

# Competition Memo: March 1999

## What price is right?

### Lessons from the UK Calls-to-Mobile Inquiry



INTERNATIONAL

The idea that companies should set prices which are “cost-reflective” is familiar in regulation and competition policy. This is the standard basis for prices imposed by regulators on regulated companies. It typically also underlies the attitudes of competition authorities in assessing claims of excessive, discriminatory, predatory or exclusionary pricing by dominant companies.

At a basic level this idea is correct: when price rises above marginal cost, consumers buy less. The consequent reduction in output is a net loss to the economy as a whole. This is, in theory, economically inefficient. Yet, in practice no company could stay in business by pricing at marginal cost because fixed costs must be paid somehow, so this piece of theory provides little practical guidance.

Where fixed costs must be covered, as is usually the case, economic efficiency requires single-product companies to price at average cost. But even this is of little help in the normal instance where a company supplies more than one product, and where there are *shared* costs between these products. The problem then becomes one of allocating costs which are not “caused” by any one product alone – without such an allocation, there is no way of measuring the “average cost” of a product. In such cases, the validity of the usual “cost-reflective pricing” approach is, at best, questionable. The recent inquiry by the UK Monopolies and Mergers Commission (MMC) into the pricing of calls to mobile telephones illustrates the problem.<sup>1</sup>

#### Calls-to-Mobile

The MMC inquiry concerned termination charges – the charge each mobile network operator (MNO) makes to other operators for conveying a call across its mobile network, to a mobile subscriber. At the time of the MMC reference, these charges were not subject to any regulation. The UK telecoms regulator, Oftel, had argued that termination charges were too high, and recommended that a price cap should be imposed. Oftel’s view was based on an assessment of MNOs’ costs.

The parties debated how costs should be allocated for the purposes of a price/cost comparison. In mobile telephony there are very substantial shared costs between services. Many of the costs incurred by MNOs must be incurred regardless whether any outbound calls are made by

subscribers, or whether any incoming calls are received.

#### Handset Costs

A particular bone of contention in the MMC inquiry was the allocation of the costs of mobile telephone handsets. MNOs effectively subsidise new subscribers by pricing handsets well below cost. Their rationale is that this encourages expansion of the network. Oftel argued that handset costs were a cost of network “access” – regarded by Oftel as a distinct service from either incoming or outgoing calls – and should therefore not be allocated even in part to incoming calls. Vodafone, on the other hand, pointed out that calls to mobile phones can be made only once a subscriber has purchased a handset and is connected to the network. Consequently, the company argued, handset costs should be regarded as a cost shared between incoming and outgoing calls.<sup>2</sup>

This raised an important question with wide implications in competition policy. What principles should govern cost allocation where a competition authority seeks to establish a benchmark against which to compare prices, in circumstances in which industry technology means substantial shared costs? Perhaps surprisingly, the economic foundations for conventional allocation approaches are pretty flimsy.

#### What is Desirable About “Cost-Based” Prices?

Oftel followed standard procedure in first adding up all direct costs, both fixed and variable, for each service. Some costs were allocated entirely to “access”, while costs shared between incoming and outbound calls were allocated in proportion to a measure of the relative output volumes of each service (usually by call minutes). But there is no reason why a pricing structure determined in this way should have any particular merit.

Economics has very little to say on the basis of costs alone about the most economically efficient pricing structure for multi-product firms. In fact only two simple propositions can be stated about the relationship between individual product prices and costs in an idealised, economically efficient market outcome<sup>3</sup>. These are summarised in the following box.

<sup>1</sup> Lexecon acted as economic advisers to Vodafone on this inquiry.

<sup>2</sup> Vodafone rejected the relevance of the “access” concept – a view that was ultimately shared by the MMC.

<sup>3</sup> Economic theory predicts that, provided there are no barriers to entry, in many circumstances the market outcome will be the economically efficient one.

### Cost-based Rules for Efficient Multi-product Pricing

- (i) The price of any product will be no *lower* than the *incremental* cost of providing an extra unit of the product; nor than the *average incremental cost* of all units of that product<sup>4</sup>.
- (ii) The price of any product will be no *higher* than the average *stand-alone* cost of producing that product.

Obviously these two rules do not in practice go very far towards determining exactly what the “right” price should be for each product or service – they merely give rather wide lower and upper limits on the price. If there are large shared costs, this leaves plenty of room for disagreement.

### What Makes for Economically Efficient Pricing?

But if costs alone are not enough, what criteria *should* determine prices in the interests of economic efficiency? A useful starting point in thinking about this question is to remind ourselves why it is that prices matter to economic efficiency. The key to efficient pricing lies in considering the *responses of customers* to relative prices.

This brings us to a principle first established by the mathematician and economist Frank Ramsey over 70 years ago. Ramsey asked what prices would be efficient where customers unavoidably have to pay more than the marginal cost of producing the items they are purchasing – because of fixed costs, or because of a need to raise tax revenue. Ramsey concluded that, in the most efficient price structure, the mark-up on different products above their marginal cost should be inversely related to customers’ respective price sensitivities for the products. Thus, if demand for product A (e.g. handsets) is very sensitive to price (i.e. price-elastic), while demand for product B (e.g. calls to a mobile phone) is not, then the price of product B should recover proportionately more of any shared cost than that of product A. This will keep to a minimum the distortion in economic behaviour induced by too-high pricing.

### Ramsey Pricing

This approach is known as Ramsey pricing. It is an instance of the general principle that allowing price discrimination frequently can improve economic welfare. When coupled with the condition that economic efficiency requires firms to earn only “normal” profits on their overall operations, it gives a *demand-led* cost allocation approach. Applied to mobile telephony pricing, it means that it is almost certainly inefficient for the full burden of the handset charge to be borne solely by subscribers (as

opposed to callers) to a network. Making subscribers bear the full cost will tend to distort behaviour by discouraging handset take-up, making it impossible for anyone to call those individuals who, because of high handset prices, choose not to connect to a network.

The MMC recognised this point in essence. It acknowledged that a subscriber’s decision to join a mobile network gives rise to an *externality* (a benefit accruing to persons other than the decision-maker), in that the new subscriber’s decision to join makes it possible for others to call him/her on a mobile phone. For that reason the MMC allocated a proportion of handset cost to incoming calls.

Ramsey pricing is usually regarded as a somewhat obscure topic in regulated industry economics. This is entirely wrong. It applies to any multi-product firm with substantial shared costs. In fact many – probably most – real-world firms are multi-product firms. And large shared costs routinely arise within multi-product firms.

By contrast, the application of simple cost allocation rules, where shared costs are allocated in proportion to direct costs or some simple volume-based “cost driver”, gives the wrong results in many industries. Even Ramsey pricing cannot promise to give the whole answer in all circumstances – for one, it is based on a *static* analysis, which ignores the importance of providing incentives for development and take-up of new products over time. But at least it is a step in the right direction, recognising that the world is usually more complex than the economist’s textbook model of single-product companies.

### Conclusion

Ramsey pricing has received the approval of many regulators and competition authorities – in *principle*. Practical use of Ramsey principles in price regulation can be problematic because demand patterns are usually more difficult to measure accurately than costs. For this reason authorities tend to avoid demand-related criteria and prefer to rely on costs alone. In the calls-to-mobile inquiry, the MMC nominally abided by regulatory convention in using cost models as a guide to mobile telephony termination charges. However, the MMC acknowledged the limitations of such an approach.

Ultimately, the MMC decided, the key issue was the prospect of *competition* for the services in question. This makes sense: provided they are subject to effective competition, firms left free to set price by trial and error will eventually get the results roughly right. The same cannot always be said for conventional cost allocation approaches.

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<sup>4</sup> The average incremental cost of product A includes any fixed costs which are incurred only in producing product A, but not any costs shared with other products.