



Access price flexibility with a vertically integrated access provider

A report for Optus

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1. Introduction

1. The Competition Economists Group (CEG) has been asked by Optus to consider the economic arguments for allowing a vertically integrated access provider of fixed line services, such as Telstra, a degree of flexibility in allocating fixed and common costs to individual access services.
2. We contrast the potential outcomes of allowing pricing flexibility for a vertically integrated access provider to the historic approach of the ACCC which has been to set a maximum uniform access prices using its Total Service Long Run Incremental Cost methodology (which we equate to a form of average cost pricing).
3. The main conclusions are as follows:
 - In cases where marginal cost prices for telecommunications services is infeasible, price discrimination which is based on end-user characteristics is likely to be desirable. This form of price discrimination is not 'cost based' but is generally welfare enhancing.
 - Such forms of price discrimination are widely practiced at the retail level in telecommunications markets, but are less commonly considered in regulated access prices where common cost recovery is set (arbitrarily) based on a uniform mark-up of costs. Access prices based on Ramsey principles (even if imperfectly implemented) would generally improve welfare relative to current practice. However, such forms of price discrimination may be difficult to apply for some services where knowledge of end-user characteristics is not retained by the access provider.
 - In the context of a vertically integrated access provider, the additional option of access prices based on the vertically integrated access provider's retail prices is likely to be superior to a single access price based on a uniform mark-up of costs.
 - Allowing a vertically integrated access provider to set the menu of non cost-based access prices, subject to an average price constraint, is problematic. There are a number of reasons why a vertically integrated access provider may favour its downstream retail arm. In particular if there are significant economies of scale in downstream markets it may be able to damage or displace its rivals.
 - Whilst an average price cap will prevent overall prices being set above cost, the vertically integrated access provider's incentive to distort the access pricing menu to harm competition will remain. Indeed, the vertically integrated access provider will be able to choose which market segments access seekers will be able to profitably serve. This may allow the vertically integrated access provider to 'hold up' investments which are specific to particular services or market segments.



2. Efficient access pricing for telecommunications services

4. This section discusses in general terms the economics of pricing services on telecommunications networks. We consider the benchmark for efficient prices and discuss how the efficiency consequence from deviating from this benchmark, whilst necessary to achieve total cost recovery, can be minimised. Finally, we consider the relationship between efficient retail and access prices.

2.1. Marginal cost pricing in telecommunications

5. When telecommunications networks demonstrate increasing returns to scale, marginal cost pricing whilst efficient will not allow the network owner to cover the total cost of operating the network. If the network owner cannot obtain a subsidy from the government to cover its fixed costs then a mark-up over marginal cost prices is needed.¹
6. That said, marginal cost pricing is the appropriate reference point for considering the efficiency of alternative pricing approaches. Marginal cost pricing maximises welfare because end-users' demand for the network will expand to the point where the marginal benefit of additional demand is equal to the marginal cost of meeting that demand.²
7. Importantly, the concept of marginal cost which maximises welfare is a short-run concept which loses much, if not all, of its welfare and efficiency properties if it simply substituted with a long-run marginal cost concept. Short-run marginal cost pricing maximises welfare because it recognises that using the sunk capacity of a network should not be discouraged by pricing which reflect the cost of replacing that capacity whilst demand is insufficient to warrant addition costs being incurred.
8. As a result, short-run marginal costs may fluctuate significantly with the timing of investment decisions. Assuming there is a single network asset, short-run marginal cost prices are likely to be low (or zero) as long as the asset is not congested, and be very high when that asset needs to be duplicated. In reality, telecommunications networks are made up of many network assets with very different lives and therefore at all times most of the network costs are fixed and therefore short-run marginal cost is low, generally well below average cost.

¹ Raising funds from the government via general taxation will also come at an efficiency costs, but given the very large base for government taxes we would reasonably expect these efficiency costs to be lower than the efficiency cost of above marginal cost pricing of telecommunications services.

² Ignoring externalities.



2.2. Least inefficient way of covering total costs in telecommunications

9. In cases where marginal cost pricing is infeasible and/or will not result in cost recovery, a mark-up above marginal cost will be necessary. Any mark-up above marginal cost will create allocative inefficiency and is therefore harmful to welfare. We are therefore seeking the 'least inefficient' way to recover total costs through telecommunications prices (assuming options such as accessing the income tax base via a Government subsidy are unavailable).
10. Economic theory (thanks to Frank Ramsey) tells us that the 'least inefficient' way to recover total costs depends heavily on our knowledge of end-users' preferences and our ability to price differently to end-users based on those preferences. In other words, efficient cost recovery requires that prices be determined based on end-users' willingness to absorb those prices and our ability to charge prices to end-users which match their willingness to pay. Therefore the efficiency of recovering total costs will depend on:
 - the number of discrete services which are supplied by the network and/or how much knowledge we have about end-users' characteristics and preferences (eg, consumption and consumption patterns) to discriminate pricing for units of consumption of each service between end-users (ie, have some end-users pay higher prices/higher mark-ups than other end-users); and
 - our knowledge of end-users' willingness to absorb prices/mark-ups and how this affects/distorts their consumption.
11. The efficient mark-up on marginal cost for each service or unit of consumption (if prices for each unit can be set differently between end-users) should be based on 'Ramsey principles'. That is the mark-up for each service and/or unit of demand should be the one that allows the firm to recover its total cost and minimise the economic distortion created by reduced consumption of all services. In general, this will require a greater percentage mark-up on those services and units of consumption which have demand which is least sensitive to higher prices.
12. Whilst the superiority of Ramsey prices over alternatives (such as prices based on equi-proportionate mark-ups or other attempts at average cost pricing) can be demonstrated in abstract economic concepts of increased efficiency and consumer surplus it may be best seen simply as a means to selling more services. In telecommunications, where there are significant increasing returns to scale, selling more services has the benefit of reducing average costs.³

³ Hausman, J. A. And MacKie-Mason, J. K., 1988. "Price Discrimination and Patent Policy," RAND Journal of Economics, vol. 19(2), Summer, pages 253-265.



2.2.1. Price discrimination

13. Whilst telecommunications networks provide a number of discrete services, there is increasingly less distinction between services (eg, internet protocol traffic management means there is little ‘real’ distinction between voice minutes and data transfers – though they may be packaged as distinct services when sold to end-users. Therefore, we must look for ways to differentiate prices for the same service (price discrimination).
14. Assuming that end-users cannot be charged for services based on their individual willingness to pay for each services (ie, perfect price discrimination), price discrimination must occur at a more general level by either charging different prices based on the characteristics of the end-user (eg, whether they are business or residential end-user, whether they consume at day or at night, where they live, and whether they also buy other services) or on how much the end-user consumes (eg multi-part tariffs).⁴ The less general, or more refined, the level of price discrimination possible, the smaller will be the efficiency loss from pricing services above marginal cost.
15. It is useful demonstrate the benefits of price discrimination algebraically.⁵ We do this by beginning with the case where a monopoly telecommunications network only sells one calling service and must determine the optimal price for that single service. Imagine that end-users’ maximum willingness to pay for calling services, p can be represented by a cumulative distribution function, $F(p)$, with a density function $f(p) = dF(p)/dp$.

16. For a given price, p , the demand for calling services would be given by:

$$D_p = 1 - F(p)$$

17. The telecommunications networks with marginal costs, c_n , sets p to maximise profits $\pi = (1 - F(p))(p - c_n)$. This results in a monopoly price:

$$p_m = c_n + (1 - F(p))/f(p)$$

18. Clearly, at the monopoly price the telecommunications network would be willing to sell more services if the monopoly revenue can be preserved. That is, if they can sell services to those who are not consuming at p_m . They will do this as long as selling services to those remaining consumers $F(p_m)$ does not result in a leakage of the

⁴ These general forms of price discrimination are known, respectively, as third and second degree price discrimination, and can be used in combination with one another.

⁵ Following Hausman, Economic Analysis of Price Discrimination for Broadband, MIT, May 17, 2005



revenue that is being received from end-users purchasing at the monopoly price, $(1 - F(p_m))$.

19. It is relatively straightforward to show that if a new service is sold at a lower price, say p_l to $F(p_l)$, a new monopoly price needs to be calculated for the remaining end-users as follows:

$$\tilde{p}_m = c_n + (F(p_l) - F(\tilde{p}_m))/f(\tilde{p}_m)$$

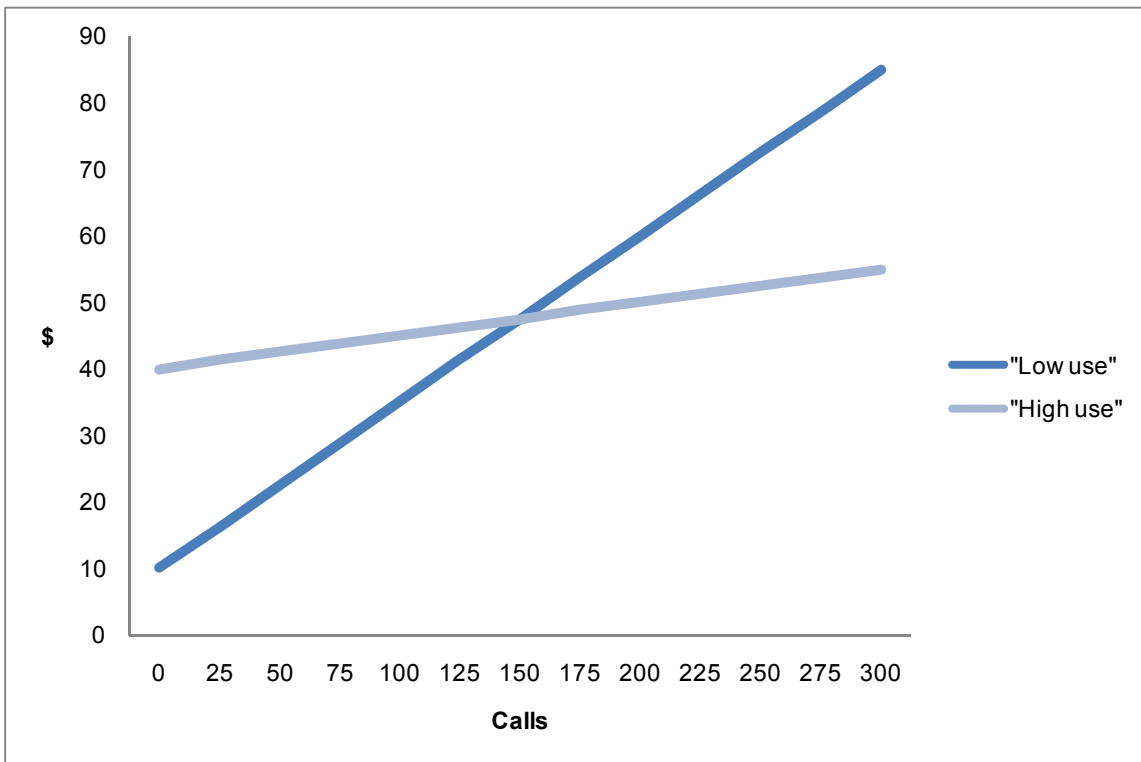
20. As $F(p_l) < 1$, the value of $\tilde{p}_m < p_m$. Meaning that the newly calculated monopoly price is lower than what was previously calculated as a result of earning more revenue from end-users with low valuations at p_l . Therefore, price discrimination in this simple model improves welfare by allowing more end-users to consume at a price they are willing to pay, and lowers prices to other end-users.
21. As noted above, these calculations assume the ability to precisely differentiate between end-users based on their willingness to pay. In reality, this will not be possible and we would expect some leakage of revenue, δ , as some high willingness to pay end-users identify themselves as low willingness to pay and receive a lower price. In that case the new profit maximising price \tilde{p}_m , would need to be adjusted upward. However, only if the leaked revenue exceed the revenue from the low willingness to pay service, $\delta > p_l F(p_l)$, would it not be worthwhile for the telecommunications network to price discriminate.
22. Price discrimination is very common in telecommunications networks services. For example, business end-users are charged different prices to residential end-users for identical calling services. Business end-users pay a higher price reflecting their greater willingness to pay. This form of price discrimination is possible to the extent that end-users can be classified as being a 'business customer' or a 'residential customer'.
23. Price discrimination also occurs on the basis of usage. For example, operators generally offer a menu of two-part tariffs for calling services. Telecommunications networks offer a higher (lower) fixed charge⁶ with lower (higher) calling charges. These menus are designed to allow differential pricing to end-users with different willingness to pay for local calling, with use being an 'indicator' of willingness to pay.
24. A simple menu of two-part tariffs illustrates how end-users can be segregated. Imagine a menu which offered calls for 25 cents if a monthly fixed charge of \$10 were paid, or calls for only 5 cents if a monthly fixed charge of \$40 was paid. If end-users

⁶ The higher (or lower) fixed charge may be presented as a higher or lower line rental charge but for economic analysis, this should be thought of as the fixed component of a two-part tariff for calling services.



are allowed to self-select from the menu, 'low use' would select the first calling plan and 'high use' end-users would select the plan. The menu defines which end-users are 'high' and 'low' use – in this case end-users making more than 150 calls per month would be considered high use. This menu is graphically illustrated in the figure below.

Figure 1: A simple menu of two two-part tariffs



25. The menu of two-part tariffs is effective because 'low willingness to pay' end-users are personally better off on the 'low use' tariff and find the 'high use' tariff unattractive and vice versa for 'high willingness to pay' end-users.

2.3. How widely should common costs be recovered?

26. Telecommunications networks have significant economies of scope. In particular, there are many fixed costs which are incurred jointly in the production of a range of different services.
27. A reasonable question to ask may be how broadly these fixed and common costs should be spread amongst services. Regulators have generally proposed restrictions on the breadth of cost recovery by attempting to quarantine costs to particular services



on the basis that those costs are ‘attributable’ to those services. The ACCC’s approach appears to follow this reasoning when it notes:⁷

... some of the infrastructure used in the production of telecommunications services is common to the production of multiple services, while other elements of the infrastructure is attributable to particular services.

28. However, truly joint and common costs cannot be attributed to particular services with any economic meaning and arbitrary allocations are likely to be inconsistent with efficient pricing of telecommunications services.

29. As noted by Laffont and Tirole (2000):⁸

... the Ramsey-Boiteux paradigm treats the regulated firm as a single entity. In particular, the various fixed costs incurred in different activities are lumped together, and the overall cost must be recovered through mark-ups on all services. This principle means that each expense is financed from the broadest possible tax base. This practice ensures that the marginal costs of the financing of the various services (as measured by the marginal welfare cost of distortions in consumptions) are equalized across services.

Ramsey and Boiteux’s ... principle implies that a service may be financed largely by consumers who do not purchase the service [emphasis added]

30. There may be some ‘second-order’ arguments in favour of segregating or attributing fixed costs to particular services. For example, Laffont and Tirole (2000) suggest that such segregation may assist in identifying whether future investments are socially efficient (expected revenue plus surplus exceeds cost), it may aid cost monitoring, and it may lessen the prospect of regulatory capture.

31. Perhaps more persuasively, it may be worthwhile segregating costs if they would otherwise be allocated such that the price for a particular service is in excess of the stand-alone costs of providing the service – thereby creating incentives to build a duplicate network. However, this need not *require* segregation of costs, but may require an analysis of forward-looking new-entrant costs to ensure that cost allocations are not encouraging inefficient bypass.

⁷ ACCC, Review of 1997 Guide to Telecommunications, Access Pricing Principles for Fixed Line Services, Discussion Paper, December 2009, page 51.

⁸ Laffont, J-J. And Tirole, J (2000) Competition in Telecommunications, Munich Lectures in Economics, MIT Press, page 76.



2.4. Retail versus access pricing

32. So far in this section we have purposively not distinguished between retail and access pricing. This is because if we assume the downstream retail market is competitive, *then* the framework described above for efficient pricing of retail telecommunications services applies equally to access prices for telecommunications services. That is, the same Ramsey principles should apply to the setting of access prices.
33. In a competitive market, downstream operators will incur costs in converting the access service into a final retail costs. These costs would be equivalent to those incurred by the vertically integrated access provider. If the downstream market is reasonably competitive, ie, does not involve significant fixed costs, then the additional of variable cost to the access pricing does not change the efficient structure of access prices in terms of structuring prices to ensure the least inefficient recovery of the fixed costs of the telecommunications network.
34. If the downstream market is not competitive, then some amendments to the pricing structure maybe warranted. The first-best efficient access prices would continue to be set equal to marginal cost and second-best mark-ups on marginal costs should reflect the willingness to pay of end-users. However, some amendments to efficient prices may need to acknowledge the fixed costs incurred in the downstream market. Efficient access prices may need to be set lower to reflect the inefficiency associated with double marginalisation of prices (the second margin in the downstream market).⁹

⁹ Additional issues will need to be considered in the context of a vertically integrated access provider. These issues are discussed below.



3. A uniform access price and a vertically integrated access provider

35. In this section, we consider the case where a regulator sets a maximum uniform access price for each regulated telecommunications service. We consider the effect of this in the context of a vertically integrated access provider who has freedom to price discriminate its retail prices in the downstream market.

3.1. Setting a uniform access price

36. Despite the significant efficiency gains to be had by differentiating access prices based on the willingness to pay of end-users, regulators have generally adopted a uniform access price which is not conditional on any feature of end-users, such as demand or on end-user type (differentiation based on access seekers characteristics, such as volume discounts, have also generally not been adopted). The ACCC, like many other regulators, has generally adopted this approach on the basis that to do otherwise would potentially be inconsistent with setting 'cost-based' prices and may be 'discriminatory'.¹⁰
37. Whilst the practice of the ACCC has been to set uniform access prices which are 'cost-based', at the time of the release of the Access Pricing Principles in 1997 it was recognised that non-cost-based prices were efficiency enhancing and were expected to be common in access pricing. The ACCC stated that:¹¹

The Commission expects that in most undertakings the same menu of offerings will be available to all access seekers on a non-discriminatory basis. Where an undertaking provides scope for differential pricing not based on costs, the Commission must be satisfied that such differential pricing will promote competition and will enhance the efficient use of, and investment in, infrastructure

38. It should be recognised that the forms of price discrimination discussed in the previous section (including Ramsey mark-ups for different services supplied by the same network and multi-part tariffs and other direct means to segment end-users according to their willingness to pay) are all forms of differential pricing that is not 'based on cost'. They would perhaps more correctly be considered to be 'demand-based' cost allocations.

¹⁰ Some possible exceptions include differentiated pricing for business and residential consumers of the 'local carriage service', 'PSTN OTA' services which were geographically differentiated and included a two-part tariff, and 'ULLS' services which are geographically differentiated. However, each of these price differences has generally been justified on the basis of 'cost'.

¹¹ ACCC (1997) Access Pricing Principles - Telecommunications: a guide.



39. The only true form of pricing which could be considered 'cost based' in an economic sense are prices which are equal to marginal cost. Alternative cost allocations (such as those based on 'attributable', 'incremental', or 'activity-based' cost allocations could not be considered to be based on cost in any economic sense as they do not convey an economic efficiency signal, they are by definition, arbitrary.
40. Despite the analytical detail of long-run incremental cost allocations and the intent to allocate cost based on which service 'drive' costs, the implementation of long-run incremental cost typically amounts to a calculation which takes the total cost of providing a services (including and an allocation of fixed and common costs) and divides it by the number of minutes for the service – in effect calculating the average cost of providing the service.

3.2. Vertically integrated access provider's response to a maximum uniform access price

41. In cases where the regulator sets a maximum uniform access price the vertically integrated access provider can charge, a , this access price sets the cost parameters by which access seekers can compete with the vertically integrated access provider in the downstream market. If the access seekers incur a cost of transforming the access service into a downstream retail service, c_r , then the minimum price the access seeker can profitably supply at retail is $a + c_r$. If the downstream market is competitive, this also sets the maximum price that access seekers (and therefore the vertically integrated access provider) can charge in the downstream market.
42. In other words, assuming that end-users' demand follows the cumulative density function as discussed above, the existence of access seekers who pay a price, a , will limit the ability of the vertically integrated access provider to differentiate prices to end-users with a valuation in excess of $a + c_r$, which would be a population $1 - F(a + c_r)$, as low as $c_n + c_r$, where $c_n < a$.¹²
43. In this circumstance, the existence of the uniform access price inefficiently limits the ability of the vertically integrated access provider to differentiate in the downstream market, particularly for 'higher valuation' end-users, with valuation in excess of the access price plus retail cost. Any attempt by the vertically integrated access provider to charge a higher price than $a + c_r$ to an end-user can easily be defeated by access seekers. If the downstream market is not perfectly competitive and access seekers incur fixed costs in transforming the access service into a downstream retail service then the extent of those fixed costs will determine the degree of discrimination which is possible.

¹² We follow the same notation as above, but in this example we add marginal retail costs for the vertically integrated access provider (previously the telecommunications network) and the access seeker to transform the network service into a downstream retail service. We previously assumed these costs to be zero.



44. Notwithstanding the existence of the access at a price, a , a vertically integrated access provider with the ability to price discriminate in the downstream retail market, will continue find it profitable to sell units at a lower price than the minimum price which can be charged by access seekers. That is, the vertically integrated access provider will find it profitable to serve the segment of end-users with a willingness to pay of less than $a + c_r$, defined by, $[F(a + c_r) - F(c_r)]$. This segment cannot profitably be served by access seekers.¹³
45. It should be recognised that from a welfare perspective, the fact that these low valuation end-users are served is positive and limiting the differentiation the vertically integrated access provider can engage in would generally be undesirable. Whilst a uniform price may be a second-best tool for the regulator who might otherwise set differentiated prices, there is an ‘efficiency cost’ of setting access prices which are not conditional on end-user characteristics if these prevent some differentiation which is socially desirable.
46. Whilst the theoretical analysis above assumes a particular distribution of end-user preferences it provides support for the general impression that the focus of competition in telecommunications markets is largely around ‘high value’ end-users. For example, Table 1 below show the minimum 12 month charge (excluding connection charges) available for a home phone¹⁴ from Australian telecommunications operators.

Table 1: Lowest offered annual charges for home phone (excluding connection)

	Annual minimum
Telstra	\$251.40
Optus	\$303.46
AAPT	\$647.40
iPrimus	\$359.40

Source: company websites as at 25 February 2010

47. Based on our analysis it seems reasonable to conclude that the additional option of access prices based on the vertically integrated access provider’s retail prices is likely to be superior to a single access price based on a uniform mark-up of costs. It is generally expected to increase welfare if the regulator adds an additional multipart tariff option to its uniform price. Improving welfare, rather than finding the optimal tariff structure, does not require the regulator to have ‘perfect’ information regarding end-users’ willingness to pay. However, to ensure there is not significant leakage, δ , the regulator will want some knowledge of end-user demand (at least for tariffs with a

¹³ As before, the degree of price discrimination will be limited by any expectation of some leakage of revenue, δ , as a result of the discrimination.

¹⁴ Not including a VoIP service.



marginal access price less than a). Such knowledge can be 'gleaned' from the retail pricing structure offered by the vertically integrated access provider.

48. An important question arising from this analysis is 'why doesn't the vertically integrated access provider offer some level of differentiated access prices to access seekers?' or at least, 'why doesn't the vertically integrated access provider offer the same level of differentiated access prices to access seekers it implicitly offers to its own retail arm?'
49. There are two potential reasons why the vertically integrated access provider may be reluctant to offer differentiated access prices.

3.2.1. Information unavailable to ensure differentiated access prices are reflected in retail prices

50. Firstly, it may be that the vertically integrated access provider cannot sufficiently control or monitor the access seeker to ensure that the differentiated pricing at the access level (which is efficiently based on the characteristics of the end-user rather than the access seeker) is reflected in the prices and pricing conditions imposed by the access seeker at the retail level.
51. Access prices which are differentiated based on end-user characteristics will give the access seeker an incentive to falsely 'declare' that its end-users have the characteristics which warrant a lower access price. If access seekers can achieve this they will sell into the retail market with a competitive advantage over the vertically integrated access provider in the downstream market. Such behaviour whether purposeful or incidental increase the revenue leakage from the vertically integrated access provider's price differentiation, δ , lessening their ability to differentiate price more generally.
52. In addition, the nature of the service may not allow the vertically integrated access provider to have very much knowledge of the end-users in order to set and monitor the form of price discrimination which it undertakes. For example, the unbundled local loop service (the ULLS) is an access service which provides access seekers with a piece of copper wire which is detached from the vertically integrated access provider's network. Apart from the location of the customer, the vertically integrated access provider has no direct way of determine the characteristics of the customer (eg, usage, business or residential, bundling preferences, etc) which would allow it to differentiate prices.

3.2.2. Ability to gain a competitive advantage by not differentiating access prices further

53. Secondly, there may be an anti-competitive motive to the vertically integrated access provider's unwillingness to offer differentiated access prices below the maximum uniform access price set by the regulator.



54. Absent any anti-competitive motive, if access seekers provide a differentiated service to the vertically integrated access provider then we would expect that the vertically integrated access provider would view the access seekers as channel for differentiated pricing which it cannot achieve on through its own arm. Similarly, if access seekers have lower marginal costs in serving some, or all, end-user's, then the vertically integrated access provider has an incentive to favour access seekers over its own retail arm.
55. However, despite these factors we do not see differentiated access prices below the uniform access price. This may be because *not offering*, or refusing to offer, such differentiated prices, provides the vertically integrated access provider a competitive advantage in the downstream market. It does this if by not offering further differentiated prices they can reduce the size of the addressable market which can be served by access seekers relative to their own retail arm and by doing so raise the cost of their competitors (the access seekers) in the downstream market or their ability to constrain pricing across that market.
56. The existence of economies of scale and scope in the downstream market would reasonably explain how reducing the addressable market would advantage the vertically integrated access provider. In the extreme, by not offering differentiated prices below the uniform access price the vertically integrated access provider could exclude some access seekers from the retail market entirely. This outcome seems unlikely given the presence of the regulated access price set at average cost. However, not offering differentiated pricing may limit the scale economies access seekers can achieve in the downstream market relative to the vertically integrated access provider and therefore, by definition, limit their ability to constrain the retail pricing of the vertically integrated access provider. It may also limit their ability to compete in related markets.



4. Allowing the vertically integrated access provider to design its own menu of access prices

57. In this section we consider the case where a vertically integrated access provider was given flexibility to design its own menu of differentiated access prices. We consider the case where this flexibility was allowed subject to the constraint that the average access price was equal to the average cost of services on the network.

4.1. The pricing constraint on the menu of access prices

58. In order to illustrate the potential effect of allowing a high degree of pricing flexibility we place a simple constraint on the vertically integrated access provider. We impose the constraint that the weighted average access price, \bar{a} , is equal to the total cost of the network, TC_n , where the weights used to calculate the average access price, w , reflect the sales of both the vertically integrated access provider and access seekers.

59. Algebraically the constraint would be:

$$TC_n = \bar{a} = \sum_{i=1}^n w_i a_i$$

60. Where i is assigned to each service which is sold and is assigned to each component part of each service sold if a multi-part tariff is used. For example, if there is a two-part tariff including a fixed charge per customer and a variable charge, this would effectively be treated as two separate services for the purpose of calculating the effect of this service on the weighted average.

61. In practice, to implement this pricing constraint we would need to impute an access price that the vertically integrated access provider is charging to itself. To the extent that retail costs were readily identifiable and not controversial, the imputed access price could be calculated as a 'retail-minus-retail-cost' for each retail price offered the vertically integrated access provider, and weights reflecting the vertically integrated access provider's downstream sales.

4.2. Vertically integrated access provider's incentives when allowed access price flexibility under a weighted average price cap

62. As noted above, to the extent that access seekers have lower costs in serving a competitive downstream market, in theory the vertically integrated access provider would prefer to sell services through access seekers rather than through its own retail arm. In addition, if access seekers provide a market channel to achieve a level of price differentiation that the vertically integrated access provider cannot achieve via its



own retail arm, then it would have the incentive to structure a menu of prices which achieve this objective.

63. However, to the extent that access seeker sales are simply sales lost by the vertically integrated access provider then it would have an incentive to discourage such sales. To the extent that this would avoid duplication of fixed costs in the retail market this would be efficient, however, if it also prevented socially beneficial product differentiation by the access seeker then it would be overall harmful to welfare. As discussed in section 3.2 a vertically integrated access provider may have a number of anticompetitive reasons to favour its downstream retail arm.
64. In order to achieve differentiated prices under the weighted average price cap, the vertically integrated access provider would need to set access prices, a_i , for each service subject to various 'conditions'. These conditions could take the form of 'in order to pay an access price of a_1 , all units must be sold between 10pm and 3am' or 'in order to pay an access price of a_2 , all units must be sold to premises with more than 5 lines connected'.
65. Alternatively, the 'conditions' could take the form of a two-part tariff, where say, access seekers are offered a lower per minute call rate the greater the minutes per retail end-user. If the vertically integrated access provider is differentiating as efficiently as it can, and would not be aided in differentiating prices by an access seeker, it may simply offer the same form of price discrimination it implicitly offers to itself. Following our simple example in section 2.2.1, access seekers would be offered an access price of $(25 - c_r)$ cents per minute for those of its subscriber that also paid an access price of \$10 per month per end-user and an access price of $(5 - c_r)$ cents per minute for those of its subscriber that also paid an access price of \$40 per month per end-user.¹⁵
66. In this simple two-part tariff example it can be clearly demonstrated that the vertically integrated access provider has the ability to set its access pricing menu in such a way that some customers would not be competitive for one segment of the market. For example, if the vertically integrated access provider wished to ensure that access seekers could not compete for 'high-use' end users the per minute access price which is conditional on a \$40 per month end-user charge could be set at $(5 - c_r) + \varepsilon$. The higher per minute charge, achieved by adding $\varepsilon > 0$ to the per-minute charge, would make access seeker uncompetitive in competing for 'high-use' end-users. They would be unprofitable for access seekers.
67. In contrast, despite the existence of an 'imputed' access price on the vertically integrated access provider's sales, it would disregard such a price as a 'transfer

¹⁵ Note that we do not consider two-part tariffs determined on the characteristics of the access seeker (eg, straight volume discounts). Such tariffs could easily be structured in a discriminatory fashion given the size of most vertically integrated access providers (a function of their historic incumbency).



charge' and would find it profitable to serve these 'high-use' end-users. As noted above, the vertically integrated access provider faces the true marginal cost, c_n , on all sales and can therefore disregard and imputed access price, a_i , in its pricing decision.

68. However, the effect of the weighted average price cap is that the imputed revenue the vertically integrated access provider would receive on sales to 'high-use' end-users, equal to $(w_{hu}\epsilon)$, would need to be 'given back' in the pricing to 'low-use' end-users. In effect, this means the vertically integrated access provider would need to give up the gains it makes on 'high-use' end-users on 'low-use' end-users.
69. This does not mean however, that the vertically integrated access provider would have an incentive to set the menu of differentiated access prices in an efficient manner. To the extent there are cost conditions (economies of scale) that allow the vertically integrated access provider to damage or displace its rivals through fewer sales will give the access provider incentive to favour its retail arm over access seekers. Whilst access seekers may provide an alternative avenue for efficient price discrimination, the opportunity to distort the access pricing menu to harm competition will remain.
70. Regardless of the menu of access prices which would be offered by the vertically integrated access provider to its competitors, it should be remembered that the vertically integrated access provider always faces a cost for using its network equal to the marginal cost of the network. So long as a marginal cost based access price is not offered to access provider, competition in the downstream market will be distorted.
71. In particular, as the vertically integrated access provider has the ability to set the menu of access prices it has the ability to define which segments of the end-user market access seekers will not be able to compete for. Unlike the case in the previous section where the regulator's average-cost price determined which end-users were profitable and which were not, in this case, this is determined by the vertically integrated access provider. This could involve risk to downstream competition if there are important market segments which are important to the downstream viability of access seekers (eg, some customer types may be more loyal than others).
72. In addition, allowing the vertically integrated access provider flexibility to set the access pricing menu may give it an incentive to change that menu in a manner which disrupts the operation of its competitors in the downstream market and 'hold-up' investments made by access seekers. For example, if the vertically integrated access provider has flexibility in allocating costs between the local loop and wholesale line rental service, it could discourage investment in fibre and DSLAM equipment. It could do this by increasing (the cost allocation to, and hence the) price of the local loop service once investors had committed sunk investment in fibre and DSLAM equipment to an exchange. The knowledge that this was possible under the average price cap would discourage investment in that infrastructure (particularly as wholesale broadband services are not regulated in Australia).



73. Whilst pricing rules (eg, imputation tests) and general competition law provisions may be put in place to address this type of anticompetitive conduct, they are inevitably difficult to apply and cumbersome in their application. In this case, identifying which cases of access price discrimination were 'good' and 'bad' would be highly problematic for the regulator, and would inevitably involve errors where 'bad' discrimination was allowed to occur and 'good' discrimination was stopped.

4.3. Potential barriers to allowing the vertically integrated access provider price flexibility

74. Implementing a weighted average price cap would involve some reasonably significant practical issues to over-come. An obvious issue is the need to impute an access price for all sales by the vertically integrated access provider. As the vertically integrated access provider in reality faces marginal costs, c_n , on all sales the access price would need to be imputed. If all costs in the downstream market are variable this would simply be calculated as $p - c_r$, however if there are fixed costs at retail these would need to be allocated to each access service.
75. Another potential barrier to implementation of a weighted average price cap is the availability of information on end-user characteristics. This information is needed by the vertically integrated access provider to both design and monitor the operation of a weighted average price cap. For some access services, such as calling services, the information on end-users would be readily available to the vertically integrated access provider. However, as noted above, for access services such as the unbundled local loop service, such information could only be obtained from access seekers who may be reluctant to relinquish such information.
76. In addition, allowing a vertically integrated access provider a high degree of discretion in setting and changing prices may create uncertainty for access seekers and may discourage them from making sunk investments in the downstream market.
77. In addition to tangible investments in telecommunications infrastructure, access seekers may make sunk investments in a intangible assets which are specific to particular market segments (eg, branding). However, access seekers may be discouraged from making such investments if they do not have certainty regarding future access prices for that segment. Whilst a weighted average price cap gives certainty regarding the overall price level, it does not provide certainty to access seekers regarding the structure of prices.