



**Price Regulation of Mobile Termination:
Promoting Competition and Investment in Telecommunications**

A comment on CoRE Research's submission to the ACCC

October 2003

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Executive Summary

Gans and King, on behalf of Hutchinson, have submitted to the ACCC a seriously flawed analysis of competition issues surrounding mobile termination services.¹ This response highlights that their analysis contains a number of inconsistencies and does not take account of the realities of competition in Australian telecommunications. As a result, the regulatory solutions they advance, as well as being impractical, would be harmful to effective competition in Australia.

Gans and King make a number of prescriptive recommendations for regulation of both mobile termination and retail fixed-to-mobile calls. They claim that these regulations are required to deal with market power issues in mobile termination and fixed line services. However, Gans and King's view that Telstra has market power in the retail market for fixed-to-mobile calls is based on a misunderstanding of the nature of fixed service competition. Throughout their analysis they essentially assume that the only provider of retail fixed-to-mobile services is a single fixed-line network. This is incorrect, and completely ignores the significant infrastructure competition and use of regulated access services that effectively constrain Telstra's behaviour.

Gans and King recognise that the mobile services market is competitive and, as such, mobile operators will be unable to earn excess returns. Given this, their recommendation that mobile termination charges should be regulated is based on a belief that the pattern of mobile cost recovery is inefficient. However, they fail to adequately demonstrate that current mobile termination prices are inefficient, let alone sufficiently inefficient to justify the extremely intrusive regulatory policies they recommend.

Gans and King recommend that mobile termination prices should be regulated to be less than short run marginal cost (SRMC)² and maybe even set to zero.³ In NECG's view, Gans

¹ CoRE research, June 2003 "*Price Regulation of Mobile Termination: Promoting Competition and Investment in Telecommunications*".

² Gans and King (2003), p. 38, second paragraph.

and King's proposal is inconsistent with modern regulatory practice and even inconsistent with Gans and King's published views on other industries.⁴

In addition to recommending radical changes to price regulation of mobile termination, Gans and King make a number of suggestions on ways in which they believe transparency of termination charges could be improved. However, most of their suggestions do not pass the most basic cost-benefit analysis.

The remainder of this report is structured as follows:

- Section 1 shows that there are no market failures in either fixed-to-mobile services or mobile termination.
- Section 2 outlines why, even if there was deemed to be a market failure, the recommendations made by Gans and King (including regulating mobile termination at short run marginal cost, implementing measure to improve transparency, and controlling fixed-to-mobile prices) are inappropriate and distortionary.
- Section 3 concludes.

³ Gans and King (2003), p. 38, last paragraph.

⁴ See for example Gans, J. & King, S. (2003), "Approaches to Regulating Interchange Fees in Payment Systems" *Review of Network Economics*, Vol 2, Issue 2, June, pp. 125-145. Gans and King recognise that the socially efficient interchange fee may be greater than marginal costs (see p139).

1 Why regulate?

Gans and King make a number of very prescriptive recommendations for regulation of both mobile termination and fixed-to-mobile calls. However, they fail to demonstrate market failure sufficient to justify such prescriptive and intrusive regulation. Indeed, at no point do they even provide any analysis of the relevant market or markets in which they allege use of market power leads to market failure.

1.1 Fixed to mobile services

In their analysis Gans and King seem to assume that:

- there is a single or dominant fixed network (characterised as Telstra), which is incorrect;
- Telstra has market power in the supply of retail fixed-to-mobile services, which they do not demonstrate and which is incorrect; and
- Telstra's market power can be used to exclude mobile networks, which even if Telstra possessed such market power (which it does not), is not possible in the Australian context.

We deal with each of these issues in turn.

Throughout their analysis Gans and King either assume that there is a single monopoly supplier of fixed network services⁵ or that there is a dominant fixed network operator.⁶ At no point in their analysis do they identify the potentially relevant markets in the supply of

⁵ Gans and King (2003) see for example p. 18.

⁶ Gans and King (2003) see for example p. 21.

fixed networks,⁷ or take account of the fact that in Australia there are a number of competing fixed line and mobile operators. Table 1 contains a list, compiled by the ACCC, of competing local infrastructure in Australia split by the technology used and by the network owner. There are 28 providers utilising six different local access technologies. In addition to Telstra, there are the internationally backed and well-financed competitors Optus and AAPT. As well as these established competitors, there is a range of second tier players including MCT, MCI, PowerTel and Primus all of whom own significant infrastructure. In addition to these second tier players, there is a range of smaller infrastructure owners providing services in a variety of geographic areas.

⁷ There are likely several markets for supply of fixed networks, with breakdowns both on the basis of customers and geographic region. While it is beyond the scope of this note to fully identify the relevant markets here, the degree of market power Telstra has probably varies significantly over these. For example, it is quite likely that Telstra, even absent regulation, has little if any market power in the infrastructure-based supply of fixed network services to large corporate and government customers in the central business districts. It may, however, be the case, that Telstra has market power in fixed network supply in suburban and rural areas not served by a competing cable supplier, most especially to residential customers.

Table 1: Local area networks in Australia 2002

Network type	Carriers
Copper	Telstra, Airnet Commercial Australia, Victorian Rail Track, TransACT
Optical Fibre	Telstra, SingTel Optus, Powercor Australia Telecom, Ipera Communications, Amcom Telecommunications, Flowcom, AARNet, Uecomm, PowerTel, NTT Australia IP, Primus Telecom, Macquarie Corporate Telecommunications, AAPT, MCI WorldCom Australia, Soul Pattinson Telecommunications, Swiftel Communications
HFC	Telstra, SingTel Optus, Neighbourhood Cable, Broadcast Engineering Services, Windytide (AUSTAR)
Microwave, LMDS, MMDS, fixed wireless	Telstra, SingTel Optus, OMNIconnect, Ipera Communications, Soul Pattinson Telecommunications, AAPT, Highlands Internet, Windytide (AUSTAR), Alphalink (Australia), Integrated Data Labs, Unwired Australia
ISM and modified spread spectrum	Arafura, Airnet Commercial Australia
Satellite	Telstra, SingTel Optus, PanAmSat Asia Carrier Services

Source: ACCC (2003) "Telecommunication Infrastructure in Australia 2002".

If the existence of competing fixed-line and mobile infrastructure suppliers was the only important fact that Gans and King overlooked, the possibility of Telstra having market power in some of these markets might be arguable. However, retail fixed-to-mobile calls are not solely supplied by fixed-line infrastructure suppliers, indeed far from it. Any retail fixed-to-mobile supplier is entitled to wholesale access to Telstra's network to originate calls through a variety of declared services (ULLS, LSS, local OTA and most notably domestic OTA). As a consequence, Gans and King's view that Telstra has market power in supply of

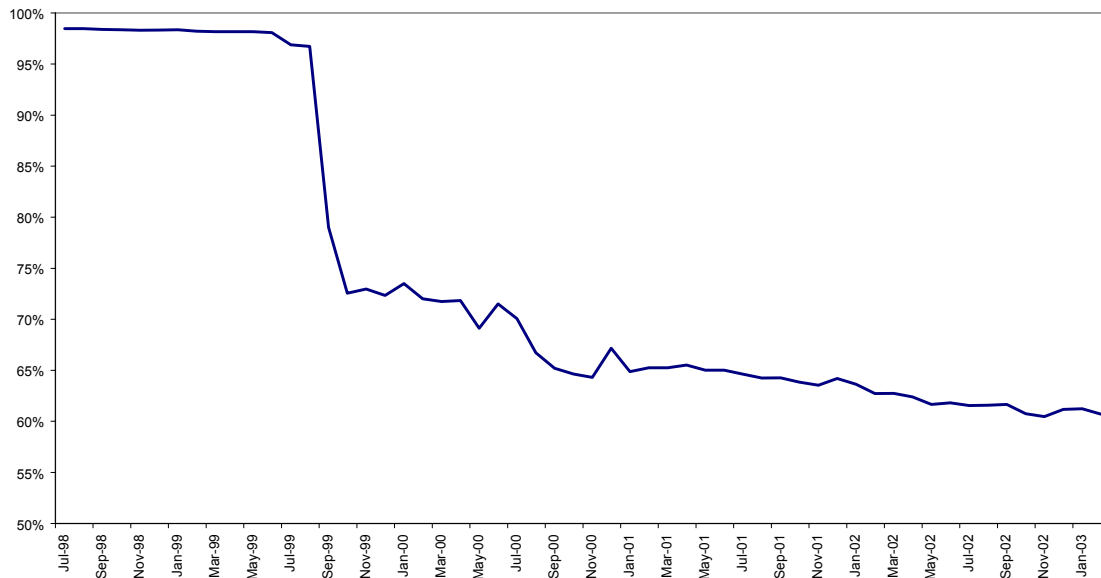
retail fixed-to-mobile services is incorrect, completely ignoring suppliers providing retail fixed-to-mobile services utilising pre-selection or override.⁸

There are a number of competing suppliers who use pre-selection and override codes to provide fixed-to-mobile services. These include operators, such as Optus, AAPT and Primus, that use pre-selection to provide services where they do not have their own infrastructure while others, such as WorldXchange, are pure pre-selection providers and do not own infrastructure. Telstra estimate that approximately 32% of all fixed-to-mobile calls are provided via pre-selection. In addition, the use of over-ride codes to supply fixed-to-mobile services is widespread, particularly for business customers, including small and medium businesses which can program over-ride codes into their PABX.

There are few entry barriers to providing fixed line services given the range of wholesale products, both regulated (for example local and domestic PSTN origination and termination, line sharing and ULLS) and unregulated, that are available. This is demonstrated by the significant falls in Telstra's share of fixed-to-mobile calls. **Figure 1** clearly illustrates Telstra's declining share of fixed-to-mobile calls and highlights the dramatic effect of the introduction of pre-selection in 1999.

⁸ It is our view that fixed-to-mobile calls are provided in a retail market which includes the provision of other pre-selectable services (local, STD and IDD). These services are likely to form a cluster as a result of pervasive economies of scope associated with the joint purchase, production and consumption of the service bundle. However, even if there is a separate market for retail fixed-to-mobile calls, the same conditions apply as apply to the cluster. Wholesale access to Telstra's network is regulated and at the retail level Telstra faces many competing suppliers.

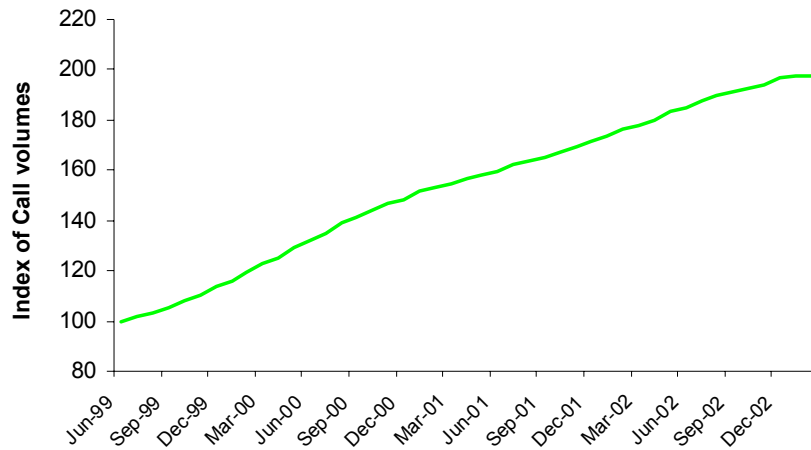
Figure 1: Telstra’s share of fixed-to-mobile calls



Source: Telstra

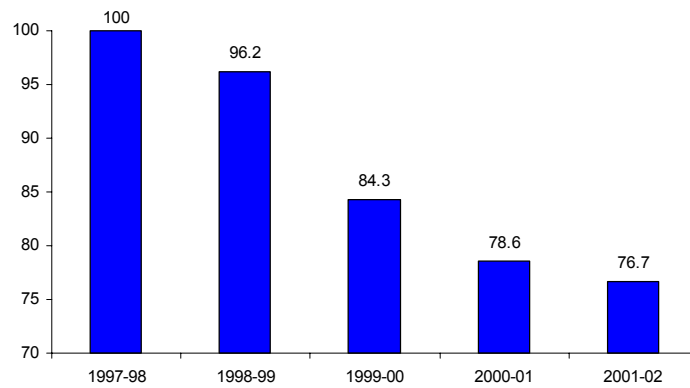
These competitive conditions have been reflected in market outcomes for fixed-to-mobile services with significantly increasing output and falling prices. Figure 2 illustrates the significant growth in fixed-to-mobile call volumes which have been growing on average by over 18% a year over the last three years. Figure 3 shows the ACCC’s estimates of fixed-to-mobile price changes since 1997/98. The ACCC estimates that fixed-to-mobile retail prices have fallen by almost 25% over the last five years.

Figure 2: Index of F2M call growth (June 1999=100)



Source: Telstra estimates 12 month moving average

Figure 3: Index of F2M retail prices (1997/1998=100)



Source: ACCC (2003), "Mobile Service Review 2003"

Thus, Gans and King's conclusions regarding fixed line market power are unsupportable as their analysis ignores both the alternative infrastructure providers and alternative retail fixed services providers (including those using preselection and override) who provide significant competitive constraint on Telstra's behaviour. In addition, Gans & King do not address the fact that fixed-to-mobile prices are likely to be competitively constrained by mobile-to-mobile services. There are now almost 14 million Australian mobile subscribers⁹ and there are a number of offers from mobile suppliers (for example free calls between 3 subscribers) which make mobile-to-mobile call pricing competitive with fixed-to-mobile calls.

As well as claiming there are market power problems associated with the fixed network services, Gans and King claim that a vertically integrated provider will retard competition in the mobile market by setting prices for its non-integrated rival:

“above the true incremental costs of providing those termination services. This raises the costs faced by the non-integrated carrier making it difficult for the carrier to compete with the integrated firm. The integrated firm faces the true costs of terminating mobile calls to the fixed-line network while the rival non-integrated mobile carrier faces inflated charges. As a result, entry by competing mobile carriers will be constrained and competition will be reduced.”¹⁰

This argument is completely irrelevant to the Australian context. Mobile carriers terminate their mobile calls on fixed networks which are subject to comprehensive access regulation. In the event that a mobile carrier believed the integrated firm was inefficiently raising charges for fixed network termination, it can request the ACCC to determine an appropriate price, which is then enforceable. In addition, the ACCC releases indicative prices for access to the fixed network to encourage commercial negotiation at, or close to, these prices. Most recently, the Commission published draft price terms for fixed network termination (ie domestic PSTN OTA) of 1.2c per minute in 02/03 falling to 1c per minute in 04/05. These

⁹ Source: Australian Mobile Telecommunications Association, <http://www.amta.org.au/default.asp?Page=267>.

¹⁰ Gans and King (2003), p. 16.

prices are based on the *efficient* cost of fixed network termination. In contrast, the integrated firm faces its historical costs of termination on its fixed network. Therefore, if anything, the unintegrated mobile carriers are at a competitive advantage compared with the integrated firm. As the fixed termination prices are regulated, the integrated provider has no freedom in setting a rival mobile operators' fixed termination prices above the regulated level and as such cannot affect their costs. Thus it is impossible for Telstra to behave in the manner predicted by Gans and King.

In conclusion, Gans and King's analysis of the role of the fixed network in fixed-to-mobile competition is flawed. They do not take account of the range of fixed network operators in Australia or the range of competitors offering retail fixed-to-mobile calls. Their conclusion of fixed operator market power seems at odds with market outcomes of significantly increasing fixed-to-mobile volumes and falling prices.

1.2 Mobile services

Gans and King also do not adequately make the case for regulation of mobile termination services. They neither provide convincing a priori reasons for a market failure nor demonstrate it. In their analysis they implicitly accept that the mobile services market is competitive and mobile operators do not earn monopoly rents. As a result they accept that any increase in termination charges will be passed on to consumers in the form of lower subscription or call charges. For example they note:

“..consider the effect of an increase in termination charges (above marginal cost) on mobile carriers. This rise means that they increase profits from termination. Those profits, in turn, mean that an additional customer is more lucrative to them in terms of overall profits. Hence in attracting customers, the mobile network will be able to reduce its subscription fees with the increase in customer base outweighing losses in revenues from those fees. This is, however, unlikely to raise mobile carriers profits in equilibrium because all networks will act similarly. *The end result is that all the increased profits from termination are passed on to consumers.* So mobile networks are indifferent between the levels of regulated termination charges” (emphasis added)

Given that Gans and King do not believe that mobile operators earn excessive rents across their full operations, the only basis for regulating mobile termination rates would be to alter

the pattern of cost recovery across mobile services. Gans and King fail to make the case that there are sufficient efficiency concerns that justify the prescriptive regulation they propose: the recovery of a larger share of the common costs of mobile operations from mobile services other than fixed to mobile termination.

It is reasonably uncontroversial to argue that the demand for fixed-to-mobile services is relatively inelastic. Indeed a number of regulators, including the ACCC and Oftel¹¹, have recognised this:¹²

“... fixed-to-mobile calls may be relatively inelastic; that is, demand will not change greatly because of price movements...”

Given this, the current pattern of cost recovery whereby fixed-to-mobile services are making a relatively high contribution to common costs is, on face, not inconsistent with efficient Ramsey pricing (this is discussed in more detail below in Section 2.1).

Independent of market power in fixed-to-mobile calling (discounted in the previous section), and absent overall market power in the mobile market (as just discussed), Gans and King offer three reasons why unregulated mobile termination prices might be too high: market power in call termination; calling consumer ignorance as regards the prices of fixed-to-mobile calls; and a lack of concern by mobile subscribers as to the price callers must pay to reach them. These assertions have some validity, but they do not characterise reality and Gans and King’s reliance on these leads them to make strong predictions that are not borne out by the facts.¹³ Mobile suppliers are not outright monopolists. For example, individuals

¹¹ OFTEL concluded that the UK mobiles market was not effectively competitive and thus mobile network operators would have an incentive to set termination charges above the level implied by Ramsey pricing.

¹² ACCC (2000), “*Pricing Methodology for the GSM Termination Service*”, p14.

¹³ They directly recognise, in another circumstance, that their models are not good matches to reality, noting that they predict that off-net calls will be cheaper than on-net calls, when the opposite is the case (Gans and King, 2002, footnote 19, p. 30).

can often be reached by more than one means. Similarly, customers are not totally ignorant or indifferent to the cost of calling one network as opposed to another, and perhaps most importantly, many mobile customers care about the cost to callers trying to reach them. For example, in many cases customers would give out a fixed line number that forwards to their mobile, thereby incurring the mobile call charges themselves. Moreover, for ordinary market forces to operate effectively it is not necessary that all customers are conscious of price or that all subscribers care about the price of being called, but only that a significant group do.

As well as failing to make the adequate case for intervention, Gans and King's analysis of mobile termination pricing lacks any grounding in actual market outcomes. When arguing why termination prices will be set too high they state: ¹⁴

“Competition will, therefore, drive termination charges upward. Indeed it is possible that this interaction could go as far as to “choke-off” fixed-to-mobile demand entirely. That is, termination charges may, in equilibrium, be so high that the fixed carrier is unable to profitably offer a fixed-to-mobile service”.

This statement is clearly inconsistent with reality. Figure 2, above, shows that demand for fixed-to-mobile services has been growing considerably, which is at odds with Gans and King's suggestion that competition would choke off fixed-to-mobile demand.

In summary, there seems little, if anything, objectionable about the current level of competition in the mobile market. Market power does not seem to be an issue. In less than a decade, second generation mobile telephony has become almost completely ubiquitous in Australia. Price levels have fallen as dramatically as subscription levels have risen. There is no empirical indication that termination of calls on mobile networks suffers from any obvious market failure, or that relative prices within the industry are seriously distorted.

¹⁴ Gans and King (2003), p28

2 Appropriate Regulation

2.1 Mobile termination regulation: separate services

Gans and King consider two cases. In the first, discussed in this section, they consider the circumstance where mobile networks are not “a direct network competitor to fixed-line networks for voice calls”, but rather provide “separate services to fixed-line networks”.¹⁵ In this separate service case, Gans and King present a wide range of inconsistent recommendations. Their first is that so long as mobile networks provide “separate services to fixed-line networks then the appropriate regulatory price for mobile termination charging is marginal cost.”¹⁶ Shortly afterwards, Gans and King recommend that mobile termination prices should be regulated to be less than short run marginal cost (SRMC)¹⁷ and maybe even set to zero.¹⁸ In NECG’s view, each of these positions is without economic merit and as a result, inconsistent with modern regulatory practice. The positions are also internally inconsistent, and are certainly inconsistent with Gans and King’s published views on other industries.

Gans and King’s reasoning in advocating SRMC and less than SRMC pricing of mobile termination is unclear or incorrect. They initially say:

“As we demonstrated in our earlier work (Gans and King, 2001) and as has been confirmed by subsequent research (Armstrong, 2002; Wright, 2002), economic

¹⁵ We discuss the second case, where mobile and fixed networks compete, is discussed in Section 2.2. Both quotes come from Gans and King (2003), the second page of the executive summary (the pages of the executive summary are unnumbered).

¹⁶ Gans and King (2003), from the second page of the executive summary.

¹⁷ Gans and King (2003), p. 38, second paragraph.

¹⁸ Gans and King (2003), p. 38, last paragraph.

efficiency (balancing the needs of consumers and carriers) will be achieved by setting mobile termination rates equal to short-run marginal cost.”¹⁹

The citation of the Armstrong²⁰ and Wright²¹ papers appears to be an error on the part of Gans and King, as both demonstrate that efficient termination charges, when mobile networks are expanding, exceed marginal cost.²²

The next paragraph purports to explain this further, but instead argues that if the supply of fixed-to-mobile calls is a stand-alone service, then a regulated termination charge should be set at *less than* marginal cost.²³ It appears that what Gans and King mean by fixed-to-mobile call termination being a stand-alone service is that fixed-to-mobile termination prices do not affect other, most especially retail, mobile prices. Even given this assumption,²⁴ Gans and King’s conclusion contradicts standard economic theory. It seems Gans and King have in mind a situation where there are no fixed costs and market power in retail fixed call supply leads to a retail mark-up over mobile termination charges. In this circumstance, if mobile termination prices are set to SRMC, then the prices of retail calls terminating on a mobile network will be marked up above that level. Given fixed costs are zero, this will result in inefficiently high retail prices to terminate a call on a mobile network. Consequently, as a

¹⁹ Gans and King (2003), p. 37.

²⁰ Mark Armstrong, 2002, The theory of access prices and interconnection, in the *Handbook of Telecommunications Economics*, Vol. 1 , M. Cave *et. al.*, (eds) , North-Holland, as cited by Gans and King (2003), *id.*

²¹ Julian Wright (2002) Access Pricing Under Competition: An Application To Cellular Networks, *Journal of Industrial Organisation*, 50 (3) September, pp. 289-315, at pp. 309-310.

²² This point is discussed in more detail on p. 21 below.

²³ The claim is repeated by Gans and King (2003) in the 2nd paragraph on p. 38.

²⁴ As directly admitted by Gans and King (2003), p. 37.

second best correction the regulator might set the mobile termination price below SRMC so that final mark-ups reflect optimal prices.

There are two difficulties with this argument, even while accepting the counterfactual assumption that fixed-to-mobile termination prices do not affect other mobile prices. First, Gans and King's arguments for a price below SRMC assumes retail market power. Section 1.1 demonstrates that the assumption of retail market power in the supply of fixed-to-mobile calls is not plausible.

Second, optimal cost-covering prices in both fixed and mobile networks, even when such networks are entirely independent, generally will involve some mark-up above short run marginal cost to recover fixed costs. Thus, subject to an empirical analysis that demonstrates this does not apply to mobile termination rates, a claim that these rates should be set to or below SRMC is not sustainable.

At a general level, reasons for marking prices up over SRMC are straightforward. Prices set to SRMC cannot recover the total costs of either a fixed line or a mobile network because of substantial fixed costs and falling incremental costs in supply.²⁵ In Australia no direct funding of deficits on telecommunications services from the government budget exist. In these circumstances, some degree of mark-up according to Ramsey principles on most, if not all, prices is efficient. Moreover, this result is not changed if fixed line and mobile networks are interconnected, either in Gans and King's stand-alone sense, or more generally.²⁶

²⁵ A substantial proportion the costs of both kinds of networks are fixed. In the case of fixed line networks, much of the cost of the customer access network and the inter-exchange network must be incurred regardless of whether one or thousands of minutes per month are carried on it. Similarly, spectrum, antenna and handset costs in a mobile network must, to a significant extent, be incurred regardless of whether one or many monthly minutes of calling are supplied. Similarly, a substantial proportion of incremental costs are very low. For example, absent network congestion, marginal costs of supply of call minutes approach zero.

²⁶ For an example, of Ramsey prices applied to one-way interconnection see J-J. Laffont and J. Tirole (1993) *A Theory of Incentives in Procurement and Regulation*, MIT Press, pp. 258 ff. The two-way network case could be derived by estimating a Ramsey price for a single provider

Determining the optimal set of Ramsey prices is progressively more complicated as one considers first the interconnecting case when mobile termination prices from a fixed-line service does not affect other mobile prices, and second, when mobile termination prices do affect the equilibrium level of other prices. Yet, the basic Ramsey insight—that in general some mark-up above SRMC is necessary to efficiently recover total costs—remains.

There are some exceptions to the general Ramsey intuition, that all prices should be marked up to some degree above SRMC.²⁷ However, none of these reasons apply to mobile termination and indeed standard Ramsey reasoning and empirical evidence supports the view that mobile termination rates should be marked up over SRMC.²⁸ Moreover, Gans and King's views are in no way based on such Ramsey reasoning, but rather on the presence of counterfactual market power in the retail fixed-to-mobile market and the assumption of no fixed costs.

of multiple networks subject to firm level, rather than market level elasticities. Given competition in retail fixed-to-mobile supply and mobile supply, the required termination rates would be equal to the respective difference between retail price and marginal cost.

²⁷ One simple exception would be for services for which demand is both close to being perfectly elastic, and independent of demand for other services. In this, albeit unusual, case no mark-up would be called for. (The case of a service with an independent and near perfectly inelastic demand is completely unrealistic, but would imply that virtually all costs be recovered from this service and few if any from others). More realistically, cross-price elasticities due to network effects may require pricing below cost. For example, demand for a new service today may require setting price below costs if there are network effects which will allow rapid service expansion and market-sustainable cost-covering prices tomorrow. Even without network effects, cross-price elasticities can lead to such prices when a service is an important complement of another. For example, it may be efficient to price network access below cost and recover costs from other services.

²⁸ See the paragraphs on p. 21 of this report beginning "Some mobile termination and..."

Of course, mobile termination charges do affect other mobile prices and for this reason Gans and King concede that it does not follow they should be set below SRMC.²⁹ Instead, they suggest mobile termination charges should not exceed SRMC.³⁰ Their explanation for this change in approach appears to rely on the transfer, due to mobile competition, of mobile termination revenues that exceed termination costs toward mobile subscribers, but no actual explanation is given. Moreover, an opposite conclusion could be drawn. The transfer could provide a reason for raising mobile termination rates above cost so as to internalise the network benefits generated by increased mobile subscription or because this is a more efficient way of contributing to joint costs.³¹

This lack of an argument for a SRMC cap on mobile termination charges is then followed by a recommendation that the mobile termination price might even be set to zero, not because this is what Gans and King believe the SRMC to be, but because there might be retail market power in the supply of fixed-to-mobile. However, no justification is provided as to why the optimal tariff would be zero.

NECG is not alone in its view that pricing at or below SRMC is inconsistent with economic efficiency. For example, as already noted, both Armstrong (2002) and Wright (2002) find that where mobile networks are growing, mobile termination charges should be set above marginal cost.³² Similarly, the U.K. Competition Commission considers that mobile termination charges should exceed marginal cost.³³ Jerry Hausman directly addresses Gans and King on this issue: “The Gans and King proposal of setting termination charges at

²⁹ Gans and King (2003), p. 37.

³⁰ Gans and King (2003), p. 38.

³¹ See the paragraphs on p. 21 of this report beginning “Some mobile termination and...”

³² For further support on the proposition that efficient termination charges exceed marginal cost see discussion on pp. 21 ff below.

³³ As cited by Gans and King (2003) p. 43.

marginal cost seems to make little economic sense.”³⁴ Gans and King respond by noting the complexity of determining optimal Ramsey prices in this context, concluding:

“There is no reason why mobile network competition for subscribers will lead to socially optimal Ramsey prices for fixed-to-mobile termination charges. In other words, if it is felt that Ramsey pricing is appropriate, then mobile network competition will not, in general, lead to appropriate pricing.”³⁵

However, this does not provide a response to the criticisms raised. None of Gans and King’s critics is claiming actual mobile termination rates are Ramsey optimal, only that rates set at, or below, SRMC are almost certainly suboptimal. To this, it might be added that given the complexity of correctly identifying Ramsey prices for mobile termination, as admitted by Gans and King,³⁶ the likelihood that a regulator will get this right is also slim. Thus, the view is simply that current rates, which likely exceed SRMC and which do not seem to be causing any unreasonable efficiency losses (if any meaningful losses at all) may be better than a radical policy change.

Having left the views of Armstrong, Wright, the U.K. Competition Commission and Hausman, all of whom Gans and King cite, unaddressed, Gans and King conclude the section:

“In summary, as a matter of economics, it is far from clear that fixed line callers should bear proportionately more of common costs than mobile callers.”³⁷

³⁴ Cited by Gans and King (2003) p. 43.

³⁵ Gans and King (2003), pp. 42-43, quote from the second paragraph of p. 43.

³⁶ Gans and King (2003), p. 44

³⁷ Gans and King (2003), p. 44, third paragraph.

But this is misleading. Gans and King are not arguing about the share of common costs fixed line callers should bear, but that they should bear *no* share or a *negative* share of common costs.³⁸ NECG and others instead assert that fixed line callers should bear some share.

It is difficult to understand why Gans and King come to a conclusion so at odds with this most conventional of results in regulatory economics, most especially as they cite extensively papers and models that come to contrary conclusions. All cost-covering prices are not economically efficient, so a regulator cannot be neutral between:

- (1) any mobile termination price simply because in a competitive market the outcome will be zero mobile profits;
- (2) any prices for fixed-to-mobile calls even if at any mobile termination price no fixed-line carrier supplying pre-selection, that is, retail service, earns positive economic profits.³⁹

Some mobile termination and retail fixed-to-mobile prices will be better than others. For example, fixed-line subscribers likely benefit when mobile penetration levels rise, especially when these networks are *relatively* small. Consequently, if distortion due to setting mobile termination prices somewhat above SRMC is likely small, then some cost recovery on mobile termination will be optimal. For example, Wright (1999) shows, using a calibrated model, that when mobile penetration is as high as 50%, efficient termination charges could be several times marginal cost.⁴⁰ Moreover, in the context of new 3G networks, this kind of reasoning would likely apply *a fortiori*.

³⁸ Earlier Gans and King note the U.K. Competition was concerned with the level of mark-up, not with whether there should be one (*ibid.*, p. 43, second last paragraph).

³⁹ Gans and King seem to think otherwise. For example, see Gans and King (2003), pp. 41-42.

⁴⁰ Julian Wright (1999) Competition and Termination in Cellular Networks, CRNEC December Working Paper, University of Auckland; see also Wright (2002) at p. 309.

Gans and King accept this point, at least as a matter of theory,⁴¹ extensively citing Mark Armstrong.⁴² Their response to this argument is that at current mobile penetration rates, this reason for marking-up costs is likely to be weak. This may be so (though Wright's calibrated model suggests otherwise), but certainly this does not make a case for mobile termination rates that are equal or below SRMC.

Similarly, if mobile subscription decisions are reasonably price sensitive as compared with decisions to make fixed-to-mobile calls, it again may make sense to price mobile termination above SRMC. Hausman (cited by Gans and King) provides empirical support for this proposition.⁴³

Market practice suggests a further reason why mobile termination rates might be set above SRMC to fund low or negative contributions from subscriptions. Competitive and optimal prices for subscription to mobile services are unlikely to be equal to some pro-rated estimate of the operator's total fixed costs (as assumed by Gans and King). In practice, in these kind of industries,⁴⁴ low prices for subscription relative to fixed costs are typically seen with cost recovery occurring elsewhere, including through mark-ups on mobile termination. Indeed, sometimes price does not even cover the service's incremental cost at start-up (for example, when razors, satellite dishes or mobile handsets are subsidised). Reasons for this are cross-price interactions between subscription prices (the fixed charge in the models Gans and King consider) and usage, including more complex cross service effects such as consumers' higher levels of risk aversion, and ignorance relative to those of retailers.

⁴¹ Gans and King (2003), pp. 44-46.

⁴² Mark Armstrong, 2002, The theory of access prices and interconnection, in the *Handbook of Telecommunications Economics*, Vol. 1, M. Cave et. al., (eds), North-Holland, as cited *id.*

⁴³ Hausman, *ibid.*, p. 596.

⁴⁴ Examples beyond telephony include razors and razor blades and satellite and cable pay television.

Practical shortcomings of use of SRMC

Gans and King also fail to properly consider the impact of relying on SRMC, but for Gans and King to be right in promoting SRMC prices, they need to demonstrate that the costs of managing such complexity is likely to be outweighed by efficiency benefits they claim for the approach. While Gans and King admit that SRMC prices would be volatile in the presence of congestion⁴⁵ (which is not uncommon on mobile networks given the limited availability of spectrum), they fail to discuss the possible negative efficiency consequences of such volatility.⁴⁶ They also fail to discuss the need, under a SRMC approach, to set prices not only on a real-time basis, but also by location, perhaps down to the level of the cell. For example cells on freeways will have different periods of congestion than cells in the city or in surrounding suburbs (which may never be congested).

The costs of attempting full SRMC pricing would likely be prohibitive. For example, it is hard enough to determine an optimal set of prices even when demand is fixed period by period, but due to the endogeneity of the peak and impossibility of predicting random events that could effect the network, true SRMC pricing would require real-time pricing responses to changing circumstances. Prices, especially when these vary by location, cannot be changed, most especially rapidly and substantially without costs. There are both the ordinary costs of adjustment (identifying the correct prices, implementing these so they can be billed, notifying customers, etc., and equally of adjustment on the buyer side of the market) and the welfare costs in terms of consumer dissatisfaction.

In fact, Gans and King advocate prices that are not based on SRMC. This is quite sensible for the reasons just given, but Gans and King cannot have it both ways: either prices based on (or below) SRMC are called for, which necessarily includes accounting for congestion costs, or they are not.

⁴⁵ Gans and King (2003), the first paragraph of p. 39.

⁴⁶ In their simple models, such consequences simply do not appear, so it is correct to say that, in those models, efficiency is maximised by setting mobile termination prices to SRMC.

Gans and King too easily dismiss the adverse incentives that SRMC regulated pricing would create.⁴⁷ They argue that mobile operators would not have the incentive to increase congestion, thereby increasing marginal costs and the resulting regulated price, as customers would likely move to a competing network with a better quality of service. This may in part be true, but whether the operator has an incentive to increase congestion or not becomes an empirical question, namely: is the loss of revenue from the customers who switch networks due to quality degradation greater than the gains from a higher regulated price?⁴⁸

In summary, Gans and King's discussion initially advocates SRMC prices, and then repeatedly, prices at least as low or lower than this level, and perhaps as low as zero. The only argument advanced for SRMC pricing seems to be that in certain highly simplified models, that bear no resemblance to the situation at hand, this produces an efficient outcome. But these models, in focusing on the incentives carriers face in setting termination charges, deliberately ignore features of reality that are widely accepted to require pricing variation from SRMC, most usually by marking prices up above this level. While good reasons can be advanced in some cases for reversing this presumption, such reasons apply to monthly mobile subscription charges and not mobile termination fees increasing the likelihood that efficient mobile termination fees would exceed SRMC. Gans and King also ignore obvious difficulties of relying on SRMC prices in the face of congestion

Measuring SRMC

Gans and King next argue that SRMC should be measured by removing the presumably short run⁴⁹ marginal cost of long distance transmission from the lowest pre-regulatory

⁴⁷ Gans and King (2003), p39.

⁴⁸ Gans and King's recommend that past retail prices and marginal cost be used to estimate SRMC (see Gans and King (2003) p. 38 third and especially fourth paragraphs). If it were possible to estimate SRMC this way (and, as we demonstrate below, it is not) this would not avoid incentives to game the system unless the resulting rates were fixed independent of actual congestion. However, if this were so, then prices would not reflect SRMC.

⁴⁹ They are not specific on this point.

mobile-to-mobile retail call prices and divide the result by two. However, such rates need not reflect underlying SRMCs for several obvious reasons. First, retail call rates are often subject to advertising specials and similar which may not be underpinned by cost considerations, and indeed may be considerably lower than actual costs.⁵⁰ Second, given Gans and King have already argued that mobile carriers might not set mobile termination rates to cost, but rather might use them to subsidise other services, one would want to be confident that in more complex models than those considered by Gans and King, some of these subsidies did not go to mobile-to-mobile rates. This is particularly of concern in the case of on-net rates, the prices of which Gans and King recognise are not set according to the predictions of the models underpinning their analysis and are typically set below off-net rates.⁵¹ Third, as Gans and King recognise,⁵² SRMC varies significantly with network congestion, including network congestion on the mobile rather than long distance network. The means of estimating SRMC recommended by Gans and King cannot capture such changes and so cannot provide an estimate of SRMC when there is congestion. Changes in SRMC due to congestion are not reflected in prices derived by simply looking at the lowest pre-regulation retail prices in the market, even if the true SRMC of the long distance transport was taken into account (which would be unlikely).

After promoting a less than SRMC price and attempting (unsuccessfully) to find a simple way of measuring SRMC, Gans and King then argue that in practice the actual price used would likely be very similar to long run marginal cost (LRMC).⁵³ But we already have much

⁵⁰ For example calls under ten minutes between Hutchison 3 subscribers are free. Telstra also offers "My Hour" whereby in a chosen hours of the day the first 20 minutes of every call you make in that hour to any telephone number in Australia is free. This would imply a negative price for mobile termination under Gans and King's proposal!

⁵¹ Gans and King (2003), p. 30, especially footnote 19. As indicated in footnote 50 retail mobile-to-mobile are sometimes set as low as zero.

⁵² Gans and King (2003), p. 39

⁵³ Gans and King (2003), pp. 39-40.

greater expertise in measuring LRMC prices and these have other advantages over the SRMC approach, like stability and the removal of incentives for congestion manipulation (as highlighted by Gans and King themselves⁵⁴). Hence, it is difficult to understand exactly why so much focus is given to (less than) SRMC prices.

SRMC and investment incentives

Gans and King make the claim that if mobile termination charges are set to marginal cost this will not discourage investment in mobile infrastructure since mobile carriers' profits are not affected by the mobile termination rate in their models (all firms always earn zero economic profits).⁵⁵ This is mistaken in two respects. First, it is simply incorrect to say that incentives to invest, or investment itself, is unaffected simply because in all cases firms earn zero profits. Consider rate-of-return regulation of firms that would otherwise operate in a competitive market. In both regulated and unregulated cases firms expect to earn zero profits, but their investment incentives are very different. In the case at hand, as Gans and King make clear,⁵⁶ a higher mobile termination rate brings more revenues through to the mobile operators. Competitive pressures result in these being dissipated through lower retail prices to mobile subscribers. What Gans and King fail to focus on is that this necessarily means greater demand for mobile services. As a result, competitive pressures would generate more long run investment in capacity and, to the extent that handsets are subsidised (as they often are), greater investment in handsets.⁵⁷ Thus, contrary to Gans and King, while profits are always zero, investment levels vary with the level of mobile termination charges.

⁵⁴ Gans and King (2003), p. 39.

⁵⁵ Gans and King (2003), pp. 41-42.

⁵⁶ The points of this and the next sentence are made more than once in Gans and King, and are repeated in the context of cost recovery (2003, pp. 40-41).

⁵⁷ This would not be true in a model with a fixed number of mobile subscribers, all of whom already subscribe. Needless to say, such a model could not be used to characterise the

Second, and more fundamentally, Gans and King do not set a baseline. As a result, it is impossible to say whether investment is encouraged or discouraged. Of course, the relevant baseline is whether *efficient* investment is discouraged. To determine this one must consider what level of output in mobile services is efficient, and what investment levels result from different mobile termination prices. Gans and King provide no such discussion. Consequently, any claims they make, assuming they should be read as claims about efficient investment, are without basis.

In addition, Gans and King's proposed approach would be at odds with the relevant legislative criteria and the Commission's pricing principles for telecommunications. As the Commission has recently noted in its draft decision on Pay TV⁵⁸, while marginal cost pricing (in that case LRMC) can promote the efficient use of infrastructure, such prices "will not contribute to the objective of cost recovery and efficient investment". The Commission states that "over time, this can lead to under-investment and a diminution of services and quality. If so, this would outweigh the static inefficiency effects of above above-LRMC pricing." The Commission then go on to note that "in this sense, as the Commission has already noted in its *Access pricing principles: Telecommunications – a guide* publication, pricing at LRMC is not consistent with the relevant legislative criteria".

2.2 Mobile termination regulation: competing networks

When fixed and mobile networks compete, the position of Gans and Kings seems to be as follows:

"As mobile penetration increases and mobile phones... [become] substitutes for fixed line services, the treatment of mobile and fixed networks as producers of distinct

investment decisions of a mobile carrier in the Australian market due to a rise or fall in mobile termination charges.

⁵⁸ ACCC 2003, Section 152ATA Digital Pay TV Anticipatory Individual Exemption Applications lodged by Telstra Corporation and Telstra Multimedia, Draft Decision, October, p 37.

services becomes less relevant. Rather... the focus needs to be on mobile networks competing both with each other and with fixed line networks..."⁵⁹

But this does not explain how being different "separate" or different competing services is relevant to mobile termination charges.⁶⁰ Instead of offering an explanation as to why their belief in SRMC prices no longer applies in the competing network situation, they go on to say:

"Treating mobile and fixed services as alternative competing products... does not mean that the differences between these services are ignored. Each of mobile services has distinct characteristics and will compete on their merits... [but] this does not remove the need for regulation... However, [this] does suggest that the distinction between mobile termination charging and fixed-line termination is arbitrary. Rather there should be a reciprocal charging rule for termination."⁶¹

This conclusion does not follow. No argument is made to explain the choice of reciprocal charges. The services are delivered using different technologies and infrastructure and as such, per Gans and King:

"The underlying costs of the services differ as does the benefits that they provide consumers"⁶²

⁵⁹ Gans and King (2003), p. 47.

⁶⁰ One reason would be to the extent that this would effect the relevant cross-price elasticities necessary to determine mark-ups, but Gans and King do not mention this.

⁶¹ Gans and King (2003), pp. 47-48.

⁶² Gans and King (2003), p. 47, last paragraph.

One would expect that this is a *prima facie* reason for their prices being different (just as, to use Gans and King's example given in this section, the price of a Toyota Camry is different from that of a Holden Commodore).⁶³

The closest Gans and King come to justifying setting reciprocal prices for the two networks is that:

"To the degree that call volumes are roughly balanced in mature networks, so there is no systematic bias in traffic flows between any two networks, reciprocal pricing means that termination charges, on average, become neither a revenue source nor a cost to carriers."⁶⁴

But Gans and King are aware that this is not an explanation, as they make clear in the immediately following sentence:

"the exact level of the charges can affect marginal behaviour and can influence the intensity of competition."⁶⁵

While it may be true that "many of the issues [not identified by Gans and King in this section or arguably in their paper] associated with termination charging can be removed by making them symmetric,"⁶⁶ it would seem inappropriate to recommend a program while ignoring impacts on marginal behaviour and intensity of competition.

In summary, Gans and King do not explain why they view the situation of competing networks compared with separate networks as no longer requiring mobile termination charges set to SRMC. Moreover, their unsupported recommendation of reciprocal rates for

⁶³ Gans and King (2003), p. 47, last paragraph.

⁶⁴ Gans and King (2003), p. 48, paragraph 3.

⁶⁵ Gans and King (2003), p. 48, paragraph 3.

⁶⁶ Gans and King (2003), p. 48, paragraph 3.

competing networks violates standard theory. There is at least a presumption to be rebutted that different services with different costs (and benefits if Ramsey pricing is applied) should have different prices.

2.3 Regulation to increase transparency of charges

In addition to making recommendations about the price regulation of mobile termination charges, Gans and King also discuss a number of ways to increase the transparency to consumers of mobile termination charges.⁶⁷ However, they do not apply a cost benefit analysis to their recommendations. Such cost benefit analysis is vital when such intrusive and potentially costly regulation is recommended.

One of Gans and Kings' suggestions is to increase the information available regarding call prefixes to help identify the mobile network being called. While they recognise that the benefits of this strategy will weaken with the increase of number portability, they appear to be unaware of the extent of mobile portability. Recently, the Australian Communications Authority (ACA) reported that since September 2001 over one million mobile phone numbers,⁶⁸ or approximately 7%⁶⁹ of the customer base, have been ported.

Another of their suggestions, to introduce a distinctive sound used to identify the mobile network being called, seems likely on face value to fail a cost benefit analysis. The benefits from introduction of this system would be extremely small given the requirement on consumers to be aware of the numerous tones and their meaning. There are five mobile network providers alone, plus at least another 16 resellers.⁷⁰

⁶⁷ Gans and King (2003), p. 32.

⁶⁸ Australian Communications Authority, Media Release No. 35 - 24 September 2003.

⁶⁹ Based on the most recent Australian Mobile Telecommunications Association figure of 14million mobile subscribers, <http://www.amta.org.au/default.asp?Page=267>.

⁷⁰ Source: www.phonechoice.com.au

2.4 Regulation of fixed networks

Gans and King make a number of detailed suggestions regarding regulation of fixed networks. As described in section 1.1, there is no issue of market power in delivering fixed to mobile services. In particular:

- there are over 28 competing fixed line providers utilising six different local access technologies;
- retail fixed-to-mobile calls can and are supplied using wholesale access to Telstra's network through a variety of declared services (ULLS, LSS, local OTA and most notably domestic OTA); and
- demand for fixed to mobile calls has been increasing and prices been falling.

In addition, even if there were rents available for the fixed operator, which we believe there are not, these would likely be competed away given the high penetration of mobile subscribers and resulting substitutability of fixed to mobile and mobile to mobile calls.

Given this competitive backdrop, there is no justification for Gans and King's intrusive regulatory recommendations of either a sub cap for fixed-to-mobile calls or that the price of fixed-to-mobile calls be set as the sum the PSTN originating charge plus the regulated mobile termination charge.

Gans and King's first suggestion, a sub-cap within the current price control basket, would restrict Telstra's ability to set efficient prices. The objective of a regulated price basket rather than mandated individual service price caps is to allow the regulated operator flexibility to set efficient prices. Common costs across services are a key element of telecommunications cost structures and the efficient recovery of these common costs is therefore vital. The regulated operator has far more market knowledge than the regulator could hope to obtain and as such is in a better position to determine prices that recover common costs as efficiently as possible. Enforcing a price sub cap on fixed-to-mobile calls will unnecessarily restrict the regulated operator's ability to do this.

Gans and King's alternative suggestion, that fixed-to-mobile prices should be set as the sum of the fixed origination and the regulated mobile termination charge, may again hinder efficient pricing. Efficient Ramsey pricing, which recovers common costs across services in

inverse proportion to the elasticities, may well require that fixed-to-mobile prices are higher than Gans and King's proposed regulated level. In effect, setting fixed-to-mobile prices as the sum of these two components is equivalent to a fixed-to-mobile sub cap with similar constraints preventing the regulated operator from setting efficient prices.

Gans and King fail to demonstrate that there is a fixed line market failure due to market power. Consequently, there is no justification for the just outlined prescriptive regulations that they recommend. Even if they did demonstrate that market failure exists, their regulatory approaches would lead to inefficient pricing and consequent loss of consumer surplus.

3 Conclusions

Gans and King's analysis of the issues surrounding mobile termination issues is seriously flawed. They make a number of regulatory recommendations that are not adequately supported by their analysis. In particular, they fail to show that there is a market failure in either fixed or mobile service markets that would justify the intrusive regulatory intervention they propose.

Even if a market failure could be demonstrated, and the evidence does not support this, the regulatory proposals they make would still be inappropriate. Their recommendations of setting mobile termination at SRMC in the "separate networks" case, and of reciprocal charges in the competing networks case, are economically flawed, impractical, and out of step with international regulatory practice. In addition, their suggestions regarding intervention to improve transparency fail the most basic cost benefit analysis.

Gans and King's analysis is economically unsound and does not take account of the realities of competition in Australian telecommunications. Consequently the regulatory solutions they advance are inappropriate and would be harmful to effective competition in Australia. As a result, NECG recommends that the Commission disregard completely the conclusions and recommendations advanced by Gans and King.