Regulating Access Prices

The heart of regulation is regulating access prices. It is the key to new entrant business models. The previous section warned of regulatory over-reach on mandating access services because not all inputs are essential, bottle-neck input services so making them available will deter new investment. This section alerts regulators to how access pricing can shape competition.

The final column of Table 4.1 provides a mapping between the access products discussed in the previous section and the approaches to pricing them which are discussed in this section. The first two columns come from **Table 1.2** defining markets suitable for *ex-ante* regulation in the EU.

Benchmarking is a pricing methodology that can (and has) been used for every service and is probably the most practical method for small developing countries.

In developed countries fundamental changes in the approach to access pricing are taking place with the transition to all digital networks. Developing countries have the opportunity to leap-frog legacy pricing approaches as the networks being built now are digital.

This section explores the following topics:

- **Policy Issues**
- **Key Concepts**
- **Pricing Interconnection**
- **Pricing Unbundled Access**
- **Pricing Infrastructure Sharing**
- **Pricing Resale**

Market	Service	Product	Pricing	Sections
1	Retail access to PSTN	Line rental (WLR) Local calls (LCS)	Retail Minus (RMAC), Benchmarking	3.6 + 4.6
2 + 3	PSTN originating and terminating access	POTA, IP interconnection	LRIC, BAK, Benchmarking	3.1.2 + 3.3 + 4.3
4	Wholesale network infrastructure access	Unbundled loop (ULL) Line sharing (LSS) Infrastructure sharing	LRIC, Benchmarking	3.4 + 4.4
5	Wholesale broadband access	Bitstream, Dark Fibre	LRIC, GB, Benchmarking	3.4 + 4.4
6	Wholesale leased lines	Data tails	LRIC, Benchmarking	3.4 + 4.4
7	Voice call termination on mobile networks	FTM	LRIC, BAK Benchmarking	6.4

◂ Table 4.1: Access Products and Pricing Options

2.4.1 POLICY ISSUES

Mandating access usually * means that access prices have to be regulated too: the owner of the essential facility cannot use its market power to control supply because open access is mandated and regulated access pricing stops it using its market power to control the price.

In trying to support competitive processes, regulated access pricing seeks to achieve three forms of economic efficiency:

- **Allocative efficiency** requires that resources, products, and services are allocated to the person or persons who value them the most. For this to happen, consumers of final products or services (such telephone calls to other customers) should pay prices that reflect the cost of the resources used to provide those products or services
- **Productive efficiency** requires that market participants use scarce resources as productively as possible. This means that the most efficient provider should not be precluded from serving customers, and
- **Dynamic efficiency** requires that all firms (entrants and incumbents) should have proper incentives to invest in technologies that reduce costs and/or expand product offerings.

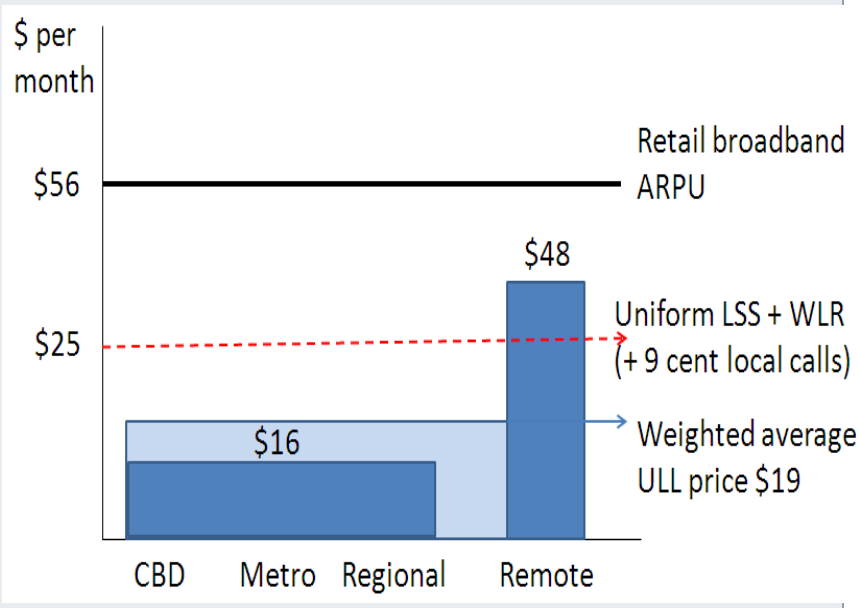
It is unlikely that these can be achieved simultaneously. More importance has been given to dynamic efficiency as the policy focus has shifted from accommodating legacy issues associated with opening access to copper networks to encouraging investment in fibre networks.

In addition, there are social objectives. Historically, many incumbent operators have maintained high prices for long distance and international services, and used the proceeds to support below-cost prices for basic services. This was made possible by statutory monopoly and allowed the wide-spread adoption of affordable telephone service. However, with the introduction of competition for calls these cross-subsidies became unsustainable. Competitive pressures eroded long distance and international prices and regulated low prices for basic service became unsustainable.

◂ **Box 4.1: Geographic Cross Subsidy**

Source: ACCC **Final Decision** on Fixed Services, July 2011 and Telstra's FTTN Briefing, 7 August 2006

Policy makers generally like uniform pricing; a social objective that conflicts with economic efficiency objectives. In Australia, Telstra argued that the ACCC was a 'rogue regulator' because it de-averaged unbundled local loop (ULL) prices across four regional types. Other access products like line sharing (LSS), wholesale line rental (WLR) and local calls are not de-averaged. This means that entrants can opt to use these instead of ULL in remote areas.



The presence of different access products reduces the ability to extract cross-subsidies.

When Telstra sought to build a metro-only FTTN, it was agreed that the access price for the new bitstream service should include a contribution to support telephony services to 1 million rural and remote customers. But the gap between the $1.77 per month offered by the ACCC and the $13.69 per month sought by Telstra was too big and the FTTN plan was dropped.

In the era of call competition, regulators had to rethink the justification for pricing policies aimed at keeping prices for basic service low and consider rebalancing tariffs to better reflect economic costs.

Among the policy challenges in moving to digital networks,

- the relative prices of wholesale services may affect the transition from copper to fibre and consistency among them is essential. Take-up of fibre access has been slow where it has to compete with copper access services which have low regulated prices
- off-setting the above, as users move off copper to fibre, cable and mobile services the unit costs of copper and consequently access prices increase; which raises affordability concerns got the users left on copper
- the migration to IP Interconnection raises transitional issues and there is no consensus yet on how to price digital interconnection

Fibre presents a new challenge for policy. Operators are facing potentially significant investment costs to upgrade existing infrastructure to keep up with technological change. However, revenues for new broadband services are uncertain and existing revenue streams are threatened by 'over-the-top' services. The most certain source of revenue is retail access pricing – and that is threatened by open access and increasingly capable mobile broadband.

◂ **Box 4.2: Asymmetric Risk Example**

Suppose an operator is considering whether to build a FTTH access network in a particular region. Revenues are uncertain. If demand is strong, the network could generate profits of $10m a year but if there is a lack of demand there will be annual losses of $8m. If these cases are considered equally likely, the expected profit is $1m and the investment will be made – if the operator has a monopoly.

	Probability	Monopoly	Open Access
Success	50%	+$10m	+$6m
Failure	50%	-$8m	-$8m
Expected		+$1m	-$1m

If, however, the network is successful and a new entrant gets access and takes 40 per cent of the market, the profits to our investor could be cut from $10m to $6m a year. The expected return is now minus $1m a year – the investment is not profitable with open access. That is, the risk of open access can make a profitable and socially desirable investment unprofitable and it will not proceed.

Private operators have been slow or reluctant to invest in broadband. In the USA, the FCC broke the impasse by forbearing to regulate broadband access * The FCC decided to forbear from unbundling and price regulation of FTTH in August 2003, extended this to FTTN in October 2004 and also DSL in September 2005. and the German and Australian incumbents unsuccessfully sought 'access holidays' long enough to get a return on their prospective investments * Initially, the Federal Network Agency in Germany supported Deutsche Telekom but under pressure from the EU it made an order in September 2010 subjecting VDSL (FTTN) , FTTH lines and Ethernet-based bitstream access to regulation. In Australia, Telstra sought concessions from the Australian government in 2005 ahead of building an FTTN network but these were refused so it chose to invest instead in unregulated HFC and mobile broadband networks.

The problem with 'access holidays' is that it gives the incumbent too much of a 'first-mover' advantage. That leaves the problem of how to set an access price for fibre networks that satisfies a number of objectives simultaneously:

- It must provide a return on large investments
- It must ensure that broadband access remains affordable to end users
- It must provide affordable open access for wholesale customers
- It must not foreclose investment (eg FTTH extensions to FTTN)
- It must satisfy government social equity objectives (eg USO and uniform pricing)

Pricing for copper networks appeared to discourage investment in fibre access networks leading some regulators to seek new models for **pricing interconnection** .

Reference Documents

- **ACCC, Final Access Determination for Fixed Line Services, July 2011**
- **European Commission: Public Consultation on Costing Methodologies for Key Wholesale Access Prices in Electronic Communications, October 2011**

2.4.2 KEY CONCEPTS

Broadly, the key concepts in the regulator's access pricing tool kit are:

- **Cost oriented prices** - as required by the WTO Reference Paper can be developed from bottom-up or top-down cost models or from benchmarking rates in similar countries who have used cost models.
- **Cost models** - bottom-up costing for LRIC (long-run incremental costs) where a firm prices in such a way as to cover only the incremental costs of the product (ie the product's LRIC), sales of that product make no contribution to the firm's common costs. There are many variations around this but it is sufficient to consider LRIC to understand the issues and principles [*].
- **Regulatory accounting** - top-down costing associated with FDC (fully distributed costs) where all costs, including joint

and common costs, are fully allocated to all the operator's services/products according to a specified distribution/allocation key. The costs of a given service/product are composed of direct volume-sensitive costs, direct fixed costs and a share of joint and common costs.

- **Benchmarking** – compares access prices across a peer group of countries to determine what price would be reasonable.
- **ECPR** – the efficient component pricing rule which is closely related to 'retail minus avoided retail costs'. ECPR is cost-based because it includes 'opportunity cost' [*].
- **BAK** - Bill and Keep has been around for mobile termination in countries with 'receiving party pays' (eg USA) and seems related to 'peering' in internet traffic exchange.
- **GB** – Volume based charging. This is a possible alternative access pricing to address changes in the industry that BAK cannot address.

Related technical concepts:

- **DAC** (depreciated actual cost) – based on historic cost accounting (**HCA**). Some regulators also require current cost accounting (**CCA**) in which assets are re-valued at replacement cost; which may then require further adjustment to 'mean equivalent assets'
- **DORC** (depreciated optimised replacement cost) – takes accumulated depreciation from **ORC** calculated for **TSLRIC**
- **SAC** (stand-alone-cost) – the sum of the incremental cost of the product, plus all the costs which are common between that product and other products. The stand-alone cost is therefore higher than long-run incremental cost (**LRIC**).
- **WACC** (weighted average cost of capital) – derived from the capital asset pricing model and used to set the return to capital.

2.4.2.1 COST BASED PRICES

Regulated pricing is needed where an unconstrained provider of an essential facility could exploit its position to charge well above cost. Regulation is a proxy for competition which tends to drive prices towards cost. But cost is a flexible concept.

The WTO Reference Paper requires "*cost-oriented rates that are transparent, reasonable, having regard to economic feasibility*". This leaves a wide degree of flexibility in how to define and measure cost-oriented prices [*]. How it is interpreted in practice is a combination of national guidelines and case law.

The two main options are the **Bottom-Up** and **Top-Down** costing approaches. Some regulators use a hybrid of these by taking account of actually incurred costs adjusted for efficiency. The two broad options are compared below.

◂ Table 4.2: Bottom-Up and Top-Down Cost Models

	Bottom-Up	Top-Down
Advantages	Can model costs that an efficient entrant would face Flexible – can change assumptions readily Transparent – much of the information used is publicly available	Incorporates actual costs Useful for testing results from bottom-up model May be faster and less costly to implement, but this depends on how well categories in the financial accounts match the data required
Disadvantages	May optimize —too much or omit costs. If this happens, the operator will be under-compensated and will reduce investment in the network Modeling of operating expenditure is usually based on simple margins instead of real-world costs Data needed for the model may not exist The modeling process can be time-consuming and expensive	Includes actual costs, which are likely to incorporate inefficiencies Less transparent – confidentiality issues mean other stakeholders may not have access to the information used The parties may dispute the cost allocation rules used (the rules used to allocate shared and common costs among specific services) Data may not exist in the required form

Both costing approaches are demanding for a small, developing country with limited resources. A cheaper alternative is **benchmarking**.

Bearing in mind that the object of pricing regulation is to produce what be expected in **competitive markets**, contestable market theory suggests outcomes will lie between a range with the ceiling defined by stand-alone cost and a floor defined by long-run incremental cost.

Practice Notes

- Forms of Competition
- Two-Sided Markets

Reference Documents

- Directorate General Information Society and Media 2012 Costing methodologies and incentives to invest in fibre. Final Report.
- European Commission: Public Consultation on Costing Methodologies for Key Wholesale Access Prices in Electronic Communications, October 2011
- UK: Ofcom, Review of cost orientation and regulatory financial reporting in telecoms, Nov 2011
- World Trade Organization - Reference Paper

2.4.2.2 COST MODELS

Bottom-up cost models are favoured by many regulators because they reduce reliance on information provided by the incumbent; a necessary feature of top-down models, even when the accounting framework is specified by the regulator.

Bottom-up models for fibre access are appropriate because they are new. Assuming fibre networks are built in an efficient manner, operators can be fully compensated for their construction at today's prices.

The bottom-up approach develops the cost model on the basis of the expected demand in terms of subscribers and traffic and sets the network design and estimates the related costs on the basis of a network engineering model. Bottom-up modelling has the following steps:

Step 1: Define the services to be modelled (for example local access services). This step includes gathering data on the number and location of customers in the geographic area under consideration

Step 2: Determine the design of the network — what facilities are required to provide the service, and where should they be located?

Designing the network to be modelled requires the regulator to make choices about how much optimization to include in the modelled network:

- The scorched earth approach represents one extreme. It assumes that nothing is fixed, not even the location of the nodes. The scorched earth network is what an entrant would build if no network existed, based on the location of customers and forecasts of demand for services.
- The scorched node approach assumes that the location of network nodes is fixed where they currently exist, and the operator can choose the best technology to configure the network around these nodes.

Step 3: Determine the amount of each type of equipment needed to construct the network

Step 4: Estimate the costs of each element. For each type of equipment multiply the amount required by its unit prices to arrive at the total investment cost. (TSLRIC models usually use current, best-in-market costs)

Step 5: Annualise the total investment cost for each network element. This amount equals depreciation costs and cost of capital for the firm in question

Step 6: Estimate opex. Operations and maintenance costs and non-network costs include direct out-of-pocket operating expenses associated with the investment and indirect expenses, such as corporate overheads

Step 7: Estimate total costs for each network element by adding the annual (monthly) amounts calculated in Steps 5 and 6

Step 8: Unitise costs by dividing the total costs of each network element by the relevant cost-driver, to arrive at unit costs. For example, use the number of lines to derive the unit costs for subscriber loops, or the number of minutes to derive unit switching costs.

In the long term all costs are considered to be variable because the production capacity is not a constraint (as it is the case in the short term). Therefore long run incremental costs include capital and the volume-sensitive costs resulting from a substantial change in production.

Some regulators have become disenchanted with bottom-up costing models because they essentially rebuild the network from scratch each time the access price is reviewed and each time the models and their many assumptions are contested. As Ofcom puts it: *"This* (TSLRIC+) *approach is suitable to current generation access networks as they are legacy networks with low*

demand side risk and substantial sunk costs that have already generated a return on the initial investment. ..This approach may be less appropriate for next generation access networks. So far, these networks are characterised by high uncertainty about consumer demand and willingness to pay, with limited clarity on the applications and services they will deliver. In this situation, investors in a free market would seek higher returns from their investment to compensate for the higher degree of risk." [Ofcom, 2007, paras 5.2 and 5.3]

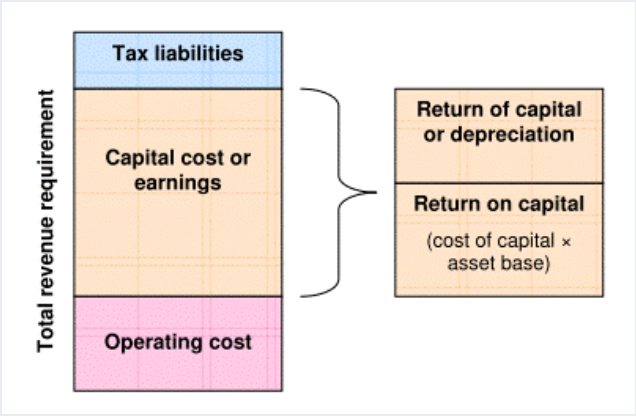
This is why the Australian regulator shifted from bottom-up modelling to a top-down 'building block' approach in 2011.

◂ **Box 4.3: Australia's Building Block Method**

Source: **Final Access Determination** (FAD) for Fixed Services., ACCC, July 2011

The ACCC has shifted from its previous pricing methodologies (TSLRIC+ and RMRAC) to a new building block model (BBM) pricing methodology.

The new BBM method is simple – once the opening value of the Regulated Asset Base (RAB) is established. The method takes the asset base for each class of asset (eg 'ducts and pipes') subtracts depreciation and adds investment. The cost of capital, depreciation, operating expenses and tax liabilities are then added together to determine the revenue requirement.



The ACCC believes that there is no uniquely correct value for the initial value of the RAB – but says that it must lie in the range bounded by the depreciated historic value of Telstra's investment in network assets (that is, depreciated actual cost or DAC) and the depreciated optimised replacement cost (DORC) where the ORC value must be depreciated to reflect the age of Telstra's actual assets.

DAC is a top-down method drawing on management reports and DORC uses bottom-up cost modelling once to calculate ORC and then makes an adjustment for accumulated depreciation. The result is then rolled forward year by year using actual investment and depreciation.

Bottom-up costing is still the preferred method in many jurisdictions (eg the EU).

Practice Notes

- **Commonly Used Cost Models**

Reference Documents

- **ACCC, Final Access Determination for Fixed Line Services, July 2011**
- **Bahrain: Development, implementation and use of bottom-up fixed and mobile network cost models, October 2011**
- **Jordan -- Instructions on Adoption of Long Run Incremental Cost Methods and Interconnection Rate Structure**
- **Nigeria -- Determination of Interconnection Rate**
- **Saudi Arabia -- LRIC Model Guidelines for the Kingdom of Saudi Arabia**
- **UK Ofcom, Future Broadband – Policy Approach to Next Generation Access, September 2007**

2.4.2.3 REGULATORY ACCOUNTING

Top-down modelling attempts to measure LRIC starting from the firm's actual costs as set out in its accounts [*]. This method does not involve detailed network modelling. Instead, a top-down model separates the firm's assets and costs into service groups, and then adds the extra costs associated with interconnection to arrive at an estimate of LRIC.

This usually involves the following five steps:

Step 1: Identify the firm's services and separate out interconnection services

Step 2: Identify and separate all costs and assets in the firm's accounts

Step 3: Allocate all directly attributable costs. If a cost item or asset is attributable to only one service, allocate it to that service

Step 4: Allocate shared and common costs across services using allocation rules. Allocation is essentially arbitrary. Possible allocation techniques include:

(1) Combinatorial tests - consider whether the prices for different combinations of products lie between the LRIC and SAC of those combinations. Where all the different combinations satisfy this test, there is no over-recovery of common costs. Depending upon the size of the product portfolio of the firm, and the types of common costs, the number of combinatorial tests could be impracticably high.

(2) Fully allocated cost - As FAC involves allocating all the firm's common costs across all products, the costs for individual products would normally be above LRIC and below SAC. However, the FAC approach allows no flexibility in terms of pricing; common costs are allocated according to a formula (eg number of lines or minutes).

Step 5: Calculate LRIC for each service by adding up the costs allocated to that services, including an appropriate return on those assets allocated to the service.

Top-down modelling uses the firm's current operating costs and either historic cost accounting (HCA, which HCA reflects the cost at the time of purchasing the asset) or current cost accounting (CCA, where network assets are valued at replacement costs). Normally regulators would be expected to use either HCA or CCA and not mix the two approaches. In practice, some regulators recognize that those assets which cannot be economically replaced (such as for example ducts) must not necessarily be valued at their full replacement costs.

In Australia, the regulator's accounting separation report finds that for all services except local call services, the costs of transformation are at least twice as large as the access costs. This means that whether an access seeker can successfully compete with Telstra in the supply of these services is more likely dependent on its own efficiency as well as service quality and differentiation rather than the access price charged by Telstra.

	Retail Price	Access Costs	%
Local service	$88.99	$80.47	90
Domestic long distance	$0.10	$0.02	20
International calls	$0.21	$0.01	5
Fixed-mobile	$0.35	$0.01	3
ADSL	$149.48	$49.96	33

◂ **Box 4.4: Imputation Reports - Australia**

Source: Accounting separation of Telstra: Imputation testing and non-price terms and conditions **report for the June Quarter 2011**, ACCC, October 2011

Practice Notes

- Commonly Used Cost Models

Reference Documents

- Australia: ACCC, Accounting separation of Telstra: Imputation testing and non-price terms and conditions report for the June Quarter 2011, October 2011

- European Union: BEREC report on regulatory accounting practice in 2010
- UK: Competition Appeals Tribunal, British Telecommunications Plc v Office of Communications (Partial Private Circuits), 14 December 2009
- UK: Ofcom, Review of cost orientation and regulatory financial reporting in telecoms, Nov 2011

2.4.2.4 BENCHMARKING

Both bottom-up and top-down cost models are complex to develop and lead to uncertain outcomes. In some markets the detailed information required may not be available. Even where regulators can apply the same cost model for the same access product, divergences in implementation can lead to large divergences in price *.

A more practical alternative to developing cost models for a developing country with limited resources is benchmarking. Regulators in many jurisdictions have used benchmarking to set initial interconnection rates. For example **Botswana** used benchmarking to resolve an interconnection dispute quickly *.

Benchmarking has two main purposes in interconnection pricing. In situations where detailed cost models can be estimated, benchmarking can be used as a common sense check on the results of the modelling. Alternatively, benchmarking can be used directly to set interconnection prices.

In a benchmarking exercise, adjustments need to be made for differences among jurisdictions, for example population density, local area size, extent of urbanisation, traffic patterns and call durations, input prices, scale economies, exchange rates and taxes.

Practice Notes

- Benchmarking: Adjusting for Exchange Rates
- Botswana: Interconnection Dispute Resolution
- Final Offer Arbitration [1]

Reference Documents

- European Commission: Public Consultation on Costing Methodologies for Key Wholesale Access Prices in Electronic Communications, October 2011
- Namibia: Interconnection Benchmarking Study, Final Public Report
- New Zealand: Benchmarking Telecom's Unbundled Partial Circuits Service, September 2004

2.4.3 PRICING INTERCONNECTION

With the exception of countries using 'receiving party network pays' (RPNP) for calls to mobile networks, in the switched interconnection context the main basis for pricing originating and terminating access has been some form of LRIC; determined from bottom-up or top-down cost models (or benchmarking countries that do either or both).

The exception (RPNP) uses Bill and Keep (BAK) where the calling party's network retains whatever revenue it raises through retail usage charges. This is the system used for mobile networks in the USA. One advantage of a bill and keep policy is that it can be adopted quickly without the need to employ a cost analysis.

Except for RPNP, pricing interconnection becomes problematic in an IP environment because many parties can be involved in handling any packet. BAK looks very similar to internet **peering**, so it has been suggested that pricing IP interconnection will converge on BAK. This makes BAK look attractive except for mobile operators in countries with 'calling party network pays' because they have enjoyed high termination rates.

BAK is the IP Interconnection model favoured in Europe (BEREC, June 2010) because:

- Costs are falling with the transition to NGN networks so the difference between switched and IP interconnection rates is getting smaller. In mobiles, this convergence is being helped along by regulation and market forces *.
- BAK reduces regulatory cost and uncertainty. Also moving cost recovery from termination, which is a regulated market, to competitive retail markets increases incentives for cost minimization.
- Assuming usual plausible cost and utility distribution and bearing in mind their uncertainty, BAK is likely to internalize call and network externalities better than CPNP.

- BAK is expected to lead to higher average usage per capita and a lower average price per minute. BAK decreases the marginal costs of traffic and the cost risk related to flat-rate offers that drive higher usage. Higher usage in combination with the large scale effects (economies of scale present in fixed and mobile networks) create lower costs per minute and so BAK feeds a positive feedback loop of higher usage and lower prices.

However, there are a couple of problems with BAK. First, it does not address the leakage of revenues that comes from the de-layering of the industry. BAK assumes there is some reciprocity: '*You can keep revenues from your customers and so shall I*'. But, 'over-the-top' service providers like Skype get to BAK without having a network and making no direct contribution to any networks its customers use. Indirectly, Skype's customers pay their respective network provider for data traffic they generate using Skype services. Such leakage could increase the risks of investing in broadband networks.

Second, while vertically-integrated network operators can BAK retail customers with managed IP voice and SMS services enabling them to maintain a premium over services delivered over 'best-efforts' internet (like Skype), the options for wholesale-only network operators are more limited. The options are discussed in the next section.

Practice Notes

- **Peering and Transit**

Reference Documents

- **European Commission: Public Consultation on Costing Methodologies for Key Wholesale Access Prices in Electronic Communications, October 2011**
- **European Union: BEREC, Next Generation Networks Future Charging Mechanisms / Long Term Termination Issues, June 2010**
- **Kenya -- Review of Implementation of the Interconnection Determination No. 1 of 2007**
- **Tanzania -- Determination on Review of Telecommunication Network Interconnection Rates in the United Republic of Tanzania, Issued in 2007**
- **World Trade Organization - Reference Paper**

2.4.4 PRICING UNBUNDLED ACCESS

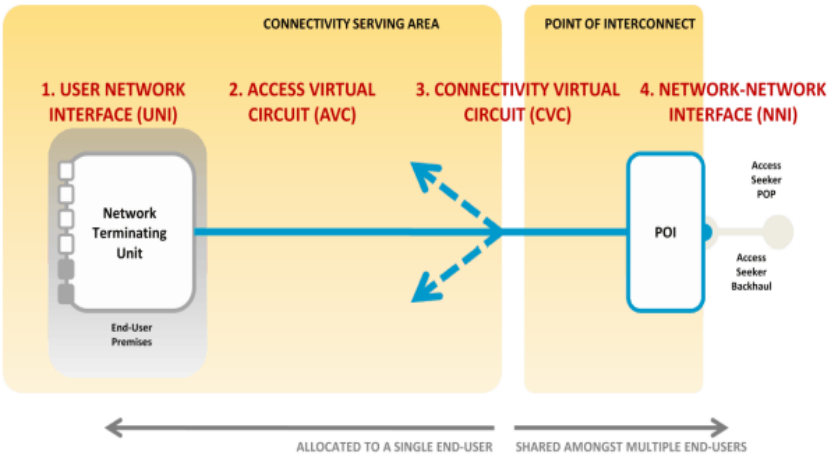
Regulating unbundled access has traditionally been done in the context of fixed copper networks and priced to some form of LRIC. Models have been used to calculate the LRIC costs of unbundled local loop, line sharing and transmission (both access tails and transmission links).

The approach to pricing access on fibre networks is still evolving to deal with both the different kinds of access products required (eg bitstream access and sub-loop) and the different level of risk associated compared with copper networks. Mindful of the need to encourage investment in fibre networks, the FCC chose to forbear from mandating access while Ofcom mandates bitstream access but forbears from regulating the access price [*].

At the same time as adjusting for risk, the relativity between access prices for copper networks and fibre networks has to be managed as this will affect the transition to fibre networks. And, the price relativity between different kinds of access products on each access platform will affect investment choices.

With FTTN, there is no analogue replacement access product for unbundled local loop. Two choices may be offered: bitstream access (much like line-sharing) or sub-loop unbundling at the node (street cabinet; combined with a back-haul access product). In practice, only bitstream will be used as the addressable customer market at the node is too small to make a business case for unbundling at that level.

With FTTH, unless it is a PTP network (which would allow dark fibre), the access product will be wholesale bitstream access (WBA). There are four components to the price in the FTTH network being built in Australia (Figure 4.1) where the critical link between the end customer and the POI is split between the individual fibre to the end customer (AVC, priced by speed and QOS to the end customer) and the aggregation link (CVC) dimensioned by the wholesale customer to handle its AVCs.



◂ **Figure 4.1: Bitstream Access in Australia**

Source: NBN Co. Product and Pricing Overview for Access Seekers, Dec 2010

This model is the same * as in Canada which has mandated two pricing options (Box 4.5). The other option is flat-rate. Flat rate is like copper based access pricing (eg ULL and LSS) but it does not take account of the growth in data traffic. The problem with flat-rate pricing is that it puts the onus on the access provider to increases the capacity of the network to handle extra traffic without a proportionate contribution towards the cost of doing that.

◂ **Box 4.5: Canada**

Sources: CRTC Telecom Regulatory Policy CRTC 2011-703 [15 Nov 2011] http://www.crtc.gc.ca/eng/com100/2011/r111115.htn

In Canada in 2000, the CRTC, permitted cable carriers to introduce usage caps and/or usage-based billing (UBB) charges for their wholesale services if UBB was also applied for their retail customers. Later, this option was extended to telephone companies offering broadband access.

On 25 January 2011 (Decision 2011-44), the Commission set the UBB rates at retail minus 15 percent. But the concession was not enough for many independent ISPs which together account for just 6 percent of the residential retail market - they were hoping for the CRTC to grant them a 50% discount.

The January decision ignited a consumer backlash and a wave of public scorn hit Ottawa ahead of the May federal election, quickly turning into a hot-button issue for a minority Conservative government and opposition parties alike. Also Netflix Inc. expressed serious concerns about its future in Canada - "[usage-based billing] *is something we're definitely worried about*," (Reed Hastings, chief executive of Netflix). On Feb. 3 2011, the federal Cabinet advised the CRTC that if it did not review the decision and come back with a new one, it would be reversed.

The revised model that the CRTC finally produced on 15 November 2011 offers two options. First, for companies that proposed a usage-based model, their tariffs have to be based on the approved capacity model, effective 1 February 2012. For companies that proposed a flat rate model, their tariffs were approved effective immediately.

The capacity model requires ISPs to choose what bandwidth of pipe it wants in order to carry traffic between aggregation points (eg street cabinets) and the handover point. This is similar to the wholesale model proposed or the new broadband network in Australia. If ISPs do not order enough capacity, their traffic will become congested without affecting other ISPs.

This should appease content providers like Netflix but there is no incentive for ISPs to buy bigger pipes to accommodate traffic for which they little or nothing?

An obvious neutral solution is volume based charging: exactly what the CRTC blocked *. The days when customers enjoyed unlimited downloads on broadband may be numbered. Twenty OECD countries currently have no data caps at all among their broadband offers (OECD, 2011). But things are changing. One of the twenty is the USA where AT&T slapped 150GB and 250GB data caps on its broadband DSL and U-Verse customers. Ultimately at the wholesale level, a monthly fixed fee for each access line plus a charge per GB for total volume downloaded across those lines may become a best practice option.

Another reason for moving in this direction is that both mobile and fixed broadband networks have had content and carriage effectively unbundled by the de-layering of the industry brought about by digitising networks. The network operators' responses and the regulator's role in this development are discussed in **Section 5**.

Reference Documents

- ACCC, Final Access Determination for Fixed Line Services, July 2011
- Australia: NBN Co. Product and Pricing Overview for Access Seekers, Dec 2010
- European Commission: Commission Recommendation on regulated access to Next Generation Access Networks, 2009
- European Regulators Group: -- Report on ERG Best Practices on Regulatory Regimes in Wholesale Unbundled Access and Bitstream Access
- Netherlands: The business case for fibre-based access in the Netherlands, December 2008
- OECD, Communications Outlook, 2011
- UK: Models for efficient and effective public-sector interventions in next-generation broadband access networks
- United Kingdon: Analysys-Mason report on the costs of deploying fibre-based next-generation broadband infrastructure, September 2008

2.4.5 PRICING INFRASTRUCTURE SHARING

There is a general consensus that infrastructure sharing should be based on cost-oriented pricing and open access models. Countries have differed, however, on the approach taken to establishing costs.

The EU considers infrastructure sharing to be just another example of unbundling. It says access to existing civil engineering infrastructure of a regulated operator on Market 4 (wholesale network infrastructure access) should be priced with the same methodology used for pricing access to the unbundled local copper loop taking into account actual lifetimes of the relevant infrastructure. The same method applies to new (fibre) infrastructure except that a higher risk premium * may be allowed in the return to capital (WACC).

The New Zealand regulator accepted the advice of the industry that it was not required to regulate access pricing for mobile co-location *.

Reference Documents

- Botswana: Guidelines on Sharing Communications Infrastructure, January 2010
- European Commission: Commission Recommendation on regulated access to Next Generation Access Networks, 2009
- New Zealand -- Standard Terms Determination for the specified service Co-location on cellular mobile transmission sites

2.4.6 PRICING RESALE

The generally accepted price rule for resold services, Pa, is 'retail minus avoided retail costs' (RMAC). Under this rule, the price paid by resellers is equal to the providing firm's retail price of the service, Pr, less its cost of retailing functions, Cr, avoided with resale:

$Pa = Pr - Cr$

RMAC is equivalent to the Efficient Component Pricing Rule (ECPR) also known as the Baumol-Willig access pricing rule which says that the marginal costs of access include not only the direct costs, Ca, but also the 'opportunity costs'. That is the access price, Pa, should be:

$Pa = Ca + (Pr - Ca - Cr)$

So long as the reseller's own retail costs are less than Cr, it can compete with the incumbent.

Although DSL is not a 'declared' (ie regulated) access service in Australia (because entrants can build and resell their own DSL services based on ULL or LSS), the incumbent has volunteered * to resell its ADSL services in all areas at RMAC (Box 4.6).

◂ Box 4.6: Telstra's ADSL2+ prices

Sources:

In Australia, unbundled loop pricing is regulated but resold ADSL services are not regulated. As part of the negotiations around the National Broadband Network (NBN), the incumbent agreed to resell ADSL2+ services set equal to Telstra's retail price minus its avoidable retail cost.

The Retail Price input is based on the weighted average price over all plans, including when supplied as part of a bundle. Avoidable retail costs sourced from Telstra's internal management accounts include the costs that Telstra would avoid if, instead of supplying its retail ADSL services through retail channels, it supplied those services through the wholesale channel. Some examples of such costs are retail sales and marketing costs and call centre costs. Zone 1 includes 90 per cent of fixed lines.

National Average Retail Price for ADSL Pr = $56

– Short Run Marginal Avoidable Retail Cost Cr = $15

– Fixed Avoidable Retail Cost Allocated to Zone 1 Cr = $10

Equals ADSL2+ Wholesale Reference Price (Zone 1) Pa = $31

Even if an entrant is not as efficient in retail as Telstra, it may choose to resell Telstra's ADSL services to build market presence ahead of the roll-out of the NBN.

A guide to Telstra's price-related interim equivalence and transparency obligations, 5 September 2011 **http://www.accc.gov.au/content/index.phtml/itemId/1003999** and

Accounting separation of Telstra: Imputation testing and non-price terms and conditions report for the June Quarter 2011, October 2011 **http://www.accc.gov.au/content/index.phtml/itemId/670198**

In New Zealand, the unbundled bitstream access (UBA) service was made available as a regulated product before ULL was made available. UBA has been regulated at RMAC.

Not all competitors are interested in using resale as their retail market strategy. If they use, say, unbundled local loop to provide both voice and broadband services there could be some inconsistency with resold local services.

An issue with RMAC is that comparisons between retail services and wholesale services are complicated because retail business units do not necessarily use the same cost elements, in the same quantities, in the same geographic areas and for the same end-users as wholesale customers.

Next: 2.5 Regulating 'Over-the-Top' Services ➔