



FINAL

Regulation of Mobile Call Termination Charges: International Approaches

Submitted to

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1. INTRODUCTION

In its discussion paper, *Mobile Services Review 2003* (April 2003), the ACCC stated that “mobile termination rates in Australia are not at excessively high levels by international standards.” However, the ACCC went on to note that

*with European regulators looking to significantly lower the prices mobile operators can charge for the mobile termination service in the near future, the Commission will need to consider whether the lower rates in some European jurisdictions may better reflect the cost of providing mobile termination services than the rates currently being charged by mobile operators in Australia.*¹

Optus has commissioned Charles River Associates (CRA) to:

- Review approaches to the regulation of mobile termination rates in Europe and the US; and
- Assess the applicability of the different international approaches to the Australian mobile market and regulatory regime.

The regulation of mobile termination rates raises complex economic issues. Unlike most price regulation which is aimed at driving monopoly profits out of an industry, *regulation of mobile termination rates is fundamentally about changing the structure of prices in an industry.*² It is generally accepted that a reduction in termination rates will force up the prices for mobile retail services, such as outgoing calls and subscription (monthly and upfront) charges. Thus in considering the question of whether economic regulation is warranted, regulators should weigh up the benefits of lower termination charges (to the extent that they are passed on to consumers) with the costs of higher other prices.

Potential dynamic effects of the regulation should also be considered. For instance, higher upfront charges raise customer switching costs and risk undermining the extant competitiveness of mobile telephony markets. Further, if the rebalancing of prices is protracted or incomplete, investment in the networks and the deployment of new products may be harmed.³

¹ ACCC (April 2003), p.34.

² If excess profitability were the concern then a general price cap covering all mobile services should be considered. Regulation of the price of only one of the services will have an uncertain impact on overall revenue. As most European mobile markets are considered to be either effectively competitive or moving towards effective competition, general price caps have not generally been considered necessary. Indeed, in a number of European countries, the concern has been with the financial difficulties (rather than any excess profitability) of some of the mobile operators and the consequent risk of market consolidation.

³ If mobile operators have been investing for a growing market and the attempted rebalancing of prices causes overall call volumes to shrink then, given significant sunk costs, the resulting excess capacity will put downward pressure on overall prices and operators' returns.

In general, European regulators who have decided to regulate mobile termination rates have not evaluated the costs and benefits of doing so. In the UK, Oftel and the Competition Commission have put forward cost benefit analyses. However as we discuss in this paper, these are fundamentally flawed in assuming that all prices (mobile retail prices as well as termination) would fall from current levels as a result of the regulation of termination rates. Rather the impetus for regulation in Europe seems to be based on a perception among regulators that current termination charges are above the average network costs of supplying mobile voice services. However, the average network cost level is likely to be significantly below the efficient charge level for termination which will also reflect an efficient allocation of common network and non-network costs and the need for a surcharge in relation to the network externality.⁴

The failure by European regulators to undertake the analysis required to estimate the efficient level of termination charges is concerning. Without knowing the efficient level there is no basis for regulating termination charges below a level that would be set by the market. A number of academic models have been put forward to explain how termination charges could be set in an unregulated market, with predictions ranging from marginal cost pricing to monopoly pricing.⁵ However, regulators have accepted that there is a range of potential constraints on termination charges. Whether these are effective in aggregate in constraining termination charges to efficient levels is ultimately an empirical question.

The evidence from countries that do not regulate mobile termination rates, such as Germany as well as the UK prior to regulation in 1999, indicates that rates are set well below the monopoly price level (estimated by Oftel to be between 20 and 40 pence per minute).⁶ We understand that Australia's termination rates, which the ACCC reports in its *Discussion Paper* as around 24 cents per minute, have been reduced by operators by more than required by regulation and are well below Oftel's estimated monopoly level for the UK.

⁴ The network externality refers to the benefit to other mobile and fixed subscribers that results from a person's decision to subscribe to a mobile network in terms of enabling the other subscribers to call and to be called by the new subscriber. The presence of the network externality implies that it is socially optimal for the prices facing the mobile subscriber to be subsidised by a surcharge on termination.

⁵ Marginal cost pricing has been predicted in models of bilateral negotiations where mobile operators seek to maximise the consumer surplus obtained on calls and then set subscription charges to recover this surplus (these models assume that subscription is perfectly inelastic which is highly unlikely given the dramatic market growth which has accompanied falling mobile retail prices). Monopoly pricing is predicted by models that assume mobile subscribers do not value calls from fixed subscribers or care about the welfare of fixed subscribers. Such models are of limited value as most telephone calls provide benefits to both parties, since otherwise they would not be initiated and maintained.

⁶ Oftel, *Termination Charges in the Absence of Regulation*, 17 April 2002. The UK MNOs' average termination charge was 13.42ppm in 1998 prior to regulation (14.88ppm in 2003 prices). This is based on simple averages of the 4 MNO's peak, evening and weekend rates weighted by 60% for peak, 20% evening and 20% weekend. Information on termination rates from Table 4.4 of the Monopolies and Mergers Commission's *Vodafone and Cellnet Report* (1999). Termination rates in Germany were around 14 euro cents (i.e. around 10ppm) in 2002 (Cullen International September 2002).

In this paper, we examine briefly the use of comparisons in evaluating the reasonableness of Australia's termination charges. However, the primary focus of the paper is to review and explain the basis for the different international approaches to the regulation of termination charges. In doing so, we assess the relevance of the various approaches to the Australian mobile market and regulatory regime to assist the ACCC in determining a way forward.

This paper is organised as follows:

- In Section 2, we consider the extent to which benchmarking exercises can be used to determine the reasonableness of the level of mobile termination charges in a particular country;
- Section 3 outlines the general regulatory framework of the European Commission;
- In Section 4, we describe and comment on the regulatory practices in a number of European countries selected to highlight the variety of approaches and we also comment on arrangements in the US; and
- Finally, in Section 5, we summarise the key insights drawn from our review of the international approaches and comment on the lessons that appear most relevant to Australia.

2. BENCHMARKING MOBILE TERMINATION RATES

In determining whether there is a basis for regulation, regulators frequently rely on particular forms of benchmarking.

Caution is needed in international benchmarking to take account of any significant differences in the fundamental aspects of supply and demand for the services between countries. The costs of supplying mobile services will differ between countries due to differences in:

- Teledensity (subscribers per square kilometre);
- Peak/off-peak traffic ratios (networks are typically designed to offer acceptable levels of usage during peak periods – if off-peak traffic is significantly lower then the cost per unit of providing the network will be higher);
- Usage volume (as well as general scale economies, the unit costs of an operator serving customers with lower usage are likely to be higher than the unit costs of an operator serving customers with higher usage);
- Input prices (there may be differences in costs arising from the impact of topography, local planning restrictions, taxes, licence fees, etc.); and
- Regulations (e.g. rollout requirements).

Demand factors will also influence the optimal allocation of costs to the different mobile services. In particular, if the elasticities of demand for the different mobile services differ between countries then operators may choose to recover different proportions of their costs from the different services. Demand factors will be relevant to determining the efficient level of charges as they impact on both Ramsey pricing and the optimal externality surcharge.

Of the cost and demand factors, Australia's much lower teledensity compared with Europe stands out as a key source of difference. For instance, the Australian mobile operator with the largest number of subscribers and call volumes, Telstra, had a subscriber base of 5,942,000 consumers (5,780 million minutes) in 2002 on which to recover the cost of providing coverage over an area of more than 1 million sq. km.⁷ By comparison, one of the smallest operators in the UK (*viz.* O2) had 11,084,000 subscribers (9,234 million minutes) and a coverage area of only around 217,500 sq. km in 2002.⁸ Thus for every square kilometre of coverage

⁷ Telstra Annual Review 2002, pp. 16-17.

⁸ O2's Annual Review 2002 reports that its network covers 90% of the UK land mass. The UK's total land mass is 241,590 sq km (CIA's World Factbook 2002). Subscriber and call minute data from Oftel's *The UK Telecommunications Industry Market Information 2001/02*.

provided, O2 can recover the cost across more than 8.5 times as many subscribers (more than 7 times as many call minutes) as Telstra was able to do. Thus Australian unit costs would be expected to be significantly above the unit costs incurred by the UK operators.

The likely extent of the difference in total costs per minute due to the difference in coverage costs can be illustrated by means of a simple calculation. Coverage accounts for around one quarter of the UK networks' total network costs (with the remaining reflecting the costs associated with providing additional capacity in areas where there already is coverage).⁹ This implies, on Oftel figures, that each minute of traffic on a UK network needs to recover (in Australian dollars) \$0.035 of costs relating to coverage and \$0.105 of costs relating to providing additional capacity or \$0.14 in total.¹⁰ As explained above, each minute on an Australian network relative to a UK network would need to recover 7 times as much coverage costs, i.e. \$0.245. If per minute capacity costs are the same in Australia as in the UK (i.e. \$0.105), then Telstra would need to recover \$0.35 of network costs from each minute of traffic on its mobile network, i.e. 2 and one-half times as much as in the UK. The Australian networks with lower traffic volumes would be expected to have higher per minute costs.

Even focusing only on urban areas, Australia's urban geography may also lead to a cost disadvantage for Australian mobile operators. In particular, the greater separation of business and residential areas in Australia compared to European cities is likely to generate significant costs in terms of, for instance, Australian cell sites that are built for weekday peaks in CBDs, but may be largely idle outside of standard work hours. Australia's very low-density suburbs may also require the provision of cell sites which are never used near full capacity. Australian cities have around one quarter the population density of European cities.¹¹

Whilst we have not assessed in detail the impact of other factors, it is highly unlikely that their impact will be to greatly reduce the significant cost disadvantage suffered by Australian mobile operators as a result of Australia's lower teledensity compared with Europe. We note that general differences in price (and cost) levels between countries are taken into account in purchasing power parity comparisons (PPP). The potential for substantial differences in costs

⁹ Oftel's LRIC model predicts that coverage accounts for about 20% of total network costs, however, the LRIC model was found by Oftel to require a 30% increase in network capital to reflect the actual costs of supplying mobile services so that coverage probably accounts for around 25% of the total network costs of UK operators (see Oftel *Network common costs*, 19 February 2002, paragraph 7 and Oftel *Review of mobile wholesale voice call termination markets*, 15 May 2003, p.203-204). We believe that even after the adjustment, Oftel's estimate understates the cost of coverage in the UK as it takes no account of the additional cell sites built since 2001 to improve coverage.

¹⁰ Oftel found that the network costs of the UK networks in 2002/03 were £0.0566 per minute, i.e. before including any contribution to non-network costs or taking into account an efficient allocation of costs based on Ramsey pricing and externalities (Oftel *Review of mobile wholesale voice call termination markets*, 15 May 2003, p.208). This is roughly equivalent to A\$0.14 per minute.

¹¹ Demographia, 2 May 2001, <http://www.demographia.com/db-intluadens-rank.htm>.

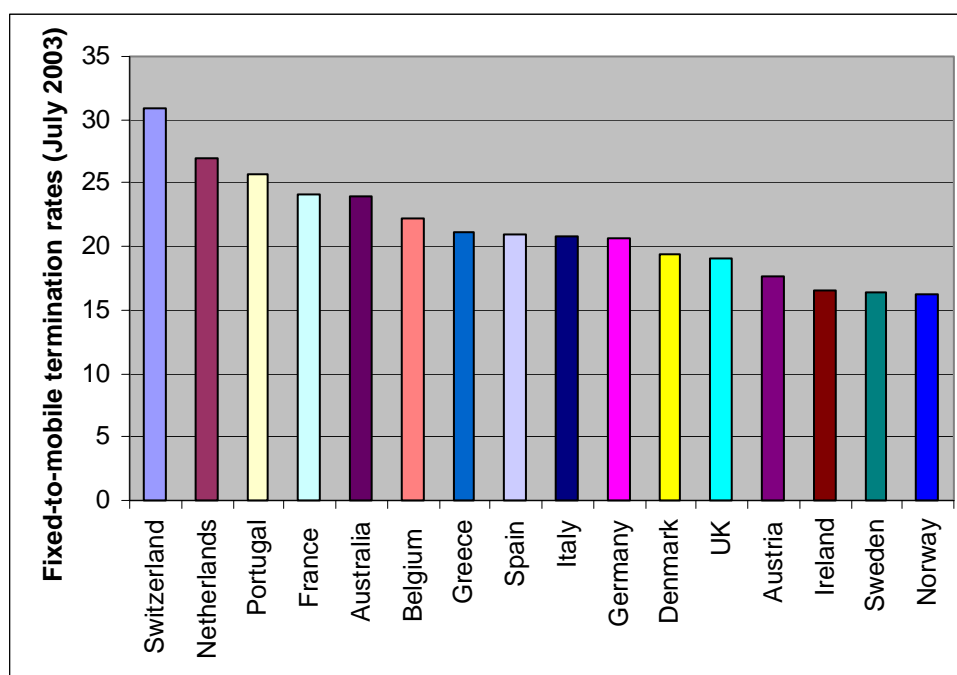
between European and Australian mobile operators, reflecting factors such as the differences in teledensity, needs to be borne in mind in considering international comparisons of termination rates.

Demand factors will also have an impact on optimal pricing. For instance, Australia's penetration rate of 64 per cent at the beginning of 2002 was lower than the European average of 70% in 2001 and 75% in 2002.¹² This suggests that a higher externality surcharge on termination may be justified in Australia to achieve the socially optimal number of mobile subscribers.

As shown in Chart 2-1 below, Optus' termination rate of [**commercial-in-confidence**] appears to be about the same as the average of the current EU country rates on a PPP basis. As we discuss in Section 4, a number of European regulators are proposing that termination rates be reduced further from current levels. Depending on the relative speed of reductions in Europe and Australia going forward, this may lead to Australia's rates being above the European average. Nevertheless, this does not imply that Australia's rates will be out of line with costs or, more importantly, with the level required to maximise efficiency and overall consumer benefits. As discussed above, there are factors suggesting that Australian operators may suffer a significant cost disadvantage. Moreover, as discussed in Section 4, we have serious concerns about the basis for some recent regulatory decisions in Europe.

¹² Data from ACCC's *Mobile services review 2003* (p.14) and EC, *Eighth Implementation Report* (Annex 1, p.46).

Chart 2-1: European and Australian termination rates (July 2003)



Sources: Data from Cullen International, Optus and ACCC's *Mobile Services Review – Discussion Paper* (April 2003).

Notes: European country averages based on individual operator rates weighted by share of minutes. Individual operator averages reflect weighted average of peak, off-peak, weekend rates where applicable and based on assumed share of minutes. Australian average from ACCC's *Discussion Paper*. PPP comparisons based on OECD's 2002 *Purchasing Power Parities* (<http://www.oecd.org/dataoecd/48/18/4098676.pdf>)

Another form of benchmarking that has been undertaken (by the European Commission and regulators) is to compare mobile termination rates with fixed tariffs. These comparisons are highly misleading given that mobile technology is inherently more expensive than fixed technology and that mobile networks do not benefit from the substantial scale economies enjoyed by the fixed incumbents (i.e. each mobile network's traffic volumes generally amount to only a small fraction of the traffic carried by the fixed incumbent). For instance, Oftel found that if BT's cost of fixed access was spread over *total* mobile minutes the cost would be 6 to 7ppm compared with 1.4 to 1.5ppm when the cost is spread over BT's much larger actual fixed traffic.¹³ An even higher cost would be derived if the cost of access was spread over only an individual mobile operator's traffic.

Termination charges are also sometimes compared with the price for on-net calls charged by mobile operators. On the basis of such comparisons, the claim is often made that the cost of termination should be around half the price of an on-net call. We consider such comparisons and claims to be highly misleading, as a particular

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http://www.oftel.gov.uk/publications/mobile/ctm_2002/term0502.pdf

feature of the dynamic competition in mobile markets has been the significant discounting of on-net prices by operators to encourage existing subscribers to attract their frequent callers to also be on the same network. For instance, on-net prices in the UK have been around one third the price of off-net calls¹⁴ (although more recently the market seems to be moving towards tariffs which do not discriminate between on-net and off-net calls). While discounted on-net pricing may be a departure from cost or even (Ramsey) demand based pricing, it is not clear that such discounted pricing is detrimental to economic welfare as it intensifies competition between operators.¹⁵ While there might be a cause for concern if discounted on-net pricing were harming new entrants, it does not appear to have hindered later entrants successfully taking market share and establishing themselves across Europe.

We also note that comparisons with on-net calls, or claims that the cost of a fixed-to-mobile call should be the same as a mobile-to-fixed call, tend to ignore the higher cost of terminating a call compared with originating a call¹⁶ and that fixed (monthly) charges levied on mobile subscribers often include elements which contribute to the recovery of outgoing call costs. Finally, it will be efficient for termination charges to bear a greater contribution to common costs reflecting Ramsey pricing principles and network externalities.

¹⁴ The UK Competition Commission, *Calls to mobiles Report*, 2003, Table 5.23.

¹⁵ J.J. Laffont and J. Tirole reach this conclusion in *Competition in Telecommunications*, MIT Press, 2000, p.202.

¹⁶ For instance, for calls from other networks the originating operator will hand the call over at the closest point of interconnect and the terminating operator will then convey the call to the location of the customer. This results in a higher cost of conveyance in termination in addition to the cost of the equipment required by the terminating operator to locate the called party within its network. See also the UK Competition Commission, *Calls to mobiles Report*, 2003, paragraph 5.127 and Table 5.23.

3. THE EUROPEAN COMMISSION'S TELECOMMUNICATIONS REGULATORY FRAMEWORK

The European Commission (EC) provides the overall framework for telecommunications regulation in the member states of the European Union. This framework is currently in a state of transition with a new regime that came into effect on 25 July 2003. We briefly summarise the relevant features of the old regime to provide a backdrop for the regulatory approaches that have been taken to date before considering the new regime.

3.1. THE OLD EC REGULATORY FRAMEWORK

The previous EC framework was embodied in a number of Directives enacted in 1997. These Directives were designed to support the opening up of telecommunications markets in the different member states and the transition from monopoly to full competition. Under these Directives, cost-based regulation was generally limited to operators that have been designated as having significant market power (SMP) in the “national market for interconnection.”¹⁷ This designated market encapsulated both fixed and mobile services and, as such, was much wider than markets that would be defined under competition law. The choice of this wide market was intended to limit cost-based regulation to the former-monopoly incumbents such as BT, Deutsche Telekom and France Telecom. The Interconnection Directive implied that both the fixed and mobile services of the incumbents could have been subjected to cost-based regulation. For instance, the EC’s formal Communication on Interconnection Pricing (98/C84/03), states at section 5.1.1:

The cost of call termination on a mobile network is in most cases not subject to price regulation under the Interconnection Directive. The one exception occurs if the mobile operator is designated by its NRA [“national regulatory authority”] as having significant market power on the national market for interconnection (i.e. the fixed market for interconnection and the mobile market for interconnection combined). In this connection, the Commission has made the following statement to the European Parliament: “The Commission confirms that Article 7(1) of the Interconnection Directive is to be applied to all organisations operating public telecommunications networks and/or publicly available telecommunications services as set out in Parts 1 and 2 of Annex I [i.e. fixed network operators] which have been notified by national regulatory authorities as having significant market power, and only to those organisations.

¹⁷ Article 7 of the Directive 97/33/EC of the European Parliament and of the Council of 30 June 1997 on interconnection in telecommunications with regard to ensuring universal service and interoperability through application of the principles of Open Network Provision (the Interconnection Directive).

Thus the EC did not consider that there was a general need for mobile termination regulation but that it might form part of the regulatory constraints on the former-monopoly incumbents.

There was also provision for national regulators to act in the event of interconnection disputes and determine reasonable terms and conditions so as to secure satisfactory end-to-end communications for users. In resolving interconnection disputes, regulators were required to strike “a fair balance between the legitimate interests of both parties.”¹⁸ A number of operators that would not have been found to have SMP in the national market for interconnect were regulated under this power.

In addition to telecommunications regulatory powers, EU and national competition laws have also been used in relation to mobile termination charges. For instance, the EC’s Competition Directorate-General has been investigating whether the termination charges set by the Dutch incumbent KPN constitute an abuse of dominance (other charges against operators in Germany and Sweden were withdrawn). In its statement of objections, the EC alleged that KPN, through its subsidiaries KPN Mobile (mobile traffic) and KPN Telecom (fixed traffic), has violated the competition rules of the EC Treaty.¹⁹ Specifically, the EC suspected KPN of abusing its dominant position regarding the termination of calls on the KPN mobile network through discriminatory or otherwise unfair behaviour.

3.2. THE NEW FRAMEWORK

The existing regime is being replaced by a package of new Directives that form the *New Regulatory Framework for Electronic Communications Infrastructure and Associated Services* (“the New Framework”). The New Framework is intended to continue to provide for the withdrawal of regulation as markets become more competitive. In particular, the Framework Directives provide that “ex ante regulatory obligations should only be imposed where there is not effective competition, i.e. in markets where there are one or more undertakings with significant market power, and where national and Community competition law remedies are not sufficient to address the problem.”²⁰ To give effect to this requirement, the New Framework essentially provides for:

¹⁸ The Interconnection Directive, Article 9(5).

¹⁹ European Commission press release, *Commission suspects KPN of abusing its dominant position for the termination of calls on its mobile network*, 27 March 2002.

²⁰ Directive 2002/21/Ec of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (the Framework Directive), paragraph 27.

- The EC to identify a list of markets susceptible to *ex ante* regulation, i.e. markets in which competition might not be effective in at least some member states;
- National regulators to assess the level of competition (i.e. whether any player has SMP) in each of the listed markets; and
- Where, and only where, competition is not effective, the national regulators must impose at least one regulatory obligation on the player(s) with SMP in that market. SMP is to be defined as being equivalent to the competition law concept of dominance. The types of regulatory obligations that may be imposed are limited and include the provision of access, non-discrimination, transparency, cost-orientation and accounting separation. The chosen remedy must be objectively justifiable and proportionate.

The New Framework significantly limits the role of national regulators and is intended to achieve a much greater degree of harmonization in approach across the EU member states. One implication of the Framework is that if the EC does not identify a particular market in its list then no regulator anywhere in the EU will be allowed to impose *ex ante* regulation on services in that market, unless it can be shown that the national market has features (not found in other European markets) warranting regulation that is, nonetheless subject to special approval by the EC. Whereas if a market is included in the list then the question of whether or not regulation is imposed and the nature of any imposed regulation is subject to review by the national regulators and subject to consultation processes.

The New Framework also seeks to achieve greater harmonisation through the clearer definition of objectives to be pursued by the national regulators. The primary regulatory objectives include promoting competition, the development of the common EU market and the interests of EU citizens.²¹ In relation to price controls, regulators must ensure that the pricing methodology that is mandated serves to promote efficiency and sustainable competition, and maximise consumer benefits.²² The New Framework also provides the right to an appeal on the merits which has not existed before in some European countries such as the UK.

²¹ Article 8 of the Framework Directive.

²² Article 13(2) of the Access Directive.

3.3. THE EC'S APPROACH TO MARKET DEFINITION FOR TERMINATION SERVICES

The EC published its initial list of markets on 11 February 2003.²³ The list included markets for “Voice Call termination on individual mobile networks.” The basis for the EC’s decision was that “a call to a given user or user’s terminal is not a substitute for a call to another user and this limitation on demand substitution follows through at the wholesale level.”²⁴ The market was considered to be wider than calls to an individual user because it is not possible for an operator to readily price discriminate between termination charges to different users across the network.

The EC examined a range of substitutes and noted the potential for countervailing buyer power arising from:

- Mobile subscribers valuing incoming calls, and so their choice of mobile operator is affected by the price of incoming calls; and
- Mobile subscribers caring about the welfare of callers (such as where the callers are members of the same family or company).

The EC concluded that call termination on individual networks was the appropriate market definition at the current time but that:

*such a definition would be undermined by (i) technical possibilities to terminate via other networks (this would broaden the market definition to call termination on all networks) (ii) evidence that users employ alternative means to circumvent high termination charges or (iii) evidence that users subscribe to networks on the basis of what it costs to be called (the last two would imply a linked market definition, comprising access, call origination and termination).*²⁵

In particular, the EC noted that if subscribers considered the prices of mobile services, including the price of calling mobiles, as part of an overall package, it “would mean that a mobile operator could only raise termination charges and thereby the retail price of incoming calls, (without losing subscribers) if at the same time it reduced prices for other services in the bundle.”²⁶ The EC considered that if a mobile operator could not profitably raise its termination charges then the relevant market definition would consist of linked national

²³ “Commission Recommendation of 11 February 2003 On Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services” (notified under document number C(2003) 497).

²⁴ Commission Recommendation On Relevant Product and Service Markets – Explanatory Memorandum, p.32.

²⁵ Ibid, p. 34.

²⁶ Ibid, p.34.

markets for mobile services. Even if narrower market definitions were adopted, the EC recognised that countervailing buyer power might prevent operators from having SMP. As discussed above, the New Framework tasks national regulators with assessing whether operators have SMP in the listed markets. The EC will review this market definition in June 2004.

3.3.1. Market Definition – Comment

The competition law approach to market definition considers the question of whether it would be possible for a hypothetical monopolist of termination services on an individual network to profitably raise termination charges. The EC has applied this approach only from a demand-side. In fact, the prices of each mobile service in the bundle of services being sold is determined interdependently,²⁷ regardless of whether there are direct demand linkages between the customers who pay for each services. This results because call termination revenues can only ever be generated by winning subscribers. Incoming calls are always delivered to individual subscribers, and therefore incoming revenue will always be just a part of the value of acquiring individual subscribers. If termination charges are raised this will increase the value of subscribers and lead operators to discount subscriber prices to attract the subscribers to its network. The price discounting will continue until the reduction in subscriber prices fully offsets the increased termination revenues so that overall profits are returned to the previous level. This means that competition for subscribers is also competition for termination revenues, as well as for outgoing call and other mobile services revenue streams.

If the market for mobile services is effectively competitive then an operator will not be able to profitably raise its termination rates – any additional termination revenue will be fully offset by lower subscription or outgoing revenue. Conversely, if the market is not effectively competitive, then an operator may be able to profitably raise termination charges or the prices of other services in the market. Accordingly, it is the competitiveness of the market for mobile services which needs to be examined to understand the outcomes being produced within the market.

Furthermore, in the telecommunications industry where network effects matter, the economic drivers for service bundling come directly from the economies of scope on the supply side and the nature of competition in the market.²⁸ Where network effects are present, a mobile operator's current customer base is an important determinant of its future profitability. If the marginal value of the operator's customer base is positive, then the operator will have incentives to charge a price (set a quantity) that is lower (higher) than the short-run profit

²⁷ Fundamentally, this interdependency arises from the substantial economies of scope in production associated with supplying the different mobile services. Such economies of scope are recognised in 'cluster market' approaches to market definition as applied by U.S. courts.

²⁸ Network effects arise from complementarities between a consumer's choice and those of other consumers.

maximising level in order to increase its market share and hence its future profits. A low ‘penetration pricing’ strategy is therefore not necessarily anti-competitive nor predatory. Even on an ongoing basis, the efficient structure of prices will recover the cost of the bundle of services across the individual services taking account of demand factors. In mobile telephony, a key demand factor is the strong customer preference against upfront charges evident in the popularity of pre-pay which has grown to account for the bulk of mobile markets in Europe and Australia.

3.3.2. SMP and Dominance - Comment

Under the New Framework, the notion of SMP is considered as equivalent to the competition law concept of dominance. The term dominance does not in itself have a well-defined meaning or standard of measurement in competition assessment.²⁹

In the EU, dominance has been defined to mean the ability of a firm to “act independently to an appreciable extent of competitors, customers and consumers.”³⁰ This definition of dominance is, however, difficult to apply in practice. First, it is not sensible to think of a firm as acting independently from its customers. Each firm faces a given demand curve which unless completely inelastic, constrains its market behaviour. Second, it is difficult to assess the extent to which a firm’s prices are constrained to the competitive level if it is not known what this level is or whether it accords with the current level of prices. In the presence of significant fixed and common costs, arbitrary allocations of costs based on accounting rules need bear no comparison with the competitive level which is likely to take into account demand factors. For instance, Laffont and Tirole note that unregulated firms “offer discounts to high-elasticity-of-demand customers, adjust their prices to competitive pressures, and carefully coordinate the pricing of substitutes or complements.”³¹

Under the New Framework, the absence of SMP (or dominance) is equated with a market being effectively competitive. Accordingly, if no operator is found to have SMP then no ex ante regulation can be applied in the market. This would suggest that a welfare-based test of SMP would consider whether or not the market outcomes can be expected to be reasonably efficient.

²⁹ See CRA (UK) (2001) “Dominance: meaning and measurement”, *CRA Competition Policy Discussion Papers 2*, December, p. 2.

³⁰ CRA (UK) (2001) “Dominance: meaning and measurement”, *CRA Competition Policy Discussion Papers 2*, December, p. 3.

³¹ JJ. Laffont and J. Tirole, *Competition in Telecommunications*, MIT Press, 2000, p.133.

A further issue associated with the concept of dominance is whether it applies only to a single market competitor occupying a dominant position or extends to the case of collective or joint dominance.³²

³² There has been a recent shift in dominance assessment in the EU to the concept of joint or collective dominance to encompass the case of coordinated market power, especially in the context of oligopolistic industries.

4. REGULATORY DEVELOPMENTS AND APPROACHES

There are significant variations in the regulatory approaches to termination across the EU and elsewhere. These range from network cost-based price regulation as is proposed to be implemented in the UK to a finding, such as by the German regulator, that the market can be expected to deliver reasonably efficient outcomes absent regulation. The majority of EU countries has followed the EC's framework and only applied cost-based regulation if a mobile operator in their jurisdiction was found to have SMP in the national market for interconnection. A number of regulators have, however, sought to regulate all mobile operators under their power to resolve interconnect disputes (e.g. the UK and Austria), or under competition or other regulatory powers derived from national rules.

In this paper, we have focused on a selection of European countries to highlight the differences in regulatory approaches and competition analyses that have been conducted (see Table 1 for a summary). We discuss the UK experience at some length as the UK approach is generally considered to have influenced developments and guided a number of other regulators in Europe to date.

Table 1: Regulation of mobile termination charges in Europe

Jurisdiction(s)	Regulatory Approach
UK, Austria	Charges of all mobile operators to be brought down to LRIC
The Netherlands, Portugal	Charges of all mobile operators capped in line with EU 'best practice' and European average respectively
Belgium, France, Ireland, Italy, Spain, Sweden	Charges of only operators with SMP in national market for interconnection to move towards cost-oriented levels or in line with other countries
Finland	Generally charges are unregulated except for charges levied by SMP operators on calls originating on other mobile networks or from abroad.
Denmark, Germany, Greece, Luxembourg	No termination tariff controls as no mobile operators found to have SMP.

Looking forward, the different approaches across the EU are likely to be harmonised significantly as a result of the EC's New Framework. The requirement to promote efficiency and maximise consumer benefits may also call

into question some existing national approaches developing with regard to other objectives.

4.1. UK³³

Telecommunications regulation in the UK has, to date, reflected a combination of UK specific law, in particular the *Telecommunications Act 1984*, and EU law. The *Telecommunications Act 1984* provides for operators' licences to be modified where, following an investigation by the Competition Commission (CC), there might otherwise be an effect adverse to the public interest that can be remedied or prevented by a licence modification.³⁴ The public interest test permits a wide degree of discretion on the part of UK regulators.

Mobile termination charges were first regulated in the UK following an investigation by the CC (then called the Monopolies and Mergers Commission) in 1998-1999 into the termination charges of O2 (then Cellnet) and Vodafone. The termination charges of the other two mobile operators, Orange and T-Mobile (then One-2-One), were not regulated.³⁵ The CC concluded that the level of termination charges was too high in relation to their costs and that this was against the public interest. As a result, the CC recommended that termination charges be lowered – to a level based on its view of the Fully Allocated Costs (FAC) level – by annual reductions to 2001/02. The CC noted that there was potential for greater competitive pressures on termination that might prove sufficient beyond this period.

The basis for the CC's decision in 1999 essentially informed the CC's more recent decision in January 2003 in relation to the termination charges of all four UK 2G mobile operators.³⁶ The CC recommended that the termination charges of each of the mobile operators should be brought down to a level based on its view of the 'fair charge' comprising the Long Run Incremental Cost (LRIC) of call termination plus a mark-up for fixed and common network costs; a mark-up for 'relevant' non-network costs; and a small mark-up for the network externality. In implementing its decision, Oftel has required the mobile operators to reduce their charges by 15 per cent in real terms before 25 July 2003. Any future reductions will be dependent on the outcome of a review by Oftel in line with the EC's New Framework. Oftel is currently proposing a reduction of 6.95ppm for the 900MHz operators following the finalisation of the EC Review and then other reductions of 15% in 2004/05 and 2005/06 (for the 1800MHz operators, the equivalent reduction is to 7.70ppm and then 14% reductions in the next two periods).

33 CRA advised T-Mobile (UK) in relation to the Competition Commission's Calls to Mobiles investigation.

34 Section 13.

35 See the CC, *Cellnet and Vodafone Report*, 1999.

36 See the CC, *Calls to mobiles Report*, January 2003.

4.1.1. The Basis of the CC's Decision

The CC identified the relevant market as the market for the termination of calls on the network of each operator. This was on the basis of its view that there was currently no adequate substitute for terminating a call other than on the network to which the called party subscribes and that there was insufficient pressure on termination rates from mobile users, including limited awareness of incoming call prices. The CC assembled evidence from customer surveys to inform its view of the current competitive constraints. Each potential constraint was examined and considered by the CC on an individual basis. Ultimately, the question of interest is whether the constraints are *effective in aggregate* to constrain termination rates to efficient levels by causing a sufficient loss in revenues to make price rises unprofitable. In this regard, an operator that raises its termination rates above those of other operators risks losing not only termination revenues (i.e. from fewer calls to mobiles) but also all the other revenues associated with customers who may switch to other networks.

A key part of the CC's decision was its view of the 'fair charge' which comprises a number of elements. The CC found that the LRIC model used by OfTel significantly underestimated the actual costs of the network operators in 2001 and increased the LRIC figures to derive its view of incremental network costs (i.e. the construction of the LRIC model proved of little value in the end because it was decided to adopt actual operators' costs).³⁷ For the 900MHz operators, the adjusted LRIC was 7.1ppm for March 2002 falling to 4.1ppm in 2006 and for the 1800MHz operators the adjusted LRIC was 8.4ppm falling to 4.5ppm over the same period.³⁸ We believe these costs may understate the network costs of the UK operators to an extent. For instance, the cost of capital chosen was relatively low (including a midpoint of the beta range below that used by OfTel for BT),³⁹ assumed asset lives were longer than would be determined by economic obsolescence and there is no recognition of the investments to improve coverage and quality since 2001 (effectively it measures the costs the networks incurred to provide the 2001 level of coverage and quality). It should also be noted that the estimated cost did not include any 3G related costs, such as the depreciation of the operators' 3G licence costs (it did include the relatively small annual charge relating to the operators' 2G licences).

A second element considered by the CC was the non-network costs of the operators. The treatment of non-network costs was a source of significant

³⁷ Given the competitiveness of the mobile market, as well as shareholder pressure, there was little basis for considering that the actual costs of the operators included significant inefficiencies.

³⁸ All figures are at 2000-01 prices.

³⁹ See CC, *Calls to mobiles Report*, paragraphs 2.233-2.234. The UK regulators also disregarded the need to compensate investors for the ex ante risks associated with investing in mobile networks (i.e. an investor will need to have the opportunity to earn a return greater than the cost of capital to compensate for the potential for returns below the cost of capital if the investment does not succeed).

difference between the views of the UK regulators and the operators in relation to the appropriate charge level for termination. The bulk of non-network costs for the UK operators were customer acquisition, retention and service costs (CARS)⁴⁰ which accounted for 49% of their total costs.⁴¹ The approach of the CC and Oftel was essentially to argue that CARS costs are not relevant to termination as they did not consider such costs to be incremental to termination:

*The operators choose to acquire retail customers, and the fact that calls are then made to those customers does not result in any additional customer acquisition costs.*⁴²

The commercial view of the operators was that they invest in acquiring customers so as to earn the bundle of revenues (termination as well as outgoing call revenues) associated with those customers. Thus they seek to recover the investment across those services. This commercial view accords with the economic reasoning that the costs incurred in acquiring customers constitute a common cost in the supply of any of the services associated with those customers. It would be highly inefficient to force operators to recover the bulk of these costs on outgoing calls (forcing outgoing calls to be further above their marginal costs) or upfront charges (for which customers are highly price sensitive as is evident from the rapid growth of mobile markets following the introduction of pre-pay services). Recovering CARS costs equally across the services would add 6.2ppm to the estimated 'cost' of termination,⁴³ leading to it being above current UK rates. The CC did allow operators to recover a contribution to administration overhead from termination services.

A further difference between the UK regulators and the operators arose in relation to the appropriate recovery of fixed and common costs.⁴⁴ Both the CC and Oftel acknowledged that Ramsey pricing provides the economically efficient solution to allocating fixed and common costs so as to maximise economic welfare. The CC's main reason for rejecting Ramsey pricing is economically incoherent:

*In our view, a Ramsey approach is not consistent with the cost causation principle, that callers to mobile phones should pay only those costs that they cause by virtue of making calls.*⁴⁵

40 CARS include costs such as distribution, marketing, handset subsidies, customer care, billing and bad debts.

41 CC *Calls to mobiles Report*, paragraph 7.148.

42 Oftel, *Review of mobile wholesale voice call termination markets – EU market review*, 15 May 2003, p.207.

43 CC *Calls to mobiles Report*, paragraph 7.149.

44 For mobile networks, fixed and common costs are significant and include the cost of network coverage, CARS costs and overheads.

45 CC *Calls to mobiles Report*, paragraph 2.515.

Ramsey pricing is an approach to dealing with common costs, which by definition are not caused by any one service.

Three additional reasons were accepted by Oftel for rejecting Ramsey pricing.⁴⁶ First, it was argued that Ramsey prices were too difficult to calculate because information on demand elasticities was too uncertain. However, there are strong *a priori* reasons to expect termination to be relatively inelastic: Oftel's market analysis suggested that consumers are relatively unresponsive to fixed-to-mobile prices (to the extent that changes in termination charges are passed on); and the cross-price elasticity of subscription with respect to termination charges would be expected to be lower than the cross-price elasticity of subscription with respect to outgoing calls charges. Thus *a priori* reasoning would suggest that overall call volumes could be maximised if more of the common costs were recovered from termination because raising the price of termination would have relatively little impact on demand. The operators provided econometric estimates of the elasticities that confirmed the *a priori* expectations.⁴⁷

The second reason was that "[a] regulated Ramsey-based termination charge would be likely to ensure a set of Ramsey prices for all mobile services only if the retail mobile market was perfectly competitive."⁴⁸ Again this is economically incoherent. Perfect competition requires prices being set equal to marginal cost whereas Ramsey pricing requires all services to contribute to the recovery of fixed and common costs, so that the prices of all services are above their marginal costs. Oftel's concern seems to be that operators might retain a surcharge on termination as excess profits, however, this concern conflicts with Oftel's finding that the retail market was effectively competitive and that evidence of the industry earning excess profits was absent.

The third reason was distributional concerns that Ramsey pricing would result in fixed-to-mobile calls bearing a greater proportion of costs. This seems to reflect the more fundamental difference in approach between the views of the UK regulators and those of the operators as to the optimal price. In particular, the operators submitted models designed to estimate the efficient level of termination charges whereas the regulators viewed such price levels as leading to callers to mobiles bearing an 'unfair' share of costs. The following statement from the CC's report makes the difference in approach clear:

We do not accept the MNOs' arguments that, in effect, consumer welfare is maximized only through the current structure of prices prevailing in the mobile

⁴⁶ Oftel, *Review of mobile wholesale voice call termination markets – EU market review*, 15 May 2003, p.100.

⁴⁷ See *Calls to mobiles Report*, Table 8.10.

⁴⁸ Oftel, *Review of mobile wholesale voice call termination markets – EU market review*, 15 May 2003, p.100. We note that Oftel engaged a consultant to develop a Ramsey-based model that was used by Oftel to assess the costs and benefits of the regulation as well as to determine the optimal externality surcharge. CRA and other consultants engaged by the respective operators also developed Ramsey-based models.

sector. This structure of pricing may, in theory, be an efficient way to recover fixed and common costs, but there are other considerations which we believe should be taken into account in assessing whether a particular pricing structure operates in the public interest. These other considerations include, in particular, whether that pricing structure is equitable as among different telecommunications users, whether it encourages or impedes competition, and whether it encourages patterns of behaviour which are undesirable, such as over-frequent upgrading of handsets, or too little use of handsets in relation to the investment made in them. We believe that the structure which has existed over the past four years has produced an inequitable outcome so far as the customers of the FNOs are concerned.⁴⁹

It is true that the UK regulators accepted that setting termination charges somewhat above costs was desirable to achieve the socially optimal number of mobile subscribers. In the absence of this surcharge on termination, some subscribers might not take up a mobile subscription even though the total social benefit from them doing so would be above the cost of subscription. In particular, it was noted that this would harm even fixed-to-mobile calls who would not be able to contact people as readily as otherwise.

In practice, estimating the optimal externality surcharge requires constructing a system of demand equations so that the private and external benefit created by lowering subscription can be balanced against the deadweight loss created by raising termination charges. On the basis of such a demand model and econometric estimates of elasticities, CRA estimated that an optimal externality surcharge in the UK would be in the range of 3 to 7.7ppm. Economic advisors to the other operators obtained similar estimates.

In contrast, the CC adopted an alternative approach which resulted in an estimate of the externality surcharge on termination of 0.41ppm. This approach is fundamentally flawed. The CC effectively assumed that operators would earn a pool of funds from termination and then use this fund to subsidize only marginal subscribers to join their networks. However, if termination charges are raised, it will increase the value of all subscribers and, through competition between operators, this will lead to subsidies being spread across all subscribers. While the CC estimated that only a small termination surcharge would be required, its approach would mean that many marginal subscribers would not be profitable for operators to acquire in their own right, i.e. it would require operators to voluntarily choose to use termination revenue obtained from other customers to fund marginal customers onto their networks which would not be profitable in their own right. Further, the CC equated the external benefit with the subsidy (rather than the deadweight loss) and thereby failed to balance social benefits and costs – in particular, a large part of the subsidy from termination will represent a transfer rather than a social cost.

⁴⁹ CC, *Calls to mobiles Report*, paragraph 2.402.

Combining the different elements, the CC estimated that the ‘fair charge’ for termination was 6.16ppm in March 2003 falling to 4.73ppm in March 2006 for the 900MHz operators. For the 1800MHz operators, the ‘fair charge’ was calculated as falling from 7.01ppm to 5.26ppm over the same period.⁵⁰ The Ramsey-based models supplied by the mobile operators instead calculated optimal termination charges of around 15ppm.⁵¹

In essence, the UK regulators considered a ‘fair charge’ for termination to be little above the incremental cost of termination. Thus the regulators are effectively proposing to shift the recovery of the bulk of fixed and common costs onto subscriber prices. This ‘fairness benefit’ would be expected to come at a substantial overall welfare loss to UK consumers. Economic consultants, on behalf of the mobile operators, estimated this welfare loss as being around £270m to £520m per year once charges had been brought down to the CC’s ‘fair charge’ level.⁵²

The CC and Oftel have estimated welfare gains from regulating charges down to the ‘fair charge’. However, their welfare modelling relies on the wholly implausible assumption that regulation of termination would result in *all prices falling*, i.e. termination charges and retail mobile prices. For instance, the CC stated (in an appendix to the report): “As all prices change, it is clear that in moving from the without price cap to price cap scenario there will be an increase in consumer surplus (as *all prices fall*)” (italics added).⁵³

The prices presented for the unregulated scenario, when compared with the regulated scenario of the welfare model put forward by Oftel, also confirms that this assumption was used.⁵⁴ There is no basis for the expectation that regulating termination charges down will lead operators to also reduce their retail revenues. In fact, operators will need to have retail prices higher than in the absence of regulation to remain financially viable (and both Oftel and the CC accepted this in the main part of their analyses). We note that since the announcement of the CC’s decision, UK operators have moved to increase pre-pay tariffs and reduce handset

50 CC, *Calls to mobiles Report*, Table 2.11.

51 CC, *Calls to mobiles Report*, Table 9.1.

52 CC, *Calls to mobiles Report*, paragraphs 9.32 - 9.50.

53 CC, *Calls to mobiles Report*, Appendix 9.2, paragraph 3.

54 CC, *Calls to mobiles Report*, Tables 9.19 and 9.20.

subsidies.⁵⁵ Thus, the welfare modelling by the regulators cannot be said to present a reasonable estimate of the impact of regulation.⁵⁶

The CC also considered a form of benchmarking similar to the ACCC's current regulation but based on tying an operator's termination charges to the on-net prices of the other mobile operators (adjusted for the share of an on-net call accounted for by termination).⁵⁷ The CC considered that this remedy was a relatively simple way of introducing competition into terminating markets without distorting competitive markets. Bizarrely, the CC, however, felt that in the UK mobile market with a small number of players interacting repeatedly a LRIC model might be needed in any event to monitor tacit collusion. The CC offered no real analysis of this possibility. The CC's concern seems to ignore the large range of factors precluding tacit collusion in mobile markets such as high fixed and common costs (implying that there are strong incentives to compete at the margin), low barriers to expansion, high churn, significant shifts in demand, technology and prices and high price sensitivity of consumers.

In terms of this remedy, we note that while movements in on-net prices over time might provide some guidance as to the movement in underlying network costs which are also relevant to termination, the *level* of on-net prices can be a misleading benchmark for the efficient level of termination charges for the reasons discussed in Section 2.

4.1.2. Summary

The UK regulators have developed an approach to termination regulation that focuses on the distributional impact of pricing structures and the fairness (or otherwise) of the charges to fixed-to-mobile callers whilst paying little attention to the impact of the regulation on economic efficiency and overall consumer welfare. It is doubtful that the Australian regulatory regime, with its clearly defined objectives set out in the Long-Term Interests of End-users (LTIE) test, provides room for the ACCC to pursue a similar approach even were it motivated to do so. Further, there is potential for the UK approach to be changed going forward in light of the requirements of the EC's New Framework, including the right to a merits appeal.

⁵⁵ For instance, see the discussion of the Vodafone's UK operations in its results for the first quarter ended 30 June 2003 on its website, www.vodafone.com and the discussion of Orange's first half results (Compactnews/telecoms 29 July 2003) in which analysts attribute the lost in subscribers to the reduction in handset subsidies.

⁵⁶ The regulators' welfare modelling also suffers from assuming the services have equal elasticities, from substantially underestimating the fixed and incremental costs of the operators and from using a low value for the externality benefit.

⁵⁷ CC, *Calls to mobiles Report*, paragraph 2.485.

4.2. GERMANY

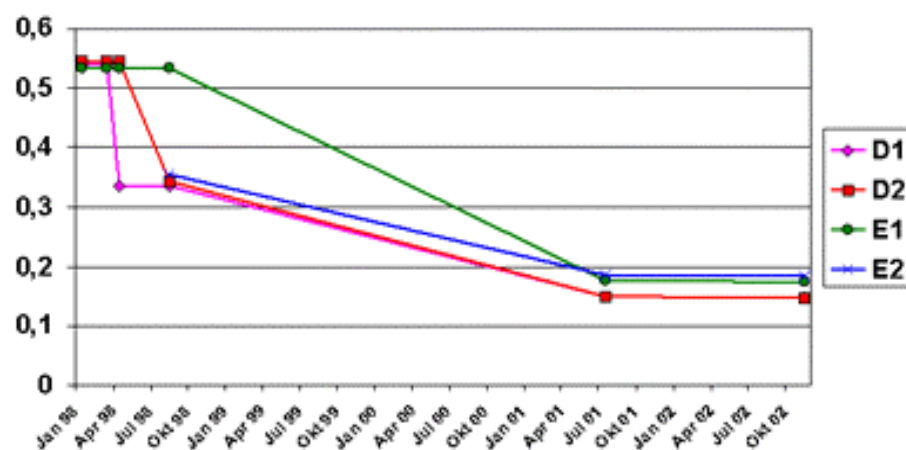
The approach of the German regulator, RegTP, provides a sharp contrast to the approach taken in the UK.

In March 2000, RegTP found that the mobile operators did not have SMP in any market.⁵⁸ According to the RegTP, consumers regard termination as part of an overall mobile telecommunications package and therefore shorten their call duration when prices increase. Further, consumers were considered to take termination charges from fixed to mobile networks into account when making their decisions to subscribe to a particular operator. Hence, the RegTP argued that no mobile operator could act independently in any market and that no regulation of termination charges was warranted.

One factor informing RegTP's view that termination charges were subject to competitive constraints was the downward trend in Germany's termination charges over time. Chart 4-1 below, from RegTP,⁵⁹ presents fixed-to-mobile prices for calls to the different German mobile networks between January 1998 and October 2002.

Chart 4-1

Development of the Telekom-O.3 rates (€/min) for calls fixed network to mobile networks



Figures 1998 – mid-2001: peak time (off-peak time substantially lower)

⁵⁸ RegTP, Official Journal, 8 March 2000, (OJ 5/200, Verf. 21/2000). See also European Commission (2002), Eight Report from the Commission on the Implementation of the Telecommunications Regulatory Package – European telecoms regulation and markets 2002, annex 3, p.26/27.

⁵⁹ <http://www.regtp.de/en/aktuelles/reden/02682/04/index.html>

An interesting aspect of trend shown in Chart 1 is that Deutsche Telekom's mobile arm, T-Mobile (D1 in the Chart), led the reduction in termination rates with the other operators following (whether through competitive pressures from subscribers or bilateral negotiations). This suggests that the presence of integrated fixed/mobile operators can act to reduce mobile termination charges across the market.

RegTP has also raised concerns regarding the impact of regulation on competition noting that "any changes in the mobile – fixed relationship could especially affect those mobile networks with a smaller customer base."⁶⁰ There are a number of ways in which competition might be affected. Higher upfront retail charges could create a barrier to switching and effectively enable the larger operators to lock-in their large customer bases. The loss of marginal customers from the market would disproportionately harm operators that had a larger share of marginal customers than higher value customers. A failure to account for differences in the share of call volumes (leading to differences in costs) would also cause particular harm to the smaller operators. If operators are unable to raise their other prices quickly and fully then the viability of the financially weaker players would be threatened by termination regulation.

4.3. BELGIUM, FRANCE, IRELAND, ITALY, SPAIN, SWEDEN

In line with the old EC framework, the mobile termination rates of operators found to have SMP in the national market for interconnect (i.e. covering both fixed and mobile services) in Belgium, France, Ireland, Spain and Sweden have been subject to regulation. As such, this regulation forms part of the general regulation of the incumbent operators in those countries.

In Belgium, the regulator has ordered the incumbent's mobile arm to reduce its termination charges by 52% to be achieved by annual reductions between 2001 and 2004.⁶¹ This is intended to bring the rates within the regulator's view of cost-oriented charges based on the operator's cost model and the rates of other operators and in other countries. The second largest operator has also acted to reduce its rates.

In November 2001, the French regulator (ART) required two mobile operators with SMP in the national market for interconnection to reduce their tariffs by approximately 40% over a three-year period from March 2002. ART has since expressed concerns over the degree of pass-through by the fixed operators, the structure of termination charges (i.e. charges being based on indivisible blocks of

⁶⁰ <http://www.regtp.de/en/aktuelles/reden/02682/03/index.html>.

⁶¹ http://europe.eu.int/information_society/topics/telecoms/implementation/annual_report/8threport/finalreport/belgiumfinal.pdf

50 seconds) and the differences between termination rates for domestic and international calls that can potentially lead to re-routing of calls.

In Ireland, two operators have been designated as having SMP and are therefore required to set cost-oriented charges. Fixed-to-mobile charges have been reduced by an average of 10 per cent. The regulator is currently considering whether sufficient progress has been made or whether to take specific action. Any such specific action is likely to be considered as part of the implementation of the EC's New Framework.⁶²

In Italy, the mobile termination charges of the two SMP-designated operators, Telecom Italia Mobile ("TIM") and Omnitel Pronto Italia (now called Vodafone), were initially reduced by regulation in 1999. Following a complaint from fixed operators, AGCOM opened an investigation of mobile termination rates in December 2000. AGCOM concluded its investigation in January 2002 without making any changes to the rate structure. The EC noted that "competitive pressure" has resulted in rates being brought down below the regulatory caps.⁶³

In February 2003, Resolution no.47/03/CONS issued by the Communications Guarantee Authority set the maximum termination price to be applied by TIM and Vodafone Omnitel, as of June 1, 2003, at 14.95 euro cents per minute.⁶⁴ This reflected a desire to move further towards cost-oriented prices whilst preserving the dynamism of the market and ensuring an adequate return on operators' investments. The Authority also established a mechanism for the reduction of termination charges for 2004 and 2005. This will be introduced along with a regulatory accounting system based on incremental costs, and the implementation of the new EC Framework. The Authority believes that, within this framework, a planned reduction of a maximum of 10% per year minus inflation in 2004/2005 would be reasonable.

In Spain, two mobile operators have been designated as having SMP in the national interconnection market and must comply with a cost orientation requirement. The regulator required the termination charges of both operators to be cut by 17.13% from 1 August 2002 with the reduction being based on European benchmarking. This regulated cut was on top of operator-initiated reductions of 17% in 2001. The Ministry of Economics has commenced an inquiry into termination rates to determine whether any further reductions are appropriate.

⁶² Commission for Communications Regulation, *Mobile Accounting Separation and Costing Methodologies Next Steps following Consultation - Information Notice*, 27 June 2003.

⁶³ EC, Eighth Implementation Report, Annex 3, p.98.

⁶⁴ http://www.agcom.it/provv/d_47_03_CONS.htm.

In Sweden, the regulator has sought to regulate the termination charges of the SMP designated operators down to its view of costs which is 12 euro cents per minute. The incumbent has appealed this decision.

4.4. FINLAND

Finland is unusual in that the mobile operators set the retail fixed-to-mobile prices. The Finnish regulator does not regulate end-user prices and therefore fixed-to-mobile prices are unregulated. The Finnish authorities have supported this system as leading to greater pricing transparency and ensuring that reductions in mobile charges are passed-through to end-user prices. Fixed operators in Finland have nonetheless been concerned about the level of the implicit amount recovered by mobile operators for terminating calls.

Under Finnish law, operators with SMP in their relevant markets are subject to a requirement that their interconnection charges must be cost-oriented. This has resulted in the mobile termination charges of mobile-to-mobile calls and calls from abroad being regulated.

4.5. THE NETHERLANDS

The Dutch regulator, OPTA, set out its policy at the beginning of 2002 for reducing mobile call termination rates. As there is no SMP designation on any operator in the national interconnection market to whom the cost orientation principle would apply, OPTA has to decide – in the event of a dispute – whether the termination charge of the mobile operator is reasonable.⁶⁵ OPTA defines reasonable tariffs as tariffs which are not above the ‘European best practice’ of non-SMP operators. Mobile operators were required to lower their termination tariffs in two steps on 1 December 2002 and 1 April 2003 (a faster reduction had originally been planned by OPTA but was overturned by the Administrative Court). The 900MHz operators' average mobile terminating tariffs may not exceed €0.1296 and those of the other 1800 MHz operators may not exceed €0.1648.

On April 25, 2003, the Administrative Court decided – in a dispute between two mobile operators and OPTA – that OPTA is not allowed to regulate the mobile termination tariffs in indirect interconnection relations between operators (i.e. where the call is transited via another operator).

Mobile operators have also recently come under pressure from the competition authority to lower rates with the outcome still to be determined. As mentioned earlier, the EC’s Competition Directorate-General has also been investigating

⁶⁵ By October 2002 OPTA had decided in some 44 disputes between mobile and fixed operators.

whether the termination charges set by KPN (the incumbent) constitute an abuse of dominance.⁶⁶

4.6. AUSTRIA

Interconnection fees for Austria's mobile operators – Mobilkom, T-Mobile and tele.ring – are regulated by the Telekom-Control Commission (TKK). On April 14, 2003, the TKK announced its decision on the termination fees charged by mobile operators for calls terminating on their networks.

For the period between January 1 and March 31 2003, Mobilkom's termination fees were set at 11.25 euro cents (per minute and excluding VAT) and the fees for T-Mobile were set at 13.8 euro cents. Going forward, the TKK decided that termination fees should be reduced gradually to enable the operators to adjust to changes in charges and costs.

For the period between April 1 2003 to August 31 2003, termination fees have been set at 11.11 euro cents for Mobilkom and at 13.49 euro cents for T-Mobile. From September 1 2003 to September 30 2003, termination fees have been set at 10.86 euro cents and 13.18 euro cents for Mobilkom and T-Mobile respectively.

Termination and origination fees for the tele.ring mobile network were confirmed at 19.62 euro cents for the period between January 1 2003 and September 30 2003.

The TKK attributed termination fee differences between Austria's mobile network operators to the different dates of market entry and their relative success in the mobile end-consumer market (i.e. relative subscriber bases).

The TKK did not consider that any mobile operator in Austria has SMP. The regulation was instead based on the regulator's power to resolve interconnection disputes and the regulated charge levels were based on a view of "reasonable fees", which takes into account the costs of network elements (depreciation, operation), interest on capital, overhead, IT/IC billing costs and the frequency license fee paid. The costs of external (or network) effects were also taken into account.

TKK considers that mobile telephony cost structures are characterized by large fixed costs, including investments (e.g., license fees and technical facilities) as well as ongoing costs such as personnel, maintenance and financing. In other words, mobile operators enjoy scale economies – as mobile sales increase, the average fixed costs per minute fall accordingly.

⁶⁶ http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/02/4830|RAPID&lg=EN&display=

TKK has – in recognition of the fact that mobile network operators are currently facing high investment requirements for UMTS implementation – decided to allow the operators to retain 50% of cost savings achieved (i.e. only 50% of cost savings are to be passed on in the fees charged to customers).

4.7. UNITED STATES

The US (and Canada among a declining number of other countries) has a Receiving Party Pays (RPP) system in which the mobile subscriber pays for incoming calls.⁶⁷ An attraction of an RPP system in a country such as the US where free⁶⁸ fixed local calls are common is that callers, who may not know whether a particular number being called is to a fixed or mobile phone, do not end up bearing unexpected call charges. As the consumer who subscribes to his/her network of choice also incurs the incoming call cost in a RPP system, it would not be expected to give rise to any concerns that incoming call prices might be excessive (although as we will discuss below, the operation of the US Telecommunications Act has led to regulatory involvement in relation to mobile termination rates).

Low mobile penetration rates have been observed in countries that use RPP. In the case of the US and Canada, this is a striking feature in light of the relatively high incomes of consumers in those two countries. The Federal Communications Commission (FCC) reports the US penetration rate as 49% in 2002,⁶⁹ while Canadian wireless penetration has only just reached 39% in 2003.⁷⁰ This compares with the average EU penetration level of 70% in 2001 and 75% in 2002.

The FCC has been considering whether to promote the greater availability of Calling Party Pays as a way of generating greater competitive pressure on the fixed incumbent operators:

The purpose of this inquiry is to explore whether Calling Party Pays could serve as one means of promoting and expanding competition in the local exchange telephone market. The Commission is committed to taking the necessary actions to increase consumer options for local telephone service.⁷¹

⁶⁷ More accurately this is a 'Mobile Subscriber Pays' system as the mobile subscriber pays for both calls made and received.

⁶⁸ Instead fixed customers tend to pay fixed monthly charges which cover the cost of the local calls as well as the termination charges borne by the fixed operators when their customers call mobile networks.

⁶⁹ http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-235838A1.pdf.

⁷⁰ Canadian Wireless Telecommunications Associations, as at Q1 2003.

⁷¹ FCC news release "FCC seeks comments on CMRS "calling party pays" service option", 25 September 1997, available at http://ftp.fcc.gov/Bureaus/Wireless/News_Releases/1997/nrwl7040.html .

This suggests that regulators should consider the potential impact on emerging competition between mobile and fixed services in deciding their approach to mobile termination charges.

The FCC was called upon by Sprint PCS to arbitrate the level of termination charges for its CDMA network in a dispute with BellSouth.⁷²⁻⁷³ Historically, Sprint paid (high per minute) access charges on all calls in both directions and in arguing against that old regime it advocated bill and keep (i.e., a zero charge on calls it terminated).

As an interconnecting carrier, Sprint is entitled – under the US Telecommunications Act 1996 – to receive its “additional costs of terminating” Bellsouth’s traffic. However, Sprint was required to demonstrate that its ‘additional costs’ exceeded Bellsouth’s rates; otherwise it would have been required by the Act to use Bellsouth’s own termination rates as a proxy. The termination charges that Bellsouth is required to pay under the Act were in addition to the revenue that Sprint received from its own subscribers for incoming calls. The ‘additional costs’ were required to be determined in accordance with the pricing rules designed for fixed incumbent local operators set out in the FCC’s Local Competition Order (FCC Docket No. 96-98). ‘Additional costs’ were defined to include “only the usage-sensitive costs . . . but not the non-traffic sensitive costs.” The estimate did not include any contribution to non-network costs or an externality surcharge. Sprint PCS estimated, on the basis of a Total Element Long Run Incremental Cost (TELRIC) model designed and built to support its negotiations, that its additional cost to terminate Bellsouth traffic was US\$0.066 per minute.

The ‘default’ regulation of mobile termination rates under rules intended for fixed incumbent operators in the US is an extreme example of a factor that is influencing some European regulators. TSLRIC (or TELRIC) was developed as a pricing approach to setting the wholesale rates for services to be provided by fixed-line incumbent operators to their downstream competitors, particularly in the provision of national and international long distance calls. It embodies a number of features and compromises which reflect the purpose for which it was designed.

TSLRIC is the incremental or additional costs a firm incurs in the long run in providing an entire service or services, assuming all of its other production activities remain unchanged. As such, it estimates the *average cost* of an *incremental* service.⁷⁴ It does not estimate the expansion cost of that particular

72 <http://www.psc.state.fl.us/Dockets/Documents/00/16479-00.html>.

73 Sprint PCS is an affiliate of the Sprint Communications Company, the third largest long distance operator in the US and a local provider in a number of states in addition to its mobile operations. CRA acted as an expert witness for Sprint.

74 For a discussion of the terminology of cost modelling, see Intven, Hank, Jeremy Oliver and Edgardo Sepúlveda, *Telecommunications Regulation Handbook*, The World Bank, Washington, 2000.

service assuming a particular level of the service is already being provided and thus it does not provide an approximation of the long run marginal cost of an existing service. This form of average cost pricing has relevance in the context of the pricing of access to essential facilities such as an incumbent's local network. TSLRIC can help identify the overall level of revenues that an owner of an essential facility will need to continue to invest in the facility and therefore it can be useful to ensure that the owner of the facility is not earning monopoly profits. Applying a uniform access price⁷⁵ (based on average cost) can also prevent anti-competitive price discrimination from occurring by forcing incumbent operators to charge the same price to all firms in the downstream market, including its own downstream arm so that it will cover its total costs.

To use TSLRIC in regulation concerned with the *structure of a firm's prices*, rather than their overall level, is perverse. There appears little evidence that 'high' mobile termination rates have harmed competition in fixed markets or harmed consumers.⁷⁶ To the extent that particular anti-competitive behaviour arises, it should be addressed under general competition law rather than regulation to change the overall structure of prices from a structure that is likely to be reasonably efficient. In fact, regulation based on average costs would be likely to come at a substantial overall loss in welfare. Rather an efficient price structure will be based on the marginal costs of the services and mark-ups for fixed and common costs (at both the network and non-network level) in line with Ramsey pricing as well as the need for an externality surcharge.⁷⁷

The adoption of a forward-looking or efficient cost standard in TSLRIC also reflects its design for the fixed incumbent operators who may have an incentive to pass on inflated costs to their downstream competitors. As mobile networks are set up to supply both outgoing services to the operators' own retail customers as well as termination and as they generally operate in highly competitive markets without a legacy of public ownership, there seems little basis for assuming an efficient level of costs different to the mobile operators' actual costs.

A final cautionary note on the application of TSLRIC is that requiring fixed operators to recover common costs such as customer acquisition and retention largely from fixed or access charges is likely to be reasonably efficient given that fixed subscription tends to be highly price inelastic. However, mobile subscribers tend to be highly averse to paying fixed charges as is evident by the popularity of

75 An alternative would have been to vary the access prices in line with differences in the elasticities of demand for local and long-distance calls, however, this may have enabled the fixed incumbents to charge a higher price to their long-distance competitors compared with their own internal transfer price for long distance services.

76 While fixed operators may prefer higher mobile retail prices brought about by lower termination charges (thus weakening the emerging competitive threat posed by mobile operators), this is unlikely to be in the interests of consumers.

77 Similarly, regulators generally do not seek to set the time of day structure of the fixed incumbents' interconnect charges.

pre-pay and the explosive subscriber growth following its introduction. As such, a large part of these costs must be recovered from calls and it would be highly inefficient to lump the costs on only certain call types rather than spreading them across all costs.⁷⁸

⁷⁸ The deadweight loss from raising a price for a service above its marginal costs rises exponentially. As such welfare will be greater if the extent to which any one price has to be raised above its marginal cost is minimised.

5. CONCLUDING REMARKS

In this section, we summarise the key insights that can be drawn from the approaches taken by regulators in the EU and other countries and comment on observable developments going forward.

- The EC's New Framework provides a much more explicit competition law approach to regulation under which a competitive assessment will be undertaken of markets where there is the potential for operators to have SMP. Only if an operator is found to have SMP will *ex ante* regulation be considered warranted. This approach limits the scope of *ex ante* regulation to areas or matters where competition law is deficient or not completely effective.
- The New Framework should achieve a greater harmonisation of *approach* across the EU, although whether regulations are justified in any particular market will depend on the particular characteristics of the country concerned. In particular, national regulators will assess whether any operators have SMP and, if so, determine a proportionate remedy to deal with that market power. Any regulations adopted must be designed to ensure they promote efficiency, competition and maximise consumer benefits. These objectives for price regulation align with the ACCC's LTIE test. However, as the new EC regime has just commenced, it will be some time before proper and relevant lessons can be drawn by the ACCC.
- In the UK, the approach taken and decisions made to date have reflected a greater concern of the regulators with distributional issues or fairness rather than with promoting economic efficiency. While there are matters in which equity concerns will be relevant to a telecoms regulator (such as USO policy), *intervention to change the general structure of prices in a market will generally be an inefficient and ineffective means by which to achieve equity objectives*. There is no obvious reason for fixed-only customers to be relatively disadvantaged compared with mobile-only customers.⁷⁹ Moreover, a movement away from an efficient structure will come at an overall loss in consumer welfare.
- The UK experience highlights the practical problems with LRIC modelling (even putting aside concerns about its relevance to determining an efficient structure of mobile prices). Despite consultants originally estimating LRIC for OfTel in 1998 and extensive workshops with operators since July 2000, the Competition Commission essentially opted in January 2003 to instead

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For instance, for single unit households, a pre-pay phone may be a lower cost alternative to a fixed phone with monthly line rental charges. Further, pre-pay phones do not have regular financial commitments which can be attractive to low-income earners with financing and budgeting problems.

rely on the mobile operators' *actual* costs to inform its view of the 'fair charge'.

- While Austria has also followed a form of network-cost-based approach, it has recognised the need for capital for UMTS investment, particularly given the current hostility of financial markets to further telecoms financing.
- In Germany, the regulator has strongly rejected the idea that mobile operators may have SMP in relation to termination and has therefore seen no basis for regulation.
- In a number of other European countries, regulation has been applied to SMP operators. This can be seen largely as part of the overall regulatory framework for constraining the dominance of the former incumbents.
- In the Netherlands and Portugal, international benchmarking has been used to set rates. Even though benchmarking these rates against those of other European operators may limit somewhat the extent of differences in underlying conditions of demand and supply (and hence costs), it may nonetheless still import regulatory or commercial decisions regarding cost allocation that do not fit well with domestic policy objectives.
- In the US, mobile termination rates have been regulated by default, with pricing rules developed for fixed-line incumbent operators being applied to mobile operators. There are strong economic reasons against applying regulation developed for the access services of fixed-line incumbents to the termination services of competitive mobile operators. Comparisons with the US – if they were to be taken – must take into account the fact that mobile operators in the US receive retail revenues from their own customers for calls they receive as well as from termination charges payable by fixed operators on those incoming calls.

The variety of regulatory approaches taken to mobile termination suggest that one solution does not fit all countries. Ultimately, regulators must determine a regulatory approach based on the characteristics of their national markets and their policy objectives. Whether or not regulation is warranted and, if so, the nature of the regulation will depend on the magnitude of any perceived problem assessed against the regulator's objectives.

Where a regulator has a mandate to pursue economic efficiency, it needs to determine:

1. Whether or not prices in the absence of regulation would be set reasonably efficiently;
2. If not, whether regulation can achieve a more efficient level of prices; and
3. What form of regulation would be likely to maximise net benefits to society.

Economic theory is clear that Ramsey pricing with an adjustment to take account of externalities will best promote efficiency and maximise social welfare. However, estimating this efficient level in practice is time consuming and controversial particularly given uncertainty over key parameters such as costs, elasticities and externalities. Nevertheless, this cannot be avoided if the regulator wishes to implement price regulation which is designed to promote economic efficiency. LRIC based approaches with simple mark-ups (such as Equal Proportionate Mark-Ups) are also time-consuming and controversial and, worse, may generate results which are so far removed from the *efficient structure* of prices that the regulation will cause more harm than good.

If a regulator does not have sufficiently robust information to be confident that price regulation will produce a positive net benefit then there is a strong case for forbearing from regulation. However, there are also more light-handed forms of regulation that provide some safeguard against excessive rates whilst limiting the risk of harm from erroneously setting prices too low. These includes measures aimed at promoting greater competition in the market itself, such as improving the transparency of retail fixed-to-mobile prices to inform the customer's choice between fixed networks and between mobile networks.