

# Evaluating Telstra's Undertakings for CAN Cost Recovery

A Report on behalf of AAPT Ltd

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The analysis here represents the views of CoRE Research Pty Ltd (ACN 096 869 760) and should not be construed as those of AAPT Ltd.

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## Executive Summary

This report considers Telstra's claim that it should receive an uncovered PSTN CAN contribution (or UPCC) as part of its PSTN interconnection pricing undertaking. The UPCC is essentially equivalent to the access deficit contribution (or ADC) that was part of previous undertakings.

Building on our earlier report on the ADC, we argue here that:

1. The UPCC is ill-defined as the USO payments that offset shortfalls between CAN costs and basic access subscription revenues themselves depend upon the level of PSTN access pricing.
2. The counter-factual question that drives the argument for a UPCC – namely, *what price should a stand-alone CAN provider be able to charge downstream firms for access to the CAN?* – along with what appears to be Telstra's answer: that *in order to ensure that an efficient provider of the CAN can recover all of its costs (including sunk costs), the CAN access price should be sufficient to cover the shortfall between the revenues Telstra would receive for basic access and its CAN costs* both are problematic.
  - a. The answer assumes that PSTN services should all be treated equally in terms of recovering CAN costs; instead, a regard for demand elasticities should be taken into account.
  - b. More importantly, the question is ill-founded in the current environment because Telstra is not a stand-alone basic access provider and, indeed, appears to benefit from its vertically integrated status. The benefits from vertical integration should also offset UPCC calculations. Such benefits are recognised in government policy regarding universal service payments that themselves presume benefits from vertical integration.
3. The UPCC also suffers from several implementation problems:
  - a. Considering the USO scheme, the UPCC should, in principle, be zero if it took into account all of the benefits Telstra receives as a provider of basic access.
  - b. It omits other products that utilise the CAN (such as ISDN and DSL lines).

- c. The local call surcharge effectively treats local calls as a special product in contributing to the CAN.
  - d. There is the possibility of entrenched and continual PSTN price rises as a result of the current definition of the UPCC.
- 4. Competitive neutrality will not be implemented if a UPCC is granted. Given Telstra's vertical integration, competitive neutrality can only be assured by prices reflecting marginal or incremental costs.
- 5. As the price cap on basic access is being lifted, the UPCC should fall to zero in a matter of years. For this reason, its inclusion or not will not likely impact on long-term investment incentives for Telstra.
- 6. When evaluating the appropriateness of the UPCC, the ACCC should consider some sanity checks including a comparison with Telstra's internal transfer pricing practices and appropriate international benchmarks.

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# 1 Background

In January 2003, Telstra submitted its proposed undertakings for PSTN interconnection pricing to be evaluated by the Australian Competition and Consumer Commission (ACCC). Part of Telstra's proposed methodology adds a component to interconnection charges to recovery *uncovered PSTN CAN costs* (or UPCC). This charge replaces the access deficit contribution (or ADC) that formed part of past undertakings proposed by Telstra.<sup>1</sup> AAPT Ltd has asked us to evaluate the rationale for such contributions to the CAN and the practical implications of the methodology proposed by Telstra.

It should be noted that the current paper complements previous work by CoRE Research Pty Ltd (undertaken independently by ourselves as part of our academic research). Our submission to the ACCC's inquiry into the ADC – "The Access Deficit Contribution for PSTN Interconnection Pricing" (Gans and King, 2003a) – reached several conclusions. First, we found that the construction of an access deficit did not, a priori, arise out of a particular economic problem; relating, as it did, to one input – basic access – in an otherwise more complex value chain. Second, we examined two arguments put forward in favour of the ADC and concluded that neither argument has a sound economic basis. In particular, we found that not providing for an ADC would not likely undermine investment incentives in the CAN as Telstra already received universal service obligation (USO) payments to cover its cost in this area. In addition, not providing for an ADC would not encourage inefficient entry, as entry would be efficient in any case given that Telstra had flexible enough pricing choices in PSTN dependent services to meet the prices of any entrant. Finally, we found that even if there was a rationale for the ADC, it would be more appropriate to recover it in a manner similar to the USO rather than through an inefficient mark-up on interconnection charges.

The present paper builds on that previous work to examine in more detail the particulars of Telstra's proposal for a UPCC as presented in its undertakings. Thus, for the purpose of this paper, we largely eschew the question of whether or not there needs to be an ADC or UPCC in PSTN interconnection pricing. Our view on that continues

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<sup>1</sup> For example, see ACCC, *A report on the assessment of Telstra's undertaking for the domestic PSTN originating and terminating access services*, July 2000.

to be that such a contribution is unwarranted. Rather, we focus on the particular methodology presented by Telstra and consider whether Telstra's approach represents an economically desirable way to recover relevant CAN costs.

This paper proceeds as follows. In section 2 we present Telstra's approach to a UPCC contribution. In section 3 we critically analyse the counterfactual exercise that underlies Telstra's claims for a UPCC. We note that this counterfactual is based on a hypothetical industry structure that does not exist in Australia. We also note that Telstra's approach to the UPCC contribution derived from this hypothetical construct does not accord with standard regulatory economics. In section 4 we note a number of practical issues that undermine Telstra's approach to a UPCC. Section 5 deals with investment incentives associated with the UPCC while sections 6 to 8 deal with other issues including providing a number of 'sanity checks' that can be applied to Telstra's claimed access prices.

## 2 Telstra's Undertaking and the UPCC Contribution

We begin by describing the approach to the UPCC contribution charge that has been presented in Telstra's proposed undertakings. Telstra proposes that an interconnection charge be paid by users of its PSTN originating and terminating access services. That proposed charge (including a flag-fall and per minute charge varying over geographic location type) has two components: a cost-based component ( $t$ ) and a UPCC contribution component ( $a$ ). We focus here on the methodology for  $a$ .

Let  $Q(t+a)$  be the total quantity of PSTN calls. Note that it depends negatively upon the interconnection charges (as costs rise so do prices causing a fall in quantity demanded). The UPCC contribution,  $a$  is implicitly defined by the equation:  $a = \text{UPCC}(t+a)/Q(t+a)$ . UPCC is itself defined by:

$$\begin{aligned} & \text{UPCC}(t+a) \\ &= \text{PSTN CAN Costs} \\ &+ \text{Retail Costs Attributable to PSTN CAN Services} \\ &- \text{Maximum Subscription Revenue that Could be Earned by Telstra} \\ &- \text{USO Attributable to the PSTN received by Telstra} \end{aligned}$$

The PSTN CAN costs are based on a forward looking cost model and hence are, in principle, unrelated to the interconnection charge. The same is true of retail costs. The maximum subscription revenue is "the maximum that Telstra could earn for the basic access service whilst still complying with the price caps." (Telstra's Methodology F15) This is a forecast of the level of basic access subscription revenue Telstra would receive if it charged for basic access at its cap. It does not include connection revenue (as was the case in previous undertakings).

The USO component of the UPCC calculation is the Net Universal Service Cost (NUSC) – for details, see Appendix A of Gans and King (2003a). The NUSC is calculated by first determining those regions of Australia that are Net Cost Areas (NCAs) for Telstra. An NCA is one where Telstra's forecast revenues from the provision of telecommunications services (including revenues from basic access, mobiles, long-distance, payphones, ISPs and access revenue) are less

than their avoidable costs of providing those services in that area. The NUSC is simply the sum of the shortfall between revenue and avoidable costs across all NCAs.

The USO received by Telstra is actually a share of the NUSC. However, in calculating the UPCC, Telstra uses the whole of the NUSC to take into account the fact that its own downstream units are contributors to the USO. Telstra state (F16) that they are being conservative with regard to the contribution of their own downstream units to PSTN-related USO costs. They claim that “it would be appropriate for Telstra to recover its contributions towards the PSTN-related USO costs from both wholesale and retail prices.” However, it is unclear what they mean by this. As discussed in more detail below, if Telstra were to reduce the USO component of the UPCC to account for contributions from its wholesale PSTN service, by its own formula, it would build this into PSTN charges and hence pass it on to other carriers. This would violate competitive neutrality as well as the current intent of the NUSC allocation scheme.

It is important to note that the basic equation underlying the UPCC contribution only implicitly defines this contribution. Thus,  $a = UPCC(t+a)/Q(t+a)$  where  $a$  enters both sides of the equation. Formally, this involves solving what is termed a ‘fixed point problem’ by mathematicians. While this does not create any significant technical problems, it does mean that the value of  $a$  need not be unique and cannot be solved without considering the endogenous effect of  $a$  on the USO and on Telstra’s revenues.<sup>2</sup>

To see this, suppose we consider a particular value of  $a$  that would involve the full recovery of the UPCC today given the quantity of CAN services Telstra currently supplies. Further, suppose that given this value of the UPCC contribution, inclusion of this  $a$  in PSTN access charges would result in a general rise in the price of PSTN originating and terminating access. This rise in PSTN access charges (under almost any standard market conditions) will lead to a rise in the price of all telecommunications services that require PSTN access, including the price of Telstra’s own services and a reduction in the quantity of those services sold.<sup>3</sup> If we assume that the market

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<sup>2</sup> In their model of oligopoly behaviour Telstra do not include USO payments and hence, avoid consideration of this issue (see Gans, 2003).

<sup>3</sup> An exception to this is asserted by Telstra in Attachment 14 to its paper “The need for an Access Deficit Contribution for PSTN Access Service Pricing: Telstra’s submission on the ACCC discussion paper,” 2003. In this attachment, Telstra claim to show that a rise in PSTN access prices leads to the highly unusual outcome of lower prices for telecommunications services that require PSTN access. However,



demands for the relevant final services that are produced using the basic access services are relatively inelastic,<sup>4</sup> so that the demand for basic access services is inelastic, then two things occur due to the rise in the UPCC contribution  $a$ : (1) Telstra's access revenues will rise and (2) revenues for all carriers (including Telstra) from services that require PSTN access will rise. But these changes affect the NUSC and thus feedback into the UPCC. These changes mean that the number of NCAs will fall and the shortfall associated with any NCA will fall, reducing the NUSC. At the same time, as already noted, the total quantity of PSTN calls  $Q$  will fall. Together, these effects mean that the UPCC contribution  $a$  will rise.

In summary, the endogenous theoretical definition of the UPCC contribution implies that there is a feedback such that a higher value of  $a$  can raise the price of PSTN access services, leading to a lower USO payment and a demand by Telstra for a higher UPCC contribution.

In practice, Telstra does not solve the relevant fixed point problem required to determine  $a$ . rather it simplifies the calculation by using figures based on current access service charges. However, this does not eliminate the feedback problem associated with the UPCC contribution, but merely hides it. We discuss the implications of Telstra's approach to determining the UPCC contribution in further detail in Section 4 below.

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upon closer examination we found that this conclusion could not be drawn from Telstra's model or its data (see Gans, 2003).

<sup>4</sup> That is, the price elasticity of demand for basic access is less than 1 (in absolute terms).

### 3 Evaluating the Counterfactual Behind the UPCC

The economic case for the UPCC rests on a particular counterfactual exercise. That exercise is to suppose that there is a single stand alone provider of basic access who does not supply any other telecommunications or other services. This provider – let’s call it Telstra Hypothetical or TH – solely invests in and operates the CAN.

TH would have two sets of customers. The first would be *end-users* who subscribe to basic access; allowing them to consume the offerings of *downstream telecommunication service providers*. The second would be the downstream providers themselves who would require access to the CAN as an input into providing their own products. At present, these other service providers supply PSTN services but also other services such as, for example, ISDN services, ADSL services and leased line services.<sup>5</sup>

Now suppose that the price TH could charge to end-users for basic access was capped. Then ask: *what price should it be able to charge downstream firms for access to the CAN?*

The answer Telstra contends is that, *in order to ensure that an efficient provider of the CAN can recover all of its costs (including sunk costs), the CAN access price should be sufficient to cover the shortfall between the revenues TH would receive for basic access and its CAN costs.*

One issue here is that Telstra’s proposed formula does not actually measure or allocate the UPCC in a manner consistent with this answer. We leave a discussion of that until Section 4 below.

Of immediate concern are problems both with the answer Telstra gives (beyond the fact that it is not strictly applied) and with the question behind it. We deal with each here in turn.

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<sup>5</sup> Annexure B to Telstra’s undertaking submission notes that ISDN voice and data calls are included in PIE II. But in footnote 1 of the submission, Telstra notes that ISDN data calls are not considered PSTN services by Telstra.

### 3.1 Problems with the Answer

Telstra's answer states that all PSTN services should be treated equivalently in terms of the recovery of UPCC cost and this is the approach adopted by the PIE II model used by Telstra. However, UPCC costs are, for the most part, both fixed and sunk. It is not generally the case that efficient recovery of such costs takes place independent of information regarding customer value of the ultimate uses of downstream services. As such, Telstra's approach and its PIE II model does not allow for economically efficient recovery of the fixed, sunk costs associated with the CAN.

From an economic perspective, the recovery of fixed costs is most efficiently achieved by using information about the demand for the relevant products. This approach comes under the economic rubric of 'Ramsey pricing' and (roughly speaking) requires that services involving a less elastic demand (or less-price-sensitive demand) for access services bear higher per unit access charges than more elastic services. Laffont and Tirole (2000) provide an overview of the Ramsey pricing methodology.<sup>6</sup>

In many 'real world' situations, the data necessary for a full Ramsey pricing approach is not available. However, there will often be significant information about service demand and, at a trivial level, some relevant demand information that can be used for Ramsey pricing is necessary for the type of exercise undertaken by Telstra in preparing its proposed undertaking. This information could be supplemented with external information about the sensitivity of demand. Even if only minimal data is available, such as local measures of demand sensitivity, a Ramsey-type approach can have a significant effect on economic efficiency and can be used to improve the allocation of fixed costs relative to the 'equal allocation' proposed by Telstra.

Alternatives to a mechanical allocation of fixed costs also exist that would boost economic efficiency. For example, in principle, a global price cap on the access services of the basic access provider would be a more economically efficient approach than the simple averaging proposed by Telstra. This said Telstra is vertically integrated and the implementation of a global price cap for basic access services would

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<sup>6</sup> Laffont and Tirole (2000, p.148) provide a brief introduction to the theory of Ramsey pricing. Pages 102-103 provide a more mathematical discussion of Ramsey pricing. It should be noted that, if there are extra constraints, such as existing price caps on local calls, then these would simply become additional constraints when maximising social welfare.

likely be more appropriate if Telstra were to be vertically separated.<sup>7</sup> The fact of Telstra's vertical integration also suggests a basic problem with the counterfactual used by Telstra to determine the UPCC contribution.

Telstra does not use an economically efficient approach to recovering CAN costs. Instead, "Telstra states that any UPCC should be allocated to all PSTN services on an equal basis except those that are unable to recover the full extent of these costs due to regulatory constraints" (ACCC, *Discussion paper on Telstra's undertaking*, March 2003, p.14). This is despite the fact that Telstra recognises that "PSTN CAN costs are generally fixed irrespective of the amount of traffic on the PSTN" (*Telstra's submission in support of its undertakings*, 9 January 2003, p.7). Put simply, even if Telstra's approach to the UPCC was justified, its method of recovering the UPCC runs contrary to standard economic theory and best practice regulation.

## 3.2 Problems with the Question

As already noted, the counterfactual exercise used by Telstra to determine the UPCC is to consider a hypothetical stand-alone supplier of basic access who does not supply any other telecommunications or other services. In reality, no such stand-alone carrier exists. Telstra is not a stand alone provider of basic access and there is no indication that we are aware of that either Telstra or the Federal Government will attempt to vertically separate Telstra in the foreseeable future. While there has been discussion of accounting separation or some form of 'virtual' separation, Telstra remains a single vertically integrated entity controlled by a single board of directors and a single group of top-level managers.

Standard economics and common sense indicate that Telstra gains some benefits from its vertically integrated status.<sup>8</sup> These benefits from integration are not available to Telstra's rivals in downstream telecommunications markets. In this sense, Telstra is favoured through its integrated structure when competing in downstream telecommunications markets and these benefits should not be ignored when determining any 'contribution' to uncovered CAN costs that should be made by Telstra and/or its downstream rivals. Note that

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<sup>7</sup> We have argued elsewhere that such structural separation would be worth considering; Gans and King (2003b).

<sup>8</sup> These benefits may be private and not ultimately socially desirable; see Gans and King (2003b).

we are not saying that Telstra's benefits from vertical integration are necessarily economically undesirable. Rather, we are simply pointing out that these benefits of integration appear to exist and, as such, limit the efficacy of determining a UPCC contribution that ignores these benefits and is based on an approach that pretends that Telstra is not vertically integrated.<sup>9</sup>

It is not our intention here to try and itemise and evaluate all the benefits that accrue to Telstra from vertical integration. Indeed, we do not have access to the information that would be required for such an exercise. However, some of the benefits can be inferred from Telstra's own behaviour and we deal with these below.

Telstra's approach to the UPCC also appears inconsistent with other Federal Government policies. In particular, the USO scheme as it is currently implemented is not based on a hypothetical stand-alone access provider but treats Telstra as a single vertically integrated firm. At the very least, this inconsistency suggests problems with Telstra's approach.

### 3.2.1 Bundling and benefits from integration

The counterfactual question at the heart of the UPCC is based on two hypothetical constructs. The first; the hypothetical stand-alone access provider; is the focus of this section. The second involves Telstra's price cap. The UPCC is constructed on the supposition that Telstra charged up to its price cap for basic access. Given this (hypothetical) pricing the UPCC considers the short-fall that would be left for basic access as a stand-alone service?

It is our understanding that, in practice, Telstra does not charge up to the price cap for basic customer access. As we have noted elsewhere (Gans and King 2003a) this failure to price up to the cap means that the ADC is a completely artificial construct. However, in this section we wish to address a slightly different issue. Given that (i) Telstra has a virtual monopoly on basic access and (ii) that the demand for basic access is generally thought to be highly price inelastic, why doesn't Telstra set the price of basic customer access up to the price cap? And what does this tell us about the benefits that Telstra derives from its vertical integration?

As a starting point, let us consider this question from the hypothetical perspective adopted by Telstra. Would we expect a stand-alone access provider to price below the price cap? Such a stand alone firm would

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<sup>9</sup> See also the discussions in Gans and King (2003b, 2003c).

only seek to price below the price cap if this raised its profits. This could occur in two ways. First, it could sell more basic customer access and if the price cap were set above the monopoly price for basic customer access then pricing below the price cap would maximise profits. However, it would be surprising if this were the situation in Australia. Most Australian households purchase access to the CAN and it is likely that few would disconnect this service if the price rose up to the price cap. That is, demand for basic customer CAN is generally regarded as relatively price inelastic.<sup>10</sup>

Alternatively, a stand-alone access provider would set customer access charges below the price cap if it found that it could gain greater profits from downstream access seekers. In other words, if by lowering the price of basic access and simultaneously raising the price of CAN services to downstream service providers, the access provider could stimulate demand for final telecommunications products (and thus demand for CAN services), then such a price shift might raise profits. However, such an outcome is highly unlikely as a matter of economics. Basic customer access is a fixed complementary input for those final telecommunications products that use the CAN. Further, the CAN largely involves fixed (and sunk) costs. Thus a profit maximising stand-alone access provider will seek to place as much of the price of CAN services as possible on fixed charges such as customer charges for basic access. These charges do not raise the marginal cost of final telecommunications products and stimulate demand for those products – and thus stimulate demand for CAN services by downstream telecommunications firms.

In summary, it is highly unlikely as a matter of economics that a stand-alone access provider of the type envisaged by Telstra when determining its UPCC would ever find it profit maximising to set customer access prices below the price cap. The implication is that Telstra only finds such behaviour profitable because it is vertically integrated. Telstra gains a benefit from its vertical integration that is reflected in its customer access charges.

We will not attempt to determine the full benefits to Telstra of its vertical integration. It is sufficient to note for the purpose of the discussion here that Telstra does gain some benefits and these benefits arising from vertical integration cannot be gained by PSTN access seekers. But these benefits are ignored by Telstra when calculating the UPCC. There seems no economic reason why these

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<sup>10</sup> In fact, this is assumed by Telstra as it calculates the maximum CAN contribution from customer access charges on the assumption that the price cap binds. Given that the CAN is largely a fixed cost, this means that Telstra itself is assuming that the price cap for basic customer access is below the monopoly price.

benefits of integration should be ignored. That these benefits are ignored suggests that the current UPCC is over-stated.

### 3.2.2 Consistency with Government Telecommunications Policy

Telstra's approach to the UPCC is inconsistent with two other related areas of government policy in telecommunications.

First, the Federal government's policies with regard to the USO are based on a framework that presumes that Telstra benefits from its vertically integrated status.

The NUSC is constructed by looking at Telstra's total losses in NCAs. That is, it takes all of its revenues from telecommunications services into account and the avoidable costs of generating these revenues. The NUSC does not simply look at basic access and its stand alone costs, even though the universal service obligation is designed to ensure the provision of basic access and not *all* of these related services.

This approach is consistent with a basic assumption that Telstra receives benefits from the totality of services it provides in an NCA and not simply basic access alone. Consequently, consistency with this policy would require that basic access not be treated as a stand alone product when calculating PSTN interconnection charges.<sup>11</sup> To do so, would be akin to double dipping on the USO payments already made.

Secondly, the Federal government's approach to the evolution of retail price controls is consistent with a Ramsey pricing approach to basic access. To see this, recall that the CAN supplies both basic access and also interconnection services. Basic access is generally regarded as being highly price inelastic – if not perfectly inelastic. This is not the case for interconnection access. Absent more precise demand information, the appropriate way to recover CAN costs would be to recover *all* those costs completely from the perfectly inelastic basic access charges and *none* from interconnection.

And it is this approach that is precisely the policy adopted by the Federal Government. The Government is increasing the basic access charges at a 4 percent per annum in real terms. The aim of this policy is to ensure that “the access deficit will be eliminated over about four

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<sup>11</sup> This argument is explored more fully in Gans and King (2003a).

years”<sup>12</sup>. Thus, it is stated government policy to put the burden of CAN cost recovery on the basic access customers and away from other customers. To build in a UPCC into PSTN charges is a step away from that policy and inconsistent with it. Indeed, as discussed in Section 5 below, to do so can only reduce overall efficiency given the current transitional arrangements in place.

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<sup>12</sup> Senator Richard Alston, Minister for Communications, Information Technology and the Arts, Keynote Address to Australian Telecommunications Users Group Conference, Sydney, NSW - Wednesday 5 March 2003. See also *Telstra carrier charges – price control arrangements, notification and disallowance determination No. 1 of 2002*, under the *Telecommunications (Consumer protection and service standards) Act 1999*, Regulation impact statement.



## 4 Implementation Problems

In addition to concerns about the underlying conceptual basis of the UPCC, there are some problems that arise in its implementation. Recall that, in our words, Telstra's answer to the counterfactual question was that a stand alone basic access provider should charge a CAN access price sufficient to cover any shortfall between the revenues it would receive for basic access and the CAN costs of an efficient provider. However, Telstra's proposed formula for the UPCC does not quite do this. In this section, we explain why.

### 4.1 USO Offset

Telstra's formula for the UPCC recognises that downstream firms (including Telstra itself) provide a payment through the USO that is designed to contribute to the cost of the CAN. The Telstra formula offsets this revenue from CAN costs. This is an appropriate adjustment in the counterfactual world considered by Telstra where a stand-alone provider of basic access has a price cap on those basic access services and so cannot recover the full cost of the CAN through customer access charges. Of course, if Telstra were really a stand-alone basic access provider, the USO payments would also be changed. A consistent USO policy would involve the calculation of NCAs based solely on basic access revenues and CAN costs. In this situation, the NUSC would precisely offset the access deficit or UPCC. Thus, if the counterfactual question were applied consistently to government policy, there would be no UPCC.

From this perspective, it is the very inconsistency between the counterfactual question posed by Telstra to justify the UPCC and the application of the USO that gives rise to the potential need for a UPCC. Recall that by the way the USO is calculated recognises that a vertically integrated basic access provider, such as Telstra, has other opportunities to raise revenues (and profits) that would not be available to a stand-alone basic access provider. The USO takes into account all relevant Telstra revenues when determining a NCA. In contrast, the UPCC begins from the opposite perspective of ignoring all of Telstra's revenues except those associated with basic customer access. At the very least, and as we noted above, this means that the approach to PSTN access adopted by Telstra in its undertaking is inconsistent with other government telecommunications policy.

As mentioned earlier, Telstra have suggested that the use of NUSC amounts to account for USO payments might not be appropriate. They suggest – as was actually proposed in previous undertakings – that they might wish to reduce the USO component of the UPCC to account for contributions from its wholesale PSTN service. Such an adjustment suggests that, in the context of the counterfactual exercise, Telstra Hypothetical would not be a payer to the USO fund. This is certainly possible – although as we have just noted, adjusting the USO to fully account for this situation would require much more than a simple adjustment to USO payments when determining access prices.

If there were a stand-alone basic access provider and if this provider received compensation from an adjusted USO scheme and if PSTN originating and terminating access charges were designed to cover any CAN costs not met by the customer access charges and the USO then (1) it would clearly be circular to include the wholesale revenues of the stand-alone provider when determining the apportionment of the NUSC but also (2) there would be no UPCC after the USO payments were accounted for and (3) PSTN terminating and originating access charges would include no UPCC contribution. In other words, if there were a consistent application of the Telstra hypothetical over telecommunications policy, then there would not be a UPCC contribution.

Telstra's approach to the UPCC is based on a hypothetical situation which it then does not apply consistently. This is reflected by its suggestion that its own wholesale revenues should be excluded from the apportionment rule. If the Telstra Hypothetical were to be applied and implemented consistently then it would involve the removal of these revenues and the elimination of the UPCC. Telstra suggests the former and not the latter. But it cannot 'have its cake and eat it too'. Either Telstra wishes to present undertakings based on the fictitious world of a stand-alone access provider with an appropriately modified USO scheme which eliminates the UPCC, or it wishes to have PSTN access charges set in a way that recognises its vertically integrated status.

## 4.2 Omission of other CAN Products

A second problem with the implementation of Telstra's methodology is that it omits some important products that utilise the CAN. For example, ISDN data services and ADSL services – a growing segment of telecommunications – both utilise the CAN and yet are not

apportioned any part of the UPCC. These are only allocated to PSTN services.

This omission again violates the underlying construction of the UPCC adopted by Telstra. A stand-alone CAN service provider would be expected to recover its costs from *all* services that use the CAN. While, as noted above, such cost recovery would preferably be based on Ramsey pricing principles, the recovery would not simply ignore some services that use the CAN. Telstra does not justify its UPCC allocation on any Ramsey pricing principles. Rather it arbitrarily states that some services will not participate in such cost recovery simply because Telstra designates these as non-PSTN services. This omission of CAN products is clearly inconsistent with Telstra's own counterfactual approach and has no basis in economics.

Telstra's UPCC allocation and calculations should at the very least, include all services that utilise the CAN and apportion costs to them on a forward-looking basis.

### 4.3 Connection Revenues

A stand alone basic access provider would receive revenues and profits from the connection of services; especially in new areas. This was an explicit part of the previous undertakings but appears to have been omitted here. Profits earned from the connection of new service should be included. Again, to do otherwise would simply be inconsistent with the UPCC justification provided by Telstra itself.

### 4.4 Local Call Surcharges

Telstra alters the allocation of costs even amongst PSTN users because of the regulated price of one PSTN service – local calls. When allocating the UPCC Telstra notes that, given its claimed wholesale costs of local calls, and given the specified retail costs, if local calls were allocated their full 'share' of the UPCC then the price of these calls would exceed the imposed price cap of 20 cents (untimed) excluding GST. Telstra then allocates to local calls the 'maximum' part of its share of the UPCC to just ensure that the 'price' of local calls does not exceed the price cap.

Such an approach is inconsistent with the underlying hypothetical of a stand-alone CAN service provider that is used to justify the UPCC. To see this, consider the economically optimal recovery of a 'deficit'

associated with such a stand-alone provider. Local call services would be provided by a downstream firm that would purchase CAN access services. Like Telstra, that downstream firm would likely produce a range of other retail telecommunications services. It would sometimes bundle these services with local calls and, like Telstra, it would not necessarily set local call prices at the cap for many of its customers and for many bundled offerings.

Would the economically optimal allocation of CAN costs then ‘pull out’ local calls and treat it as a separate stand alone product? The answer is clearly that it would not. At a minimum, the economically optimal cost allocation would consider the bundle of services provided by the downstream firm and would allocate the CAN costs over the bundles. Put simply, if local calls are sold downstream as part of a bundle which involves discounting then treating local calls as if they were not sold as part of any bundled packages would make no economic sense. Optimal cost allocation would consider local calls as part of the total package of products being supplied by firms that purchase CAN services.

Another way to see the problem associated with Telstra’s treatment of local calls is to bring the local calls and the CAN together. The UPCC is justified because Telstra faces a price cap on customer access charges. Telstra then justifies the local call surcharge because of the price cap that it faces on local calls. For consistency, bring these two products together. What Telstra is really doing in its undertaking is working out an “Uncovered PSTN CAN and Local Call Cost” (UPCLCC). In other words, the way that Telstra determines the UPCC to be attributed to all PSTN products *except* local calls is equivalent to considering the uncovered costs that a stand-alone provider of *both* CAN services and local call services would face if it set its prices equal to the relevant price caps. While Telstra undertakes this exercise in two steps, it really calculates a UPCLCC which it then allocates to other PSTN services.

There are two problems with Telstra’s approach when it is viewed from this perspective. First, it clearly breaks any link between a hypothetical stand-alone CAN service provider who needs to recover costs associated with the provision of Universal Service, and the calculation of the PSTN access charges. Telstra does not use an uncovered CAN cost when determining PSTN access charges but uses a broader UPCLCC. PSTN access charges are based on uncovered CAN and local call costs.

Secondly, the new hypothetical construct of a firm which just supplies CAN services and local call services is clearly arbitrary. Why stop there? At a minimum, if both the UPCC and the local call surcharge are consequences of the price caps imposed on Telstra, then a

consistent approach would be to consider *all* of the price cap constraints on Telstra. In other words, at a very minimum a consistent approach to calculating the PSTN access charges would ask a hypothetical question based on all Telstra's price caps. If Telstra were to price up to its price caps on all of its services that are covered by such caps, then would Telstra (on these capped services) operate at a profit or a loss? If there is a loss then this would become the relevant 'uncovered cost'. If there is no loss then there is no uncovered cost.

Finally, why should we stop at just the price capped services? Telstra provides a range of services, some of which are covered by price cap constraints and some of which are not covered by such constraints. To the extent that it operates at a profit overall, there seems to be little sense in which there are uncovered costs. To simply isolate some costs and some associated revenues and to claim that there is a loss that must then be covered by Telstra's competitors appears, at best, arbitrary. At worst, the approach seems to involve a deliberate attempt to raise rivals costs and reduce competition in downstream telecommunications markets.

In summary, the Telstra implementation of its UPCC involves Telstra 'picking and choosing' which revenues and which price caps it will consider. This is inconsistent with the underlying hypothetical construct of a stand-alone CAN service provider. It also has significant competitive implications in that it allows Telstra to arbitrarily foist some of its costs onto its competitors.

## 4.5 Entrenched Price Rises

The final issue with Telstra's implementation of its UPCC proposal arises because of the way in which  $a$  is to be calculated. The calculation of  $a$  does not involve solving the implicit equation discussed in section 2. Instead, forecasts of the Net USO and  $Q$  are based on the previous level of  $a$ . Call this previous level  $a_{t-1}$ . In this case, today, at time  $t$ ,

$$a_t = \frac{\text{UPCC}(t + a_{t-1})}{Q(t + a_{t-1})}.$$

To see the implications of this approach, suppose that we start today with  $a_0$  and by applying the formula, Telstra seeks a UPCC contribution in the next year such  $a_1$  where  $a_1 > a_0$ . This is, of course, exactly the situation envisaged by Telstra's undertaking. What happens then? As noted in section 2, a rise in the access charge due to

a rise in the UPCC contribution will tend to lower  $Q$ . It will also tend to raise Telstra's revenues and reduce the USO payment thus raising the UPCC. Thus  $Q_1 < Q_0$  and  $UPCC_1 > UPCC_0$ . Hence, when  $a_2$  is calculated,  $a_2 > a_1$ . But of course, this process continues with a rising UPCC contribution over time. That is, the proposed formula is inherently non-stationary.

An approach to the UPCC that is non-stationary is a clear cause for concern. To overcome this problem would require a regulated price adjustment formula that is not based on forecasts that themselves depend upon interconnection payments.

## 5 Investment Incentives

What would be the consequences of not allowing a UPCC in PSTN interconnection pricing? First, it should be noted that this would increase the competitiveness of downstream PSTN services and, consequently, result in short and long-term benefits to consumers.

Countering this, however, is an argument put forward by Telstra that not allowing a UPCC contribution would (i) threaten its financial viability; and/or (ii) curtail its incentives to invest in improving the CAN. Certainly, if Telstra were to go bankrupt, this would create problems for the telecommunications industry and may end up harming consumers. Nonetheless, it is our understanding that the UPCC level is currently less than Telstra's profit levels and so this seems an unlikely possibility. Indeed, Telstra do not even say that they will divest the CAN services if a UPCC contribution is not allowed; something that would surely be considered before a complete shut down in its operations.

Alternatively, if there was a failure to invest in improving the CAN, this could increase CAN costs over the long term and again, as these are passed on to ultimate consumers, not be in their interests. However, it should be noted that the proposed PSTN interconnection pricing terms are being based on the costs of an efficient provider. Consequently, if Telstra were to fail to invest in improving the CAN, it would have limited scope to pass these higher costs on to consumers.

Moreover, as noted in Section 3, as the price cap on basic access services is lifted, the UPCC is diminishing over time and is expected to be totally gone in approximately four years. Investments in the CAN would be considered in terms of their long-term profitability on a time horizon well beyond this date. As such, short-term losses (if any) that Telstra has on the CAN will not be relevant for important longer-term investment decisions.

We note that this argument mirrors that of the ACCC (*Draft Determination for the Model Price Terms and Conditions of the PSTN, ULLS and LCS Services*, June 18<sup>th</sup> 2003). In our opinion, as it will not likely impact on investment incentives, the ADC should be removed from PSTN pricing as soon as possible in order to minimise the on-going damage to competition.

As a consequence, it is difficult to see how the long-term interests of end-users would be harmed by the non-inclusion of the UPCC in PSTN interconnection pricing. Its non-inclusion would directly benefit end-users by improving competition while not impacting on long-term investment decisions.



## 6 Competitive Neutrality

In both its “Submission in Support of its Undertakings dated 9 January 2003” and its paper “The need for an Access Deficit Contribution for PSTN Access Service Pricing: Telstra’s submission on the ACCC discussion paper,” 2003, Telstra discusses what it calls ‘competitive neutrality’. Telstra appears to argue that its approach to the contribution charge is consistent with ‘competitive neutrality.’

Our companion report (Gans and King, 2003c) considers this concept in considerable detail. We note that, at best, Telstra’s approach appears to embed an asymmetric approach to competitive neutrality. In other words, Telstra only considers whether the PSTN access regime will make Telstra, as an integrated carrier, worse off than a separated access seeker, rather than considering any bias in Telstra’s favour. We note that such an approach appears to violate the underlying concept of competitive neutrality.

In Gans and King (2003c), we provide a systematic approach to competitive neutrality that is independent of the exact nature of telecommunications competition. We show that two key principles need to be met if access pricing is to be competitively neutral in the presence of a vertically integrated access provider like Telstra:

1. All non-integrated downstream firms must face the same marginal price for interconnection; and
2. The interconnection price for all non-integrated downstream firms must be set equal to the true marginal cost of the access services.

The first condition ensures that otherwise identical access seekers are artificially harmed or favoured through discriminatory access pricing. The second condition reflects the integrated nature of Telstra. If Telstra seeks to maximize profit then its internal operations will be based on the true marginal cost of the access services. Competitive neutrality with other non-integrated carriers can only be maintained if they also face a (marginal) access price equal to the true marginal cost of access.

Telstra argues, in its ADC submission, that its internal operations will not be based on marginal access costs as it will consider the opportunity cost of lost access sales when it lowers its price. We analyse this statement. We show that Telstra will indeed take the

opportunity cost of lost access sales into account in its retail behaviour. However, this will *not* lead to the behaviour claimed by Telstra whenever consumers have any price response for retail telecommunications services. In other words if demand for retail telecommunications products satisfies standard economic assumptions and ‘slopes down’, then Telstra’s internal operations will be based on the true marginal cost of access, in contrast to Telstra’s claim. In such circumstances, competitive neutrality can only be satisfied by setting access prices equal to marginal cost.

Our analysis has significant implications for Telstra’s UPCC contribution. This contribution is designed to distort access prices, raising them above the true marginal cost of access. As such, the UPCC contribution is inconsistent with an economically sensible notion of competitive neutrality.

## 7 Sanity Checks

In our analysis above, we have strongly criticised both the theoretical foundation of Telstra's approach to the UPCC contribution and its practical implementation. However, in any practical process, such as the setting of PSTN interconnection charges, it is useful to 'run the results' past real world comparisons. In this section, we briefly consider some sanity checks on Telstra's PSTN access prices and its approach.

### 7.1 Comparison to Current Interconnect Prices

As Telstra notes in its submission, the PSTN interconnection charges that are derived from its modelling are significantly above the interconnection charges that currently exist between Telstra and other telecommunications carriers.<sup>13</sup> In fact, the discrepancy is so great that Telstra argues that it cannot raise the regulated charges to the 'correct' level immediately. Thus, Telstra proposes that the ACCC allow it to raise its charges to the 'correct' level slowly over time (Telstra's submission in support of its undertakings dated 9 January 2003, p.4 paragraphs 10-11).

Such an approach by Telstra appears to be at odds with the general understanding of the telecommunications industry. Generally, it is viewed that the costs of efficiently providing telecommunications services are falling over time and as such that interconnection charges that are set by a firm such as Telstra should also be falling over time. This view appears to be supported by the ACCC itself. In its discussion paper *Future access pricing approaches for PSTN, ULLS and LCS*, September 2002, the ACCC notes that "[f]rom previous pricing work undertaken in relation to Telstra's network costs, the Commission has found that the price of technology, in general, decreases over time" (p.17). The ACCC proposes a formula to adjust interconnection prices over time based on a price cap that explicitly allows for technological improvement (p.16). This formula envisages

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<sup>13</sup> "Telstra is aware that these costs are higher than the prices that currently prevail for the UT services in Australian telecommunications markets", Telstra's submission in support of its undertakings dated 9 January 2003, p.4.

that real interconnection prices will fall over time between periodic reviews.

The significant rise in interconnection prices suggested by Telstra is at odds with both general understanding of the telecommunications industry and with the ACCC's own views

There appears to be only two explanations for the large price rises sought by Telstra. Either Telstra is suggesting that the previous computer modelling used to determine interconnection prices (including the n/e/r/a model and Telstra's own PIE I model) were wrong *and* that Telstra voluntarily entered into agreements with other telecommunications carriers that involves the sale of PSTN interconnection services at uneconomic prices that did not even recover costs, or Telstra's currently claimed access charges are not cost reflective and are too high. Telstra has not systematically shown the flaws in either its own previous modelling or the n/e/r/a model. Further Telstra has not stated that it has previously entered economically unviable interconnection contracts or why it would have entered such contracts. In this situation, Telstra's current claimed access prices fail the 'sanity check' of comparison to current prices.

## 7.2 Internal Transfer Prices

Another indicator of interconnection prices would be the internal prices that Telstra explicitly or implicitly uses to calculate the contribution of its downstream units to the CAN. Telstra argues (submission to ADC inquiry p.29) that such prices would not be relevant as Telstra faces CAN costs regardless.

However, there is a big difference here in that Telstra is proposing to build this into interconnection charges and hence, the prices of PSTN downstream competitors. If there is no similar charge built into the downstream pricing of Telstra – and it won't if it is treated organisationally as a fixed or sunk cost – then there is a violation of competitive neutrality.

We do not have an indication of Telstra's actual practice in this regard. Telstra only submit it is irrelevant. Nonetheless, we believe the Commission could useful utilise information on Telstra's internal relationships to impute whether a contribution to the CAN is required or not.

### 7.3 International Price Comparisons and Practice

International practice can be a guide as to the need for a UPCC. Telstra argue that such recognition is widely accepted. However, a close examination of its own analysis of the U.S., Canada and the European Union reveals that countries have either removed pricing restrictions on basic access or alternatively have used universal service obligation arrangements to account for shortfalls in recovery of local loop operations. Telstra provide not a single example of where a UPCC or equivalent is explicitly built into general PSTN interconnection charges.

In addition, when they do compare PSTN interconnection rates around the world, Telstra remove the UPCC for the purposes of this comparison. This is nominally done because of the different ways this is taken into account around the world. However, in that situation, it would be appropriate to account for those different ways and remove the UPCC or equivalent from those international charges. Alternatively, Telstra could compare its own rates to countries that allow a separated comparison. As it stands, the comparison is meaningless.

Indeed, it could easily be argued, that a comparison of actual, explicit, PSTN charges is what is relevant in order to benchmark the efficiency of the totality of Telstra's proposed charges. In that case, Telstra's proposed charges would be well above international averages.<sup>14</sup>

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<sup>14</sup> See Optus submission to the ACCC on "Access Deficit for PSTN Originating Terminating Access (OTA)."

## 8 References

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