	Capex forecasts form Table 8 of Update paper	Implied annual percentage change from previous year
2010	373.4	
2011	457.6	22.6%
2012	505.0	10.4%
2013	498.4	-1.3%
2014	480.9	-3.5%
2015	447.8	-6.9%

Source: Table 8 from paragraph C1.23 of the Update Paper, April 2011

2.2. Use of inflation forecast in modelling of depreciation

9. The Commission's cost model, in cells D43 to H43 of Sheet EDB25, models depreciation as the opening asset base divided by the residual asset lifetime. However, the Commission's model also separately reduces the cost of depreciation by an amount equal to inflation on the opening asset base (this is performed in the revaluation row in cells D44 to H44).

10. The purpose of the revaluation row is to (appropriately) allow only a real return on a nominally increasing asset base. However, in order to achieve this one must only apply an inflation based revaluation to that part of the RAB that is not being depreciated in that year. Applying an inflation based revaluation to the entire RAB has the effect of undoing (clawing back) the depreciation being allowed.

11. The effect of this is that no asset will ever be fully depreciated in the presence of positive inflation. That is, higher inflation has the effect of back-loading the real profile of costs. This is clearly not consistent with having implemented a real cost model where real depreciation should be independent of inflation levels.

12. In order to fix this problem:

    i. the real value of depreciation (opening RAB divided by residual asset lifetime) must be scaled up for inflation; and

    ii. the revaluation due to inflation must be applied to the opening RAB less the real value of depreciation.

13. By way of example, imagine that one had an opening RAB of $100 and that the remaining life of the asset was 1 year. Also, let inflation be 100% and the real WACC be 5%. Under the Commission's cost model $100 of depreciation would be allowed but this would be completely offset by a revaluation amount of $100 (100% of $100).

The only cost recognised in that year would be $5 (a real return of 5% on the opening asset base of $100). There would be no cost of depreciation recognised in that year – even though the asset had only one year of remaining life. There would, of course, be a $100 higher opening asset base at the beginning of the next year ($200 instead of $100) due to the operation of the revaluation mechanism. The effect of this is to backload the profile of real costs.[2]

14. However, with the adjustment recommended by CEG, depreciation in this example would be set equal to $100 plus inflation (equals $200 in this stylised example with 100% inflation). However, the revaluation would be applied to the opening asset value less real depreciation which give rise to an amount of $0 to be re-valued for the effect of inflation ($100 less $100 equals zero). This gives the correct profile of costs in this example – full deprecation of the opening asset base in one year.

15. In order to apply this adjustment within the Commission's cost model one would make the following changes:

- the contents of depreciation cells D43 to H43 (opening asset base divided by residual asset lifetime) need to be multiplied by (1+CPI) – this ensures that the real amount of depreciation is not underestimated due to the impact of inflation; and
- the CPI revaluation amount in cells D44 to H44 is only applied to the opening asset base net of depreication. The new formula can be written as (opening asset base)*(1-1/residual asset lifetime)*CPI.

[2] That is, estimates of future costs would have been increased by an amount which offsets the underestimation of current period costs.