Asset Valuation for Access Pricing

This report is about valuing assets in cost-based models for access pricing regulation.

Cost models may be 'top-down' from a firm's audited accounts or 'bottom-up' based on a desk-top engineering model. When regulators develop access prices, they use one or both (e.g. UK) of these approaches. In either case, they have to decide how to value the assets supporting the regulated service. This is the most important decision they will face for a network business dominated by fixed costs because depreciation and the return to capital derived from this valuation will account for well over half of total costs.

The fundamental choice is between actual cost and replacement cost valuation.

In 'top-down' models this choice is between using historical cost accounts (HCA), as used in most financial annual reports. Or, current cost accounts (CCA) where assets are valued at replacement cost.

For 'bottom-up' models, assets may be valued at the (actual) cost of purchase or optimised replacement cost (ORC, the cost of replacing existing assets with today's prices and best choice of technology).

The focus below is on bottom-up cost models. It argues for a particular type of replacement cost: depreciated optimised replacement cost (DORC). With this valuation, the annuity approach to capital costs in total service long-run incremental cost (TSLRIC) models can be replaced with a simpler building block model (BBM) approach.

1. The concept of operating capital maintenance

Our discussion of theory begins with the position of BEREC, the umbrella regulator for the EU member states. This is because its decisions have broad application in many different EU member states and are of a high quality in terms of detail and treatment of issues of principle.

A critical concept is that of operating capital maintenance (OCM). BEREC defines the OCM concept this way[1] (my emphasis):

[p11] *Operating capital maintenance (OCM) is concerned with the* ***maintenance of the productive capacity*** *of the operator. Capital maintenance under this approach[2] requires the company to have as much operating capability - or productive capacity - at the end of the period as at the beginning. In this approach, revenues become profits after a sufficient amount has been provided to maintain the*

[1] Annex to ERG (04) 15 rev1 - "ERG Opinion on the proposed Review of the Recommendation on cost accounting and accounting separation" at https://www.berec.europa.eu/doc/publications/annex_erg0415rev1.pdf

[2] The alternative approach is financial capital maintenance (FCM) which requires that shareholders' funds at the end of the period are maintained in real terms at the same level as at the beginning of the period. In this approach, revenues become profits after a sufficient amount has been provided to maintain the financial value of the asset (or the business).

physical capability of the asset. One of the significant adjustments relates to the revaluation of fixed assets to current cost.

[P12] *Under OCM the gross book value of assets is valued to take account of specific price changes in the price of assets and changes in technology. There are a number of techniques that can be used to revalue assets. For example, specific price indices can be applied to the existing gross book value of assets. These may be derived from the company's procurement department. Alternatively,* ***MEA valuation methods may be used. These base the value of assets on the current cost of modern equivalent assets including any adjustments necessary to reflect, for example, functionality differences or operating cost efficiencies****.*

These quotes provide support for replacement costs-based approaches. With revaluation:

[p12] *The depreciation charge for the period is calculated on the basis of the new asset valuations. This ensures that* ***the current cost of fixed assets consumed during the period is charged against revenue****. For each asset, or group of assets, the depreciation charge can in some cases be calculated using the same accounting policies (e.g. asset lives, depreciation profiles) as used for the preparation of historical accounts.*

This analogy may be useful: Suppose you have a toll-bridge with a 10 year service life. Say the original cost of the bridge is 50 but with new construction standards it will cost 100 to replace it. With HCA, the bridge operator has to borrow 50 to replace the bridge as only 50 of depreciation is collected under HCA. There are two current (replacement) cost scenarios.

A. In the first, regulation is introduced 2 years into the life of the bridge: the ORC is 100 but after depreciation the (DORC) cost is 80. The sum of allowed (regulated) depreciation is 80 which is less than 100 because the bridge was 2 years old when regulation was introduced. But 10 was put aside in depreciation under HCA (before regulation), so **10** has to be borrowed (= 100 – 80 – 10).
B. In the second scenario, replacement cost regulation is introduced at year 8 of the bridge so the ORC is still 100 but the DORC is 20. The sum of allowed (regulated) depreciation is 20. But 40 was put aside in depreciation under HCA (before regulation) so **40** has to be borrowed (= 100 – 20 – 40).

	HCA		CCA-A			CCA-B		
Year	Cost	Depc'n	ORC	Cost	Depc'n	ORC	Cost	Depc'n
	A	B	C	D	E	F	G	H
0	50							
1	45	5						
2	40	5	100	80				
3	35	5		70	10			
4	30	5		60	10			
5	25	5		50	10			
6	20	5		40	10			
7	15	5		30	10			
8	10	5		20	10	100	20	
9	5	5		10	10		10	10
10	0	5		0	10		0	10
sum		50			80			20

It is clear that the challenge for maintaining productive capacity is greater when the recognition of replacement costs is delayed: the need to borrow 40 in B versus 10 in A. Scenario B is the situation in Fiji where the average age of backhaul assets is quickly approaching the end of service life and the construction costs are now far higher than when they were built. If the regulator allowed only HCA in Scenario B, depreciated actual cost (DAC) would be 10 rather than 20 and the amount borrowed would be **50** (=100 – 10 – 40).

One of the case studies below is New Zealand which could have looked like Scenario A with a twist. Regulation was introduced in 2018, but the fibre roll-out started in 2011 and was 77% completed by 2018 so the average age of the assets was about 3.

- If the Commerce Commission had been allowed to implement its traditional approach starting in 2018, the DORC would have been less than DAC because it is likely that (unlike Fiji) the cost of civil works dropped between 2011 and 2018 with improvements in fibre laying techniques and learning by doing reduced the cost per premise connected.
- In fact, although it was required to use actual cost, it started its BBM model from 2011[3] so that there is no difference between DAC and DORC.

There are other cases where DAC and ORC will be the same. These are new investments such as the Coral Sea Cable to PNG and the Solomon Islands and the national broadband network in Australia. In these cases, the desk-top model to estimate ORC is not required. The assets are new and actual costs (efficiently incurred) are the correct starting point.

The relevant point from a regulatory and economic perspective is that replacement costs provide the correct information about investments that need to be made to preserve productive capacity.

2. Application of OCM in a cost model

The most common bottom-up costing methodology is total service long-run incremental cost (TSLRIC). The bottom-up engineering model specifies what assets would be deployed today to deliver the regulated services (this is the optimisation) and costed at today's prices for those assets. It is a thought experiment – as if the network was rebuilt overnight.

The lump sum of ORC costs is usually annualised using an annuity formula that includes the WACC, asset life and a 'tilt' factor'. This is done to address the 'year 1 problem'. With straight-line depreciation, first year depreciation is high because it is based on the full (undepreciated) optimised replacement cost. The use of an annuity addresses this by smoothing capital costs (depreciation and the WACC return) over the life of the asset.

The TSLRIC procedure is shown on the left-hand side of the Exhibit 1 below.

The right-hand side shows the application of the 'building block model' (BBM) where the actual age of the existing assets is taken into account by subtracting accumulated depreciation from ORC to get to DORC. The ACCC acknowledges that the two approaches are equivalent[4]:

[3] P49 of [Draft – regulatory processes and rules] Fibre Input Methodologies Determination 2020, 2 April 2020 at https://comcom.govt.nz/__data/assets/pdf_file/0020/213950/Draft-Regulatory-processes-and-rules-fibre-input-methodologies-determination-2-April-2020.pdf

[4] P54, ACCC, Discussion Paper, April 2011 at https://www.accc.gov.au/system/files/Discussion%20paper%20-%20FADs%20for%20fixed%20line%20services%20-%20public%20version.pdf

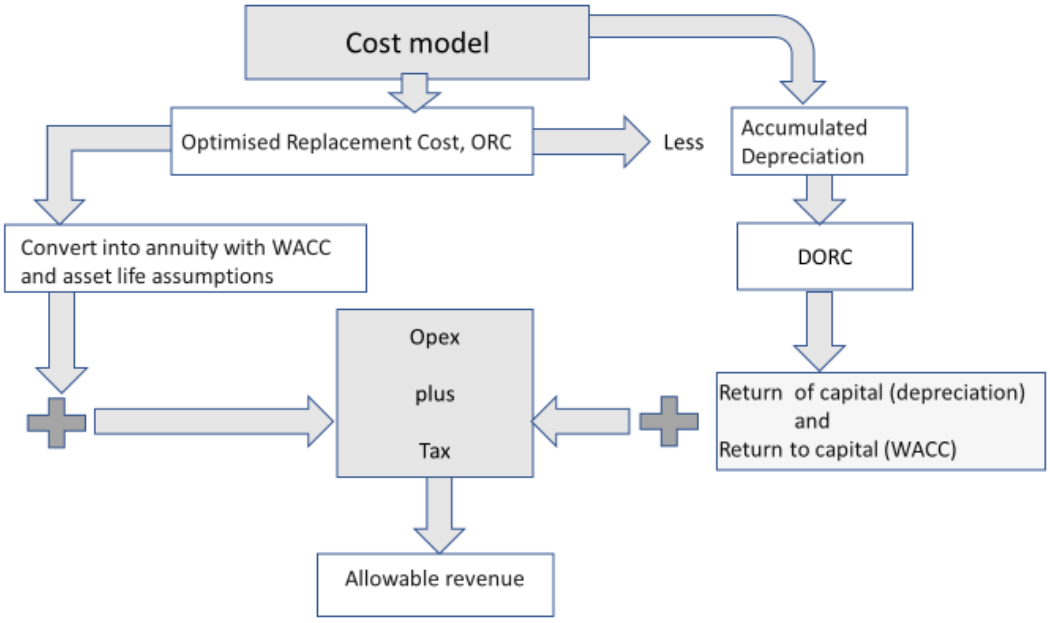
[p54] *a DORC value would be compatible with the previous TSLRIC+-based approach to calculating ULLS prices, which used estimated ORC values for Telstra's assets. To ensure consistency with the actual cost foundation of the building block approach, an ORC value must be depreciated to reflect the age of Telstra's actual assets—therefore a DORC value must be used rather than ORC. DORC values have been adopted in setting initial RAB values in other regulated industries, including the energy industry.*

In the BBM, the return to capital (WACC) and return of capital (depreciation) in each period are determined from the regulated asset base (i.e. the RAB which is the DORC). The RAB is rolled forward by subtracting depreciation and adding investment.

In both cases (TSLRIC or BBM), the starting ORC has to be estimated (once only for the BBM) and OPEX and tax are added to arrive at allowed wholesale revenue.

A big difference between these two replacement-cost approaches is that as the end of the term for the regulated prices approaches, the TSLRIC process starts again from the top with sunk costs re-valued at their full optimised replacement cost (ORC); so past compensation (i.e. past depreciation) is not taken into account[5]. In contrast, the RAB can be rolled forward indefinitely[6] with the simpler BBM approach. In either case there may need to be a review of WACC for the next regulatory period.

Exhibit 1 – TSLRIC and BBM are Equivalent



[5] P27, ACCC, Discussion paper, Dec. 2009 at https://www.accc.gov.au/system/files/Access%20Pricing%20Principles%20Review%20-%20Discussion%20paper.pdf

[6] Unless there is a significant change in MEA or network topology; see section 4.1 of GQI Report.

3. Precedents

Overseas regulatory precedents show the use of replacement cost (rather than historical cost) was and remains the dominant and preferred paradigm for asset valuation. The most extensive and detailed overseas precedents are from Europe. The precedents discussed below are:

- ✓ BEREC, which requires regulators in Europe to apply the principle of capital maintenance with replacement cost asset valuation methods.
- ✓ Ofcom in the UK, which uses current costs for both top-down and bottom-up costing
- ✓ New Zealand, where the Commerce Commission has for many years applied replacement costs to the copper network, and where the Minister recently required the Commission to apply actual cost valuation to the recently built Chorus fibre access network.
- ✓ Australia where the ACCC has for many years used replacement costs, and recently decided to apply a BBM using DAC to the copper assets in the Telstra CAN.
- ✓ ECTEL, which decided after detailed study to use replacement cost for 5 island countries in the Eastern Caribbean and found no country doing bottom-up modelling used historic costs in either fixed or mobile markets.
- ✓ Jamaica, which uses bottom-up costing and is reviewing its models currently.

a) Precedents – Developed Markets: BEREC

BEREC is the umbrella regulatory body for the EU (the European Community) that coordinates telecommunications regulation across the EU. Its recommendation to use replacement-cost based modelling has been accepted by the EU.

This decision occurred in 2013 when the European Commission adopted BEREC's guidelines on how National Regulatory Agencies (NRAs) should be doing cost-based modelling by December 2016[7].

First, it recommends the application of TSLRIC: [29] *The bottom-up long-run incremental costs plus (BU LRIC+) costing methodology best meets the objectives for setting prices of the regulated wholesale access services*. *This methodology models the incremental capital (including sunk) and operating costs borne by a hypothetically efficient operator in providing all access services and adds a mark-up for strict recovery of common costs. Therefore, the BU LRIC+ methodology allows for recovery of the total efficiently incurred costs*.

[30 and 31] *The BU LRIC+ methodology calculates the current costs on a forward-looking basis (i.e. based on up-to-date technologies, expected demand, etc.) that an efficient network operator would incur to build a modern network today*, ……. *since no operator would today build a pure copper network, the BU LRIC+ methodology calculates the current costs of deploying a modern efficient NGA* (Next Generation Access or fibre) *network*.

It says current costs *means the costs resulting from valuing an asset at its replacement cost, i.e. the cost of replacing it with either the same asset or another asset of similar performance characteristics, allowing for wear and tear and adjustments for efficiency* [p15, d].

BEREC's roll-forward approach is the same or similar to the BBM approach:

[7] European Commission, C(2013) 5761 final "on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment", 11.9.2013

[38] *The initial RAB would then be locked-in and rolled forward from one regulatory period to the next. The locking-in of the RAB ensures that once a non-replicable reusable legacy civil engineering asset is fully depreciated, this asset is no longer part of the RAB and therefore no longer represents a cost for the access seeker, in the same way as it is no longer a cost for the SMP operator. Such an approach would further ensure adequate remuneration for the SMP operator and at the same time provide regulatory certainty for both the SMP operator and access seekers over time.*

The excerpts above make it clear that replacement cost is the 'best practice' method for asset valuation for telecommunications regulators, rather than 'historical cost'.

b) Precedents – Developed Markets: United Kingdom

Ofcom has to adhere to BEREC Guidelines if it can. It advised the European Commission[8] that it would not meet the December 2016 deadline to implement BU LRIC+ based on a fibre Modern Equivalent Asset (MEA) because applying it to areas with small, non-contiguous areas would be susceptible to error. However, Ofcom noted that it based proposed wholesale prices based on [7.20] "*current cost accounting with fully allocated costs (CCA FAC), which is a form of LRIC+*". Under the CCA accounting convention, assets are valued and depreciated according to their current replacement cost.

Ofcom now uses both top-down and bottom-up approaches to costs for charge controls that apply from 1 April 2018 to 31 March 2021[9]:

[4.6] *We consider a* ***top-down model*** *forms the best basis for estimating the cost of MPF* (metallic path or copper) *services. We have an established model that can reliably be used to estimate the cost of these services and our approach is well understood by stakeholders. BT* (British Telecom) *has reported cost data on copper access services in the RFS* (CCA Regulatory Financial Statements) *for a number of years, meaning we have some confidence in the data and the cost volume relationships that underpin it.*

The top-down approach is based on replacement (current) cost:

[4.46] *We have adopted asset price change assumptions which ensure that duct and copper assets are valued consistently with how they are revalued for CCA purposes in BT's RFS.*

[4.7] *With regard to fibre cost modelling, we consulted on and have decided to model the incremental cost of providing GEA* (generic ethernet access; i.e. bitstream) *services using a* ***bottom-up model*** *based on an FTTC network using VDSL technology….* (because it) *allows us to more accurately calculate cost-volume relationships. Understanding these relationships in a top-down model can be difficult for new services and services that are seeing rapid volume changes; and it is more transparent because it can be published with fewer redactions. And a bottom-up model is also more consistent with the approach set out in the 2013 EC Recommendation* (see BEREC above).

The bottom-up approach uses depreciation taken from the CCA[10]:

[14.69] … *in the past we have chosen to use economic depreciation when building a bottom-up model…… However, in these instances we did not combine the use of top-down and a bottom-up*

[8] Ofcom, Review of the Wholesale Broadband Access Markets, May 2014
[9] Vol. 2 Ofcom March 2018 https://www.ofcom.org.uk/__data/assets/pdf_file/0023/112487/wla-statement-vol-2.pdf
[10] Annex 14 https://www.ofcom.org.uk/__data/assets/pdf_file/0018/112491/wla-statement-annexes-1016.pdf

models to determine our charge controls as we are doing in this review. Therefore, the issue of having a consistent depreciation method for reallocating common costs across the charged controlled services had not come up in the past.

Note that whether using bottom-up LRIC model or a top-down CCA FAC model, Ofcom uses replacement costs for asset revaluation.

c) Precedents – Developed Markets: New Zealand

The New Zealand Commerce Commission has used a replacement cost methodology in multiple decisions; with a recent exception where it was required by the Minister to apply a historical cost approach for newly-built fibre networks.

In 2001, legislation required access prices in New Zealand to be determined on costs based on TSLRIC with assets valued at replacement cost. It was not until 2018 that the Telecommunications Act was changed to mandate historical cost asset valuation – **but then only for the fibre access** network. As discussed below, this was not a significant change and does not yet apply to regulated copper access services.

Milestones in NZ Telecommunications Access Regulation

Date	Relevant Events	Asset Valuation
2001	Telecommunications Act (Act) requires use of TSLRIC	Asset valuation not determined
Aug 2002	Discussion paper on application of TSLRIC Asset valuation methods canvassed	Replacement cost (ORC) chosen
2011	Start of Ultra Fibre Broadband (UFB) roll-out Prices negotiated under commercial agreements with Crown Fibre Holdings (CFH)	Fibre not regulated. Investments recorded in HCA
Dec 2015	UBA and UCLL prices based on TSLRIC Bottom-up TSLRIC model used	Replacement cost
Nov 2018	A revised Act defines asset valuation for fibre UFB regulation with BBM	HCA for UFB assets locked-in
Nov 2019	Fibre input methodologies decision BBM will apply only to Chorus	HCA for Chorus fibre only
Dec 2019	Section 30R reviews of STDs Last change to copper access regulations	Replacement cost determinations indexed to CPI
Dec 2025	Copper Review	All copper deregulated?

In New Zealand, forward-looking cost models were decreed by the Telecommunications Act 2001. The Final Pricing Principles (FPPs) set out in subpart 1 of Part 2 of Schedule 1 of that Act required the Commerce Commission to use forward-looking costs to set access prices: total service long run incremental cost (TSLRIC)[11].

The Commerce Commission noted in a 2002[12] discussion paper that a range of asset valuation methodologies could potentially be used for asset valuation; including opportunity cost, historic cost, replacement cost (ORC or DORC), or optimal deprival value. The Commission chose to use optimised replacement cost (ORC) for all assets as its asset valuation methodology to implement

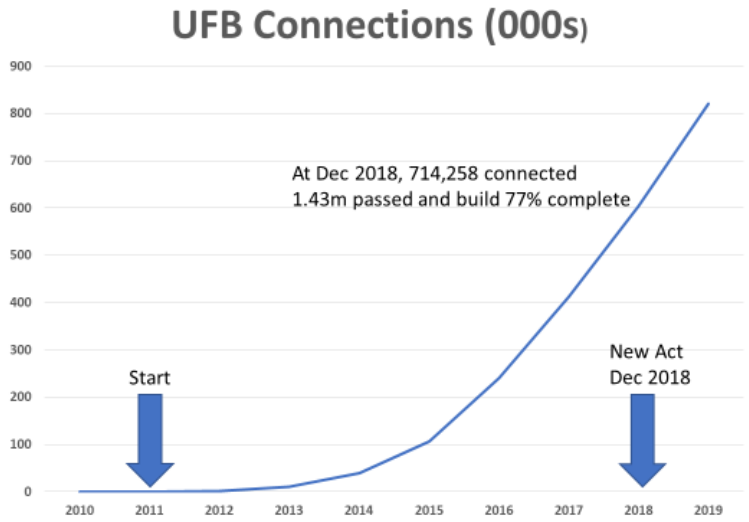
[11] http://www.legislation.govt.nz/act/public/2001/0103/latest/DLM127744.html#DLM127744
[12] Commerce Commission, Discussion Paper 'Application of a TSLRIC Pricing Methodology', July 2002

TSLRIC. It noted that in bottom-up cost models, ORC is typically used and considered most consistent with TSLRIC.

The last time unbundled local loop (UCLL) and unbundled bitstream access (UBA) prices were set using TSLRIC was in December 2015[13].

In 2018, the then Minister for Communications mandated the use of a historical cost approach through legislation (only for newly built fibre access networks), which the Commerce Commission was required to apply.

The relevant background is that from 2011 four local fibre companies (LFCs) started rolling-out the Ultra-Fast Broadband (UFB) fibre access network subsidised to $7 billion by the New Zealand Government. Contracts negotiated with the LFCs by Crown Fibre Holdings included commercially agreed pricing. These cannot be assumed to be cost-based[14].



(Source: Table 4, https://comcom.govt.nz/__data/assets/pdf_file/0021/212763/2019-Annual-Telecommunications-Monitoring-Report-Revised-version-12-March-2020.pdf)

[13] [71] *After receiving applications under section 42(1), we set updated prices for Chorus' UCLL and UBA services in December 2015 using the FPP as set out in the Act. These prices are the outcome of detailed modelling of the efficient costs of providing the UCLL and UBA services, under an approach referred to in the Act as total service long run incremental cost (TSLRIC).*
https://comcom.govt.nz/__data/assets/pdf_file/0034/87757/2017-NZCC-4-UBA-30R-review-Final-determination-14-March-2017.PDF

[14] The Commission said "*we disagree with Vodafone that the negotiations* 'are likely a good reflection of costs given the information available at the time', *because one specific item of a complex commercial negotiation cannot be considered in isolation*." 255.1 in
https://comcom.govt.nz/__data/assets/pdf_file/0034/87757/2017-NZCC-4-UBA-30R-review-Final-determination-14-March-2017.PDF

It was not until late 2018 that any decision was made about how to regulate new fibre and legacy copper access services (from January 2022). This was done by ministerial fiat and not by any publicly documented consultation process. The Minister for Communications[15]:

"Having assessed the feasibility and impact of different valuation methodologies, my view is that:

- *the rule for post-2011 assets should stand. These assets should be valued on the basis of the actual costs incurred by the supplier in constructing or acquiring those assets, which have not yet been recovered at 2020 (termed 'depreciated actual costs');*
- *pre-2011 assets should also be valued on the basis of the actual costs incurred by the supplier in constructing or acquiring those assets. However, due to the difficulties in obtaining reliable information about the amount and recovery of those costs, the depreciated values recorded by Chorus in its accounting statements should be adopted (termed 'depreciated historic cost'); and*
- *in either case a replacement cost valuation will not be acceptable because it is not an estimate of the historic costs incurred by the supplier".*

The revised Act deregulated UCLL where fibre was deployed with effect from 1st January 2020[16] and prescribed an annual pricing adjustment mechanism for other regulated copper access services, with effect from 16th December 2019[17].

The Commerce Commission proceeded based on the above requirements [18]; "*we are required to set an asset valuation IM* (Input Methodology) *in accordance with section 177 of the Act[19]".* It detailed how it would implement the fibre regime for Chorus in November 2019[20] and made some housekeeping changes to the standard terms and conditions (STDs) of regulated copper access services just before the window for changes closed: *"Amendments to the STDs that reflect the decisions in this paper[21] take effect from 15 December 2019. This is because, as noted in paragraph 5 above, under s69AG(5)(b) of the Act, the Commission's powers under s 30R to vary the STDs for UCLF[22] and Chorus's unbundled bitstream access (UBA) are suspended with effect from 16 December 2019 (and will only resume once we have completed the 'copper review')"*

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[15] [36] Cabinet paper https://www.mbie.govt.nz/dmsdocument/1112-review-telecommunication-act-2001-cab-paper-pdf

[16] *ss2(1)(a) and 13, and Schedule 2 of the Telecommunications (New Regulatory Framework) Amendment Act2018 (Amendment Act)*

[17] *s 69AG of the Act.*

[18] http://www.legislation.govt.nz/act/public/2001/0103/latest/DLM124961.html
Section 177: inserted, on 13 November 2018, by section 24 of the Telecommunications (New Regulatory Framework) Amendment Act 2018 (2018 No 48).

[19] [148] https://comcom.govt.nz/__data/assets/pdf_file/0035/147779/Fibre-regulation-emerging-views-Technical-paper-21-May-2019.pdf

[20] https://comcom.govt.nz/__data/assets/pdf_file/0038/189893/Fibre-input-methodologies-Draft-decision-paper-19-November-2019.pdf

[21] [14] https://comcom.govt.nz/__data/assets/pdf_file/0028/195454/2019-NZCC-22-Section-30R-reviews-of-five-regulated-telecommunications-services-standard-terms-determinations-Final-decisions-12-December-2019.pdf

[22] The unbundled copper low frequency (UCLF) service is similar to the UCLL service and was priced at the same level. It allows access only to the low-frequency band of the Chorus' copper lines (which can be used to deliver voice services).

Part 2AA of the Act "*contains provisions for the deregulation of certain copper services*"[23]. This 'copper review' has to be completed by 31st December 2025. It could lead to the full deregulation of wholesale copper access services subject to the copper withdrawal code protecting consumers.

The Act said that fibre access network assets built by Chorus before 1st December 2011 should be priced at depreciated actual cost. These assets consisted only of point-to-point fibre to large businesses. There were less than 5,000 such connections at 1st December 2011 as they doubled between that time and 30th June 2012 as a result of bringing the price of business grade services down to contracted UFB prices in September 2011[24]. At 30th June 2012 there were just 10,000 fibre connections of which only 100 were UFB end-users[25].

d) Precedent – Developed Markets: Australia

The history of Australian access pricing regulation begins with the pricing principles developed in 1997. The ACCC decided then to use TSLRIC and replacement cost with modern equivalent assets[26]:

[p28] *The Commission's view is that … the access price should, in general, be based on the total service long-run incremental cost (TSLRIC) of providing the service….. (which) is the incremental or additional costs the firm incurs in the long term in providing the service, assuming all of its other production activities remain unchanged.* ***It is the cost the firm would avoid in the long term if it ceased to provide the service****.*

[p41] *Estimating TSLRIC requires assets to be valued at their economic cost. There is a variety of methods of asset valuation. Of these methods,* ***replacement cost is the methodology most consistent with TSLRIC.*** *…. Replacement cost is the present-day cost of replacing the asset with another asset that provides the same service potential*.

If the access provider were to cease providing services overnight, it would avoid the cost of replacing its assets. These quotes align with the operating capital maintenance principle that existing assets should be valued at replacement cost to ensure its current productive capacity can provide service in the long-term.

As the ACCC says, there is a "*general regulatory principle that a regulated business should expect to receive sufficient revenue to allow it to cover* ***all expected prudent expenditure necessary to maintain a given level of service*** *at each period into the future"*[27].

For over a decade, the ACCC commissioned its own bottom-up cost models while Telstra did the same. All were based on the principles of replacement cost and all annualised ORC valuations. All these efforts were subject to intense scrutiny and debate over input assumptions.

Consultation about moving to a BBM approach started in December 2009. In April 2011, the ACCC published a discussion paper explaining the proposed a shift from its previous pricing methodologies to a building block model (BBM) pricing methodology[28].

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[23] [2.20] https://comcom.govt.nz/__data/assets/pdf_file/0021/213960/Fixed-line-telecommunications-regulation-overview-02-April-2020.pdf
[24] Chorus 2012 Annual Report
[25] Chorus 2012 Annual Report Presentation
[26] ACCC, Access Pricing Principles – Telecommunications, 1997
[27] P18, ACCC, Review of 1997 Access Pricing Principles, 2010
[28] ACCC, Discussion Paper, April 2011 at https://www.accc.gov.au/system/files/Discussion%20paper%20-%20FADs%20for%20fixed%20line%20services%20-%20public%20version.pdf

As explained earlier in the discussion around Exhibit 1, it would have been a simple matter to make a smooth transition from TRSLRIC to the BBM by converting the most recent estimate of ORC into DORC. But, three developments persuaded it to move to DAC.

The first development was that all the previous cost models were based on scorched node copper networks and that was no longer considered the appropriate modern equivalent asset (MEA)[29]:

Use of a DORC valuation method would require the ACCC to make many subjective judgements about the appropriate level of optimisation and the modern equivalent assets for the copper network. … It considers that, if a suitable model was available, a DORC value would be calculated using a fibre network, with a discount for the much higher service quality potential of fibre and a substantial depreciation allowance to take into account the age and deterioration of the existing copper network (compared to a new fibre network). No such model currently exists and timely development of such a model is not feasible.

The second development was that in 2009 the government created NBN Co. to build a fibre customer access network. Regulators in Europe (including Ofcom) have struggled with how to value assets for incumbents migrating from copper to fibre customer access networks. That was not an issue for the ACCC. Since Telstra was never going to build a fibre access network there was no need to consider a new cost model based on fibre to regulate Telstra's copper services.

Since the question before the ACCC was the regulation of Telstra's wholesale services over copper, it could have just converted the last ORC into DORC in moving to the BBM.

The third development is that the energy sector, where the BBM had been adopted some years earlier, was moving to DAC. It is not clear why the energy sector chose to do that. But there is no doubt that it has used DORC with BBM.

The ACCC was also aware of difficulties in applying DAC to Telstra[30]: in particular in obtaining a reliable historical asset valuation[31]:

[p45] *In the September 2010 Draft Report, the ACCC recognised the limitations of Telstra's RAF* (Regulatory Accounting Framework) *data, particularly for assets that were put in place many years ago when account keeping was generally less robust and Telstra was subject to less stringent accounting obligations and disclosure rules. The ACCC has in the past expressed concerns about the incomplete nature of Telstra's records on its long-lived network assets, particularly its ducts, pipes and copper cables. The ACCC acknowledged that the book value of assets contained in the RAF is only an approximation of the actual costs incurred by Telstra.*

The poor quality of the (RAF) financial accounts was the reason for rejecting current cost (but not it seems 'actual cost') asset valuation[32]:

The ACCC has also considered whether Telstra's current cost accounting valuation of its assets could provide a reliable basis for setting an initial RAB value. However, since these accounts provide indexed values for Telstra's assets calculated from the RAF accounts, they are subject to the same limitations as the RAF accounts as well as any shortcomings in the indexation methodology applied by Telstra.

[29] P55, ibid.
[30] P45, ACCC, Discussion Paper, April 2011
[31] P45, ACCC, Discussion Paper, April 2011
[32] P55, ibid

When the ACCC set an opening asset value for Telstra's fixed network in 2011, it chose a value that was in between bounds set by historic costs and DORC, and which explicitly took account of current price levels[33]:

The ACCC has] calculated a value within the suitable range of RAB values set by the DAC and DORC values for Telstra's network assets. In calculating an appropriate value within this range, the ACCC used the DAC value as a starting point because the more substantial limitations associated with estimating a DORC value meant that it was not considered an appropriate starting point ...this…adjustment [to the DAC value] *is warranted to provide sufficient pricing stability to support past investments and promote industry confidence in making future investment decisions.*

Asset valuation should take international best practice (which is for replacement cost) as the starting point and consider whether local circumstances require or justify departing from that approach. The need for situation-specific analysis is acknowledged by regulators generally, and also by the ACCC in its 2010 Decision[34].

e) Precedent – Developing Markets: The Eastern Caribbean

The Eastern Caribbean Telecommunications Authority (ECTEL) serves five contracting Eastern Caribbean States - Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines. Each country has its own National Telecommunications Regulatory Commission (the NTRC) which defers to ECTEL on the framework regarding regulatory matters pertaining to interconnection and pricing.

The Council of Ministers that governs ECTEL decided on LRIC (i.e. replacement) cost modelling. ECTEL conducted a public consultation process in 2016 and commissioned AXON[35] to report[36] on international best practice and recommend guidelines, which have been adopted by ECTEL.

The AXON Report adopted by ECTEL identified countries that have published methodologies for BULRIC models. It found such reports by other NRAs in the Caribbean, Latin America, Europe, Middle East and Africa. The following table shows that none of these uses historical costs to value assets in either the mobile or fixed network.

[33] P43, ACCC, *FADs for fixed line services*, July 2011
[34] P52, ACCC, Discussion Paper, April 2011
[35] https://www.axonpartnersgroup.com/public-policy-and-regulation/
[36] ECTEL, Final guidelines report, 27 December 2016

Assets valuation method

		Brazil	Cayman Islands	Jamaica	Colombia	El Salvador	Belgium	Spain	France	Norway	Sweden	UK	Oman	Bahrain	UAE	Saudi Arabia	Jordan	Zimbabwe	TOTAL
MOBILE NETWORKS	Static approach - HCA	x	X	x	x	x		x	x	x	x	x	x	x	x	x	x	x	0/16
	Static approach - CCA	x	√	√	x	√		x	x	x	x	x	x	√	x	x	x	x	4/16
	Dynamic approach (Cash-flow)	√	X	x	√	x		√	√	√	√	√	√	x	√	√	√	√	12/16
FIXED NETWORKS	Static approach - HCA	x	X	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0/17
	Static approach - CCA	x	√	√	x	√	x	x	x	x	x	x	x	√	x	x	x	x	4/17
	Dynamic approach (Cash-flow)	√	X	x	√	x	√	√	√	√	√	√	√	x	√	√	√	√	13/17

Table 8: Benchmark: Assets valuation method. [Source: Axon Consulting]

The 'static' approach means the value in a particular year measured by either HCA or CCA. Either can be used in a BBM to encompass future years. The 'dynamic (cash-flow) approach' means that a series of years is taken into account. This refers to TSLRIC models which need to annualise ORC. ECTEL "*considered the static CCA approach the more appropriate choice, since it sends accurate price signals in the market and avoids increasing the complexity of the model unnecessarily*" (p16,17).

ECTEL took into account international best practice while ensuring that its choices would reflect the reality and specificities of the market in ECTEL member states and to serve its regulatory objectives. The relevant decisions for this report include:

> *Determination 9: The static Current Cost Accounting approach will be implemented in the models.*
>
> *Determination 10: Assets will be substituted for a MEA based on the above.*
>
> *Determination 11: The tilted annuity approach will be implemented in the models and the formula above will be used.* (only relevant to annualising ORC costs)
>
> *Determination 12: The models will include the working capital in the manner indicated above.*
>
> *Determination 13: the models will use the LRIC+ approach.*

This determination was based on expert advice and detailed consultation with interested parties. ECTEL chose to apply bottom-up (BU-LRIC) costing with assets valued at replacement cost.

f) Precedents – Developing Markets: Jamaica

Another case of a less developed island market is Jamaica. Its regulator, the Office of Utility Regulation (OUR), is of the opinion that a BULRIC model that represents a hypothetical, generic, existing operator is still the best option for its market.

Jamaica's fixed cost model is a bottom-up LRIC model that calculates the cost of fixed voice termination service. A modified scorched node approach is used to model the fixed network, without including the assets associated to the access network (below line card).

The OUR launched a consultation on updating the model in January 2020. It plans to update the WACC for fixed carriers approved in 2016 with a further consultation in 2020[37].

4. Summary

Theory and practice suggest that replacement cost is the way to value assets for access pricing.

The key theoretical concept is OCM to maintain operational capability and ensure continuity of service. That means current cost accounting for top-down approaches to cost modelling or replacement cost with MEA for bottom-up costing models.

For both traditional TSLRIC models and the simpler BBM, an initial ORC needs to be estimated. This needs to be done only once for the BBM with accumulated depreciation subtracted to get DORC.

In some cases (e.g. the UK and New Zealand), copper networks are being replaced with new generation access networks (NGA) raising questions about what is the modern equivalent asset (MEA) and when and where to apply it.

Historical cost is used in New Zealand for the fibre access network but the difference between depreciated historical cost and depreciated optimised replacement cost will not be large because the assets were deployed recently. This will also be the case for all new networks (e.g. new submarine cables).

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[37] Update of the Fixed Cost Model and Assessment of Fixed Infrastructure Sharing Costs – Principles and Methodology – Consultation, January 2020 at https://www.our.org.jm/ourweb/sites/default/files/documents/sector_documents/update_of_the_fixed_cost_model_and_assessment_of_fixed_infrastructure_sh.pdf