

MEMORANDUM

TO: Vanessa Oakley **CRA NO.** D06197-00
FROM: Neil Quigley, James Mellsop and Matthew Burgess
DATE: 30 November 2004
CC: Antony Srzich, Deborah Anderson
SUBJECT: **Mobile Market Definition**

1. INTRODUCTION AND CONCLUSIONS

You have asked for our views on the most appropriate technique for defining markets in respect of mobile telecommunications services. More specifically, you have asked for our views on the applicability of cluster market analysis and two-sided markets analysis.

In our view, the Commission is incorrect to define a (wholesale) market for the supply of mobile termination services on each mobile network. Rather, the market is that for the supply of mobile services, including subscription, origination and termination.

The most powerful framework for analysing competition in the mobile sector, including market definition, is developed in the literature by, among others, Wright (2000, 2002). The two-sided market analysis is consistent with this literature, and the implications are very potent. We explain this framework in this memo (section 2).

On reflection, we think that the cluster market approach actually collapses into the broader framework developed in section 2, and we briefly explain why in section 3 of this memo.

Finally, a further, although weaker, justification for the broader market definition is on the basis of supply-side substitutability, as we outline in section 4 of this memo.

2. COMPETITION IN MOBILE TELECOMMUNICATIONS

Wright (2000, 2002) and Gans and King (2000) model mobile telephony services as a two stage process. In the first stage, each MNO sets its termination charge either unilaterally or by tying rates to other carriers' rates. In the second stage, MNOs compete for customers by setting prices for subscription and/or calling, taking the termination price as given. Depending on its intensity, competition results in the dissipation of some or all termination rents: "any gain from higher termination revenue is to some degree undone by increased competition for cellular customers" (Wright 2000:2). This two stage structure is used because it is a cellular firm's customer base that determines the demand for the firm's termination services (Wright 2000:2).¹

These models posit a link between termination revenue and origination and subscription pricing decisions: increases in termination revenues intensify competition as firms jostle for customers who attract termination revenue. The key insight is that, provided termination and origination/subscription services cannot be feasibly offered standalone, competition will force the *joint* revenues earned for all three services down to (economic) cost, but it will not necessarily force revenue separately earned on each service to equal cost. Indeed, in a competitive market in which overall economic profits equal zero, it must be the case that if a profit is being earned on one service then other services are being sold below (standalone) cost.

The linked structure of the mobile market is a phenomenon seen in markets as diverse as dating services, credit cards, and operating system software. The economic literature classes these markets as *two-sided markets*.² Rochet and Tirole (2004:40) describe these markets as follows:

A market is two-sided if the platform can affect the volume of transactions by charging more to one side of the market and reducing the price paid by the other side by an equal amount; in other words, the price structure matters, and platforms must design it so as to bring both sides on board.

¹ We note that the so-called "waterbed effect" would apply even if the MNO were a monopoly.

² Rochet and Tirole (2004:10-11) provide the following formal definition of a two-sided market:

Consider a platform charging per-interaction charges a^B and a^S to the buyer and seller sides. The market for interactions between the two sides is one-sided if the volume V of transactions realized on the platform depends only on the aggregate price level

$$a = a^B + a^S$$

i.e., is insensitive to reallocations of this total price a between the buyer and the seller. If by contrast V varies with a^B while a is kept constant, the market is said to be two-sided.

And Evans (2002:2):

*A fundamental economic characteristic of two-sided markets is the presence of positive externalities from having the other side on board ...and the inability of the parties to the transaction to internalize these externalities themselves.*³

Firms in two-sided markets are most socially valuable when they can get two (or more) types of customers on board. A dating service is most socially valuable when it can attract both men and women in approximately equal numbers. A credit card system is most socially valuable when it can attract both merchants and cardholders. A newspaper is most socially valuable when it can attract advertisers and readers. Similarly, mobile telephony is most socially valuable when it has a base of callers and mobile phone users.⁴ The essential features of two-sided markets in general are:

1. The cost of the platform that brings the two customer types together is a joint cost; prices do not and *cannot* follow marginal costs in each side of the market (Evans 2002:1). The price structure on each side of a two-sided market considered independently cannot be understood using the economic tools economists apply to one-sided markets (Evans 2002:28);
2. Firms in two-sided markets must optimise both price structure and price level in determining commercial success. For example, if women are relatively reluctant users of dating agencies, an agency that sets the same price for men and women will attract an unhelpfully high proportion of men, even if the price suitably reflects marginal cost; and
3. Price structure is relatively invariant under monopoly, competition and the social planner; it is price *levels* that are sensitive to these modes of competition (Evans 2002:58-9). This is particularly helpful because it essentially breaks the link between the promotion of competition and price structure.

³ We note that the link between mobile subscription, origination and termination is even stronger than that created by externalities – fundamentally termination cannot exist with the subscriber base.

⁴ Also see Armstrong (2004), pp. 4-5.

On market definition, the literature is unequivocal: it is essential that both sides of a two-sided market be included in the competition analysis. There are three reasons for this. First, failure to do so carries an assumption that the other side of the two-sided market will be constant between a regulation factual and counterfactual which is not plausible in a two-sided market. Second, while the rules of competition analysis hold for a two-sided market with both sides considered in aggregate, they break down on each side considered independently because cost and demand is intrinsically joint. This means that in merger and market power analyses, mark-up of price over cost on one side of a two-sided market is by itself unrelated to market power or efficiency. Third, where network effects are important, as they undoubtedly are in mobile telephony, a one-sided market definition will fail to take account of these despite their obvious relevance to a cost benefit analysis. Evans (2002) provides useful examples of the problems caused by narrow market definition at 64-5 and 81.

3. CLUSTER MARKET ANALYSIS

There is relatively little academic literature on the nature and definition of cluster markets. One of the most frequently cited articles is Shiff, Ergas and Landrigan (1998). They state (pages 34-35):

At the most general level a cluster market arises when the economies of scope are such as to require firms to compete not on individual items but rather on a set of items taken jointly.

...

Thus, to say that good A and good B form a cluster is to imply that a firm selling only A or only B would not be able to compete with one selling both A and B – either because the supply cost of producing A and B jointly is substantially below that of producing them separately, and/or because consumers incur additional costs when they purchase A and B separately as against purchasing them jointly.

It is important to note that, according to Shiff et al, economies of scope on *either* the demand- *or* the supply-side may be sufficient to define a cluster market. Clearly the supply-side characteristics of mobile services are such as to make stand-alone supply of termination services non-competitive.

However, the Commission's response (i.e., that one type of (wholesale) customer purchases termination services, and another type of (retail) customer purchases origination services) has some validity. In other words, purchases of mobile services are "unbundled".

Nevertheless, the purchase of a termination service is meaningless (or valueless) unless there are customers to call: in this sense, then, termination services are not really unbundled; rather, their value is intimately tied to the subscriber base. This in turn brings us back to the two-sided nature of the mobile market, and hence to the discussion in section 2 of this memo.

4. SUPPLY-SIDE SUBSTITUTABILITY

A complementary argument that could be made is that application of the Commission's own supply-side substitutability test would result in a wider, mobile services market.

It is useful to begin by noting that termination is an open communication channel that is jointly consumed by both parties to the call. It is a service that is produced using a network platform that is shared with other mobile services. Indeed, apart from call set-up procedures, termination is essentially the same product as origination. This indicates extreme supply-side substitutability between the two products. In particular, any hypothetical monopolist of call termination would face a competitive constraint from any operator that can provide call origination, as such an operator would enter call termination if there were a profit opportunity provided by call termination charges being "too high".

Accordingly, the immediate result of applying a hypothetical monopolist test to the narrow market is to reject the existence of a market for only termination services supplied by an operator. The market would also include origination services supplied by that operator.

It may be asserted that this argument is "too conceptual" in the present case, as hypothetical monopolists of termination and origination are indeed very hypothetical! Still, the fact is that the supply-side economies of scope are extremely strong in mobile telecommunications. However, it is the combination of these with the network externalities and the interrelationship between subscription, origination and termination that really define competition analysis in this sector, leading us again towards the potency of the section 2 analysis.

5. REFERENCES

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