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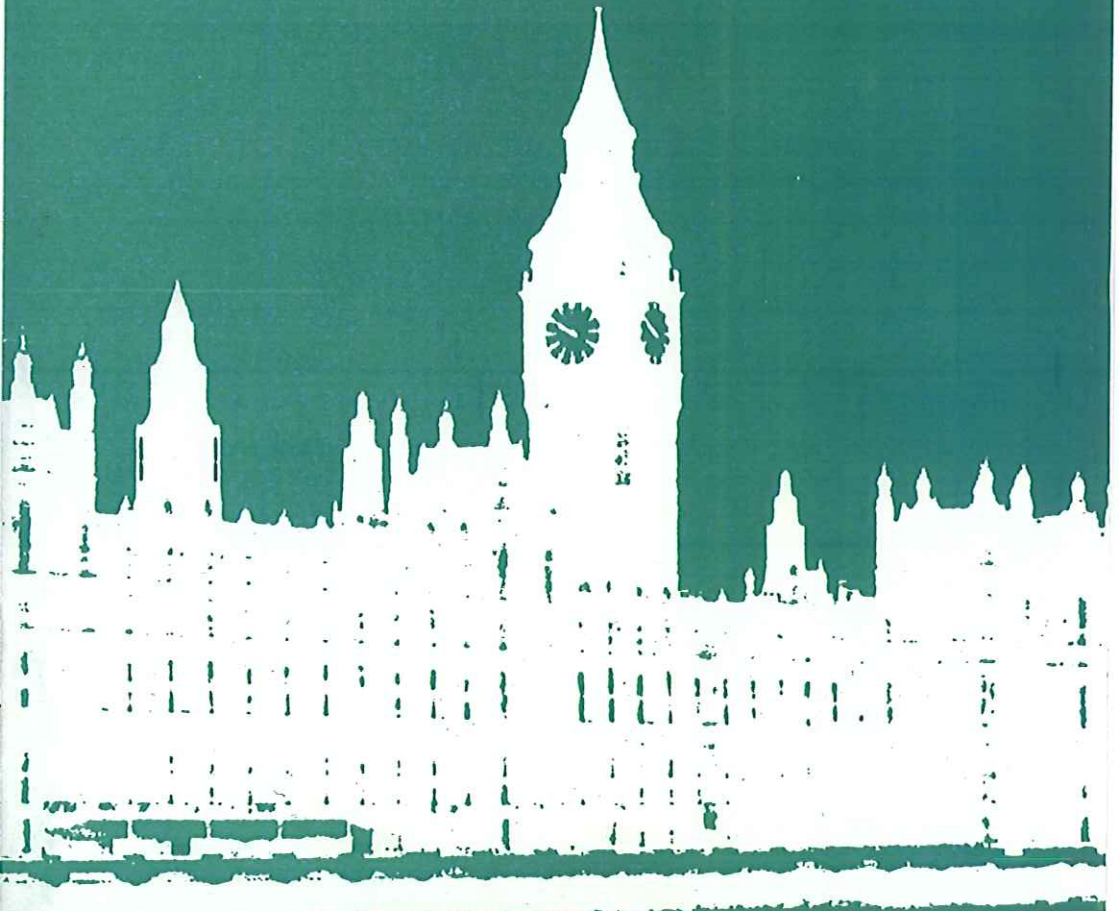
Policy Study No 123

Freeing the phones

the case for *more* liberalisation

William Letwin



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1991

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Contents

Notes

1. Citations in the text are given in the following forms:

   (9.12) refers to Chapter 9, paragraph 11 in the Government's Consultative Document, *Competition and Choice: Telecommunications Policy for the 1990s*, Cm 1303, November 1990.

   (B T 8.3) refers to Chapter 8, paragraph 3 in BT's response to the Consultative Document, *Serving Telecommunications Customers*, 14 January, 1991.

   (M p.5) refers to page 5 of Mercury's response, *The Mercury Response*, 1991.

   (W P 3.43) refers to Chapter 3, paragraph 43 of the Government's White Paper, *Competition and Choice: Telecommunications Policy for the 1990s*, Cm 1461, March 1991.

2. A glossary of technical terms is provided at the end of the paper.

Introduction

The Government has decided to end the telephone duopoly. The duopoly was established when, after privatising British Telecom in the early '80s, the Government licensed Mercury to compete with BT in providing ordinary telephone service, technically described as public switched network service. It assured Mercury that no other competitor[1] would be admitted for seven years, after which the situation would be reviewed.

Accordingly a 'duopoly review' opened last November with the publication of the Government's consultative document, *Competition and Choice: Telecommunications Policy for the 1990s* (Cm 1303). Over two hundred written responses were submitted, including an earlier version of this Study. In the light of these and other comments, as well as of discussions between the Director General of Telecommunications (DG) and BT, the Government reached conclusions which are set out in the White Paper published this March, *Competition and Choice: Telecommunications Policy for the 1990s* (Cm 1461).

In view of its devotion to free markets, it may seem strange that the Government chose to move from statutory monopoly to statutory duopoly – rather than to open competition. Yet the Government's reasoning seven years ago is easily understandable. For any company to enter into competition with BT, armed as it was with an established ubiquitous network, was certain to be very costly and risky. If entry had been opened to more than one competitor, nobody might have thought it prudent to enter. If, on the other hand, only one company were allowed to enter, it would be assured at least that while contending against BT it would not need to fend off a swarm of other competitors, who might have preferred to attack Mercury and each other rather than BT. Recognising this, the Government decided, quite rationally albeit not necessarily most wisely, to admit only Mercury for the time being.

Now, after having evaluated the seven-year experiment with duopolistic competition, the Government has opened the door to additional competitors.

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1. By a historical anomaly, the municipal telephone system of Kingston upon Hull was not absorbed into the Post Office, and now continues as an independent company providing service in its local area. This minute third company is excluded from consideration here.

This new policy is most desirable. Effectively competitive markets, requiring little if any regulation, would serve customers better than markets which are duopolistic in legal form and virtually monopolistic in fact, and which must therefore be regulated at considerable cost and with imperfect effect.

In certain particulars, however, the Government's conclusions should be modified so as to permit more expeditious entry of competitors as well as more effective regulation in the meanwhile. Such recommended modifications are summarised in the final chapter.

It must be emphasised that the goal is not merely to admit competitors but to achieve an effectively competitive order, which requires the continuous presence of many robust competitors. We cannot be altogether certain that the effort will succeed.

Doubt arises mainly from the possibility that BT is a 'natural monopoly'. In other words BT may enjoy economies of scale and scope that would enable it to defeat any smaller competitor.

There are good reasons to be sceptical about whether BT (or its counterpart firms in other network industries) has in the past enjoyed cost advantages resulting from its great size and vertically-integrated operation. Even if it used to once, it might not do so in the future.

Nevertheless, there is enough uncertainty about economies of scale and scope to make it sensible to regard the new policy as in some measure an experiment. As such it is promising and safe. If the experiment fails – because few competitors enter or only slowly, or some competitors go bankrupt, or others fail to curtail BT's dominance – little harm would be done to customers and the public interest. If on the other hand the experiment succeeds, it would contribute to the public good not only by its direct effect on telecommunications markets but also by indicating that increased competition could be effective in other network industries thought to exhibit economies of scale and scope.

1
Background

As a preliminary to evaluating the Government's new policy it will be useful to review the basic technology and economics of a public switched network.

Technology of the network

The switched network's components and operations are immensely complex, needing a recondite vocabulary to describe their detailed working, continually changing to incorporate innovations of equipment and practice, a mystery to most ministers, MPs and others who influence the making of public policy. As usual in such matters (like, for instance, the choice among various types of atomic power reactors), policy-makers may be tempted to delegate too much authority to technical experts. But policy-makers need not in this instance be over-modest in the face of technical complexity. For though the technical details of a telephone network are too difficult for a layman to grasp, their essence is quite simple.

The technical essence of a telephone network can be seized simply by considering what it was like when telephoning began a century or so ago. Each subscriber had a handset in his home or place of work. Each handset was connected by wire with a local exchange. Situated at the exchange was a switchboard capable of connecting any telephone with every other. Fairly soon, as exchanges multiplied, they were connected with each other by lines, known (by analogy with railroad practice) as trunk lines or long-haul lines, and with trunk switches. The telephone network in say 1900 thus consisted of five classes of equipment: handsets (colloquially 'receivers'), lines to the exchange (now called 'local loops'), exchange switchboards, trunk lines, and trunk switchboards. These remain today the essential components of the public switched network.

Needless to say, the technology has changed very considerably.

Primitive handsets have been superseded not only by refined and elaborate handsets, but also by PBXs and PABXs (private switchboards that serve large offices and plants), by fax and telex machines (that can pass written messages), and by a number of yet more specialised devices. Accordingly the original name of receivers has been subsumed in a broader category of 'subscribers' terminal equipment'. Yet, as the word 'terminal' reminds us, such equipment,

whatever its form and function, marks the boundary between the network and the user.

Local loops, the pair of copper wires linking terminal equipment with the local exchange, though still the typical device, are no longer the only one. Copper wires have been technologically superseded by glass fibre. Physical linkage of terminal to exchange can be replaced by radio linkage, as in car phones and telepoint. Fundamentally, nevertheless, the function of linking terminals to exchanges is an inescapable step in the network's operation.

Exchange switching is no longer the domain of operators plugging sinuous cables into crisscross patterns on a large vertical board. Besides operating automatically, exchange switches can automatically record the destination and duration of calls, transfer calls from the original destination to other destinations, and perform tricks of many other sorts. Local exchanges have been enlarged in capacity. Many are designed to serve just short of a million lines. Moreover, exchanges in large cities, though each designed to serve at most ten thousand lines, are grouped by switching centres that link from ten to twenty exchanges, so in effect providing local switching capacity of one or two million lines. But none of this expansion has essentially altered the local switching function.

Trunk-line service has undergone similar technical evolution. Simple wires were replaced by co-axial cables and are now being replaced or augmented by glass fibre. In the meanwhile, long-distance transmission increasingly relies on microwave radio operating from tower to tower, or from ground stations via satellite.

Trunk switching has been improved dramatically by computerisation. A trunk network can be likened to a spiderweb, a lattice work along which the spider can move from one point to another by a great variety of routes. Messages can pass from one point to another of a trunk network by a similar great variety of routes. Of all possible routes for a given long-distance call, some are at any moment inoperable because particular segments are fully engaged or out of order, and some are more direct or cheaper than others. The basic task of trunk switching, which is to identify the route that will complete a call most quickly and cheaply, a job which used to be done slowly and inaccurately by operators, is now done quickly and accurately by computerised switching.

All in all, then, the public switched network still comprises five distinguishable technical elements, despite all technological evolution in this century. (International service, though different in economic organisation, is technically equivalent to domestic long-distance service.)

Competition can be introduced separately into each of the five submarkets comprised in the public switched network market. Technically speaking it is possible to have different companies competing in the supply of customers' terminal equipment, local loops, exchange switching, trunk-line service, and trunk-line switching. (Indeed, supply of terminal equipment is already very competitive.) Alternatively, at the extreme, it is technically possible to admit competitors who would provide competition with BT on a comprehensive basis, that is, who would provide lines and switching all the way from terminal to terminal – as Mercury now does for some customers. Nor is there any significant technical obstacle to a mixed structure in which some companies compete with BT and Mercury on a narrow front – such as providing trunk line service only – while others compete across the whole network. The Government now proposes to licence some competitors to operate only local or trunk or international service while licensing others to operate any combination of the three. Offering such latitude is clearly the best way to encourage entry.

Economics of a telephone network

Many economists who favour free competition in general maintain that it cannot be achieved in public switched network service. According to them, a network such as BT's is a 'natural monopoly'.

They come to this conclusion because they believe, in the first place, that a telephone system enjoys what are known as 'economies of scale'. This means that, all else being equal, the average cost of carrying a message declines as the number of messages carried by the system increases[2]. Moreover, in the view of these economists, these economies of scale are for practical purposes inexhaustible. In other words, no matter how large the number of messages becomes, and no matter how much the network may have to be expanded to accommodate the increased traffic, the average cost per message will continue to decline.

If this were true, no relatively small competitor (such as Mercury) could effectively compete with a large one (such as BT). The small competitor might be exactly as efficient as the large one – in the sense that it could produce service at just as low an average cost as the large one if it produced the same volume of service. Nevertheless, because it produces a much smaller volume of service, it necessarily incurs a

2. Average cost per message is defined as total cost incurred by the system divided by the number of messages.

higher average cost than the large one. Consequently the large company could always drive the small one, or any number of small ones, out of business by setting a price for service which, though high enough to cover its own average cost, would be too low to cover the small competitor's greater average cost. Sooner or later, accumulating losses would force the small competitor or competitors to depart defeated.

Not only would competition be evanescent in the presence of a natural monopoly, but it would be detrimental while it lasted. As the first competitor entered the previously monopolistic market, it would divert some of the erstwhile monopolist's traffic to itself – by offering a lower price or, what comes to the same thing, better service at the same price. By thus reducing the erstwhile monopolist's output, it would push up the erstwhile monopolist's average cost. In so doing, the competitor would deprive all telephone users of the opportunity to benefit from the minimal average cost that the dominant firm could and did achieve while it was the sole supplier. As the dominant firm's average cost rose, it would tend to raise its price. Competition, impermanent in the long run, would thus in the short run injure the great bulk of customers who continue to be served by the dominant firm.

Competition is said to be futile in public switched network services not only because of economies of scale but also because of economies of scope. These occur whenever two different services can each be rendered at a lower average cost if produced together than if produced separately.

For instance, if the same company provides and maintains both your telephone handset and your exchange line, and the two go out of order simultaneously, then an engineer can repair both in the course of a single visit, doing so more cheaply than if handset and line were maintained by two separate companies who sent out two engineers. So a large firm whose network provided all possible telecommunications services could produce each of those many services at a lower average cost than if each were produced by separate and necessarily smaller firms. Economies of scope, so far as they prevail, suggest that public switched service is best provided by a vertically integrated firm.

Taken together, economies of scale and of scope are thought to justify a vertically-integrated monopoly as the 'natural' and most efficient organisation of public telephone service.

But since those who believe this to be the case recognise that such a monopoly, if privately owned, could and would exploit its customers,

they maintain that the proper role of government is paradoxically twofold. One, government must exclude competition, so that the monopoly can achieve the utmost benefits from economies of scale and scope. But two, government must regulate the monopolist's business in ways calculated to make it behave as though it were part of a perfectly competitive industry – an industry that translates low costs for the producer into low prices for the consumer.

Those conclusions about the appropriate line of public policy stand or fall depending, for one thing, on whether public switched networks do enjoy economies of scale.

One way of looking at the question is to examine the record of vertically-integrated monopolies such as the nationalised telephone systems of many countries or private firms like AT&T (the American Telephone and Telegraph Co) before it was dissolved. Econometricians have made many meticulous and laborious studies comparing the growth of such a company's output with the growth of its total cost. If output of all services has grown faster than total cost, the average cost per unit of output has declined as output grew, which means that economies of scale were present. The same is true for any particular service, such say as trunk switching. Econometric studies have in fact regularly concluded that public switched networks, in part as well as whole, do exhibit economies of scale, unexhausted and, for all one can tell, inexhaustible.

These findings should be treated sceptically.

The original data used by the studies are unreliable. Figures about costs must be drawn from a company's accounts, which are drawn up with diverse ends in view, and calculated or tempered according to conventions laid down by accountants, lawyers, and public officials, none of whom is exactly devoted to making life easy for economists. Thus, for instance, depreciation costs – typically the largest single item after labour costs – are often fairly arbitrary estimates, based on conventional opinions or guesses about how long a piece of equipment will last before it needs to be replaced for reasons of age or obsolescence, and what fraction of its productive power is used up in each successive year. Similarly, units of output – for the firm as a whole – are difficult to assess. Figures will be available for each sort of service: local voice calls, long-distance voice calls, digital transmission, fax, telex, and many others. But there are various ways in which these figures might reasonably be added up: for instance according to the total time of all service provided, or time multiplied by distance travelled, or yet more complex methods.

As the last point indicates, much of the inherent difficulty, which

forces econometricians to make arbitrary judgements, stems from the fact that a telephone system produces many different products, not just one. If the econometrician's objective is to measure economies of scale in any one of these services, he must allocate to it some fraction of the cost of equipment and labour that is used in providing two or more types of service. A classic example of this problem is local-loop service, which is used for local calls as well as for long-distance calls. How much of the total cost of carrying subscribers' messages from their terminals to the local exchange switchboard should be attributed to local service and how much to long-distance service? That apparently simple question created turmoil in the US for many years and cannot be answered in any single way that is demonstrably most correct. As one highly authoritative academic study puts it, 'determining the existence ... of scale economies in even a single product line is quite complex and often less than unambiguous or clearly determinable'; determining it in a multiproduct industry is 'even more complex'; and determining it for an industry which, like telecommunications, has experienced rapid growth and rapid technological change, yields results the most questionable of all. Nevertheless this study concedes that telephone systems probably do exhibit some economies of scale, while suggesting that these apparent economies for the system as a whole 'may very well stem from economies present only in one area [such as long distance lines] and not in other areas of telecommunications service [such as production of customer premises equipment].' Moreover it holds that economies of scale in the system as a whole may well be eroded in the future by technological change or nearly exhausted by growth in the industry's output[3].

Even deeper doubt is cast by other economists on presumed findings that telephone systems display continuous economies of scale. They argue that any such economies, even if they do exist, only reflect a history of statutory monopoly. They maintain, contrary to the usual view that natural monopoly justifies a monopoly *de jure*, that it is the existence of legal protection which has given the monopolist economies of scale and scope, which were never there inherently and which would probably vanish if the industry were opened to competition. In their view, the only reliable way to test the presence of economies of scale is to remove obstacles to competitive entry.[4]

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3. John R Meyer et al., *The Economics of Competition in the Telecommunications Industry* (Cambridge, Mass.) 1980, pp. 147-148.

4. John T Wenders, *The Economics of Telecommunications* (Cambridge Mass.) 1987, pp. 169, 217, 235.

On balance, evidence of past economies of scale and scope for a telephone system as a whole must be considered inconclusive. Their disputable existence in the past does not provide firm ground for predicting that they will continue unexhausted in the future. Public policy cannot prudently be based on the assumption that a telephone system now is and will continue to be a natural monopoly.

If BT does enjoy economies of scale and scope that are unexhausted and will for some time remain so, then the case for admitting competition would be by no means open and shut. Rather, the ideal policy might be for the Government to re-establish BT's statutory monopoly, which would enable it to produce service at the lowest possible cost, and at the same time to reinforce the regulatory powers of OFTEL, which would enable it to transfer the benefit of BT's low cost to customers in the form of the lowest possible price.[5]

However, an opposite conclusion, in favour of competition, can be erected on two propositions. First, despite its economies of scale and scope, BT operates less efficiently than it could and than its competitors might. Second, OFTEL regulators, no matter how extensive their statutory powers, could never satisfactorily identify the average cost incurred by BT in producing any of its particular services. Moreover, any dedicated effort by OFTEL to identify those average costs and to set prices accordingly would make the regulatory process so expensive for OFTEL and BT as well, that the cost advantage of BT over any smaller rival would be diminished if not reversed.

In the Consultative Document the Government stressed that first proposition. While conceding that BT enjoys economies of scale and scope in various of its services (e.g. 11.14), it suggests that BT is not 'fully efficient', partly because 'the very existence of a monopoly[6] is itself likely to foster inefficiencies'. (7.8) The apparent paradox, that efficiency stemming from economies of scale may nevertheless be less than 'fully' efficient, can be resolved easily. Economies of scale mean only that average costs decline as output rises, all else being equal. 'Full efficiency' means that at any given level of output, average cost is as low as the best technology on hand would make possible.

The relation between the two concepts is illustrated in the graph on

5. The lowest possible price that could be maintained in the long run for any of BT's services, in the absence of subsidies from the Government and of cross-subsidies from any other of BT's services, would exactly cover the average cost of producing that service plus a margin of profit that would allow BT a normal rate of return on its capital, 'normal' being defined as the long-run rate of return by businesses just as risky as BT's.

6. Though BT is no longer a monopoly *de jure*, it remains virtually a monopoly *de facto*. See pp. 10-11.

page 37. Suppose that before any competitor enters, BT supplies the whole demand of 10mn units at an average cost of 3p per unit. On entering, a competitor supplies 1mn units, at the far higher average price of 7p per unit, for despite operating on the fully-efficient cost curve it suffers the disadvantage of operating on a much smaller scale. At the same time, BT's average cost per unit is raised from 3p to 4p because its output has been reduced from 10mn to 9mn. As this purely hypothetical example shows, the entry of a competitor may have a sharply adverse effect on costs, in the short run at least. But what the Government's argument for competition rests on is the expectation that the competitor's entry, coupled with the possible entry of still other competitors, will compel BT to defend itself by moving from its previous, relatively inefficient cost curve to the fully efficient one, so reducing its average costs below the previous level.

In short, on the Government's reasoning, competition is advantageous – as far as cost of production goes – not because any competitor might be able to produce more cheaply than BT (or even as cheaply) but rather because the threat of competition would compel BT to produce more cheaply as a measure of self-defence. A question might be raised whether the cost advantage gained by BT from moving to full efficiency would outweigh the disadvantage it suffered by moving to a lower output. As to the short-run effect, the Government does not and probably could not demonstrate a net advantage. But in the longer run this difficulty would vanish. Because economies of scale are determined by the absolute size of a firm's output rather than by its relative share of the industry's output, BT would maintain all its previous economies of scale as long as its total output remained steady, even though its market share were declining. Inasmuch as total demand for telecom services has been increasing fast, BT will most probably not only maintain but increase its absolute output, thus perhaps benefiting even more than before from economies of scale.

The second broad proposition underlying the Government's case for the virtue of competition in an industry that may be naturally monopolistic – namely, the inescapable difficulty of regulating the monopolist's prices properly and cheaply – is discussed below (pp.31-32).

Economic consequences of the duopoly

A natural first step in evaluating the feasibility of more competition in network services is to see how well the experimental animal, Mercury, has fared.

In commercial terms, Mercury has enjoyed a striking success. Since beginning to operate in 1987, its volume of business, as measured by the number of lines ordered by customers, has at least doubled every year and has now reached about 400,000. Its turnover has increased from £22mn in the earliest half-year to £316mn in the latest, and over the same period its net earnings before tax have risen steadily from a loss of £12mn to a profit of £50mn. It claims that it now supplies 14% of Britain's international telephony and, more important, 30% of the traffic of London's financial market. Its long-distance network is accessible to 70% of the population, though far less than 1% of the population uses it as yet.

Unfortunately this success story tells policy-makers nothing about the critical question of whether Mercury – and, by extension, any additional competitors who might enter in the near future – can produce at average costs as low as BT's. To be sure, Mercury's prices are lower than BT's, as they had to be to lure customers. Yet the fact that Mercury charges lower prices does not mean that it operates at lower cost. On this question the Government enters an open verdict: BT's economies of scale and scope may or may not be outweighed by its inefficiency. (7.11) Curiously enough, BT suggests that Mercury's costs are lower than its own:

> 'there is a significant advantage for new entrant companies in being able to build their networks from scratch, both from being able to design and plan on a green field basis and from being able to utilise modern digital technology throughout their networks.' (BT 14.4)

However as this comment serves to support BT's contention that its competitors do not need to be pampered by the Government – for instance by being relieved of the universal service obligation that weighs on BT alone – it is not altogether persuasive. In the absence of precise data, we may suppose, as there are good reasons for supposing, that Mercury incurs higher average costs in providing network service than does BT.

How then, while producing at a higher cost and selling at a lower price, can Mercury make profit? The answer is that Mercury engages in cream-skimming. Cream is there to be skimmed for either or both of two reasons. One is the large profit margin that lies between BT's prices and costs in long-distance and international service, as BT concedes. (BT 2.5-2.6) The other is the large profit margin that BT earns from some particular customers because, though they pay the same averaged price as all other customers of the same class, the cost of serving them happens to be low. As the Government puts it,

'Mercury may have been successful in attracting customers only because they were relatively profitable to serve and because it could undercut BT's averaged prices.' (7.9)

Now if Mercury's success has depended exclusively on opportunities for cream-skimming, then its long-run competitive viability is precarious. For the cream can be removed from the system. It would be removed, according to BT's reasoning, if its tariff structure could be rebalanced in a way that gave it a uniform low profit margin on all services, local, long-distance, and international. Alternatively, the cream would largely vanish if BT were permitted or required to de-average its tariff, so enabling it to meet or even undercut Mercury's prices to relatively profitable customers. Once the cream vanished, any competitors whose average costs exceeded BT's would vanish as well, unless they could lodge in some small corner of the network market where BT could not or would not compete. In short, Mercury's success cannot justify extravagant hopes for durable and increasing competition in network services.

Moreover, though Mercury has been successful commercially, it has not so far really altered the competitive structure of the network market. BT, though no longer a monopolist *de jure* remains a virtual monopolist *de facto*. According to the consultative document, BT still supplies some 99% of local-service customers, 97% of domestic trunk service, and 'still has clear monopoly power' in international service. (7.3, 9.1, 10.8) According to BT, it earns 95% of all revenues from network services. (BT 2.5) The Government accordingly concludes that despite Mercury's inroads BT retains 'overwhelming dominance' of the telecommunications market, and it is this departure from an effectively competitive market which the Government now intends to correct. (6.3)

Judged by these criteria the duopoly experiment has not succeeded. To be sure, the protection afforded to Mercury by the exclusion of other competitors may have helped it survive; in any event it has managed to avoid infant mortality and seems to be entering viable youth. But on the other hand, the ultimate objective of the duopoly policy, which was to force BT into effective competition, would seem to have failed inasmuch as BT still supplies near enough the whole of the country's network service.

In its response to the consultative document, BT emphasises an important distinction about 'dominance'. While conceding that it is dominant from the standpoint of supplying 95% of the market, it maintains that it is not dominant in the sense of being able to exercise market power. It cannot, so it says, 'behave anti-competitively, for

example by raising prices to abusive, or reducing them to predatory, levels, or by reducing quality, or failing to innovate, or operating inefficiently ...' (BT 2.1-2.8) It cannot behave in such malign ways partly because of the regulatory regime and partly because of Mercury's price-cutting. BT maintains, not inaccurately, that the Consultative Document has cited no evidence to show that it has in any way abused its merely statistical dominance – though that is far from proving that it has not done so or could not do so with impunity.

We may, in any event, set to one side the question of whether BT does or might abuse its dominant position. The very fact that it is dominant – reflected by its serving some 19mn customers while Mercury serves some 100,000 – is vital for making and assessing policy. At the very least, many would-be entrants could not possibly attract customers unless they could offer them access to all of BT's subscribers as well as to all those overseas subscribers who can be reached only via BT circuits. Mere dominance, abused or not, must be reckoned with by policy-makers.

2

Opening network markets to competitors

Essentially the Government has decided to award licences for new telecommunication systems to any applicant 'unless there are specific reasons to the contrary'. (WP p.iii)

New entrants into local service

Some indication of what might constitute 'specific reasons to the contrary' is given by a passage (7.20, WP 3.1) which states that the Government would consider any such application 'on its merits, taking into account in particular the service proposed, the ability of the applicant to fulfil its plans, the extent to which it might result in more effective competition and the environmental implication of any request for Code powers'.

The criterion of 'service proposed' is clarified by the passage (7.13) which considers what service obligation should be imposed on new licensees. It starts from the assumption that it is 'clearly ... desirable to maximise the number of potential customers able to receive service from a new operator and therefore able to benefit from increased competition.' Such an assumption – or more precisely, an assumption expressed in that particular way – might tend to bias the Government in favour of large applicants who, as compared with small ones, could 'maximise' by offering service to a larger number of potential customers. But given the risks attaching to entry, an effectively competitive structure might be brought about as readily by the entry of a number of relatively small licensees as by a few relatively large ones. Therefore, so far as the assumption quoted above might be taken to be an authoritative principle of policy, it ought to be restated. What needs to be maximised is the number of potential customers able to receive service from at least two and preferably several operators rather than the number able to receive service from any single new operator.

What the authors may have had in mind when they drafted the 'maximisation' passage is suggested when the Consultative Document considered alternative means of achieving that goal. One (7.14) would require a new operator 'to provide service to anyone who reasonably requested it', just as BT is presently obliged to do. Now, BT's obligation to serve every would-be customer is founded on the fact that BT was previously a statutory monopolist and is still a virtual

monopolist in the provision of local network service – a service deemed to be a vital necessity. By contrast, suppliers in effectively competitive markets (including those that supply vital necessities such as food, clothing and shelter) carry no legal burden to serve all comers. Just as each customer in an effectively competitive market is free to choose his supplier, so each supplier is free to choose his customers. It follows that imposing a service obligation on suppliers of local network services could only be justified on the assumption that the Government's aim, to turn the telecom industry into a competitive industry, will not be achieved for some time to come. It is realistic to suppose that many local markets for local network services will remain monopolistic for some time to come or at best, in the near future, turn into duopolies.

Suppose, for instance, that a prospective operator sought a licence to provide local network service within a town with some 50,000 inhabitants, where local network services were provided exclusively by BT. The applicant might realistically estimate that the licence would make him a player in a *de facto* duopoly – as, once his network was installed, there would be less incentive for any third company to enter. In these circumstances, if the new operator were free to pick and choose customers as he pleased, many customers in the town might be left relying on BT as their sole supplier. This would be the outcome if the new operator decided, say, to serve only business customers, or only customers located near the town's centre. On the other hand, the new operator might for good commercial reasons offer to serve anyone in town. But because *de facto* duopoly may prevail for quite some time in many parts of the country, and because the incoming duopolist (the new competitor with BT) may wish, wisely or otherwise, to limit his offering to some customers only, it would be reasonable that he be required sooner or later to provide service to everyone who requests it – for though if some customers in a given place can choose between two suppliers that is better than if none could, it would be better still if all customers in that place could.

The Document (7.14) comments that a service obligation 'may deter entry'. This is by no means certain. An obligation to serve all comers does not, after all, conflict with ordinary commercial incentives. If prospective providers of local network service faced a duty to serve all would-be customers, which meant that they would have to install capacity adequate for the purpose, that obligation would certainly affect their judgement about how large a service area to apply for – though the prospect of having many customers rather than few would scarcely deter them. For the prospective licensee, the

real problem would be not how many customers it would be obliged to serve but rather how many of the prospective customers in its service area would choose to subscribe to its service.

The Document (7.15) goes on to point out that an operator could evade its duty to serve by setting its tariffs in such a way as to debar certain potential customers. That such evasive tactics are a real possibility is obvious. For instance, a new operator who wished to serve only multi-line business customers could achieve that result by offering them prices lower than those charged by BT, while pretending to offer single-line residential service, though at a price exceeding that charged by BT. This form of evasion could be controlled if the regulator required competitors to demonstrate a cost justification of any tariff suspected of being deceitful.

Ideally, in view of what has been said above, a new licensee should be required to serve all comers, because this would guarantee that every customer in the area could choose between at least two suppliers. But this ideal may well be difficult to achieve in the short run. In the meanwhile, therefore, the Government ought to accept a second-best solution. All else being equal, it ought to grant a licence even though the applicant proposes to serve one or more particular classes of customers to the exclusion of other classes.

Prospective entrants will obviously wish to serve customers whom they can serve profitably; licensing them to do so will enable some customers, at least, to benefit from competition; and some competition is better than none. Once a licensee of this sort has established itself, it may need no urging to offer service to other classes and ultimately all classes of potential users.

Within any given class of customers, the general rule of non-discrimination (7.16, WP 3.7) should undoubtedly apply to all new licensees. There can be no rational justification for charging different prices to customers in identical circumstances. Granted that no two customers are identical, the question is whether they belong to the same 'class' of users. If the licensee enjoyed unrestricted freedom to define classes of users as he chose, he could evade the force of the rule. So it is insufficient to insist that the licensee may not discriminate as between customers of the same class. It is essential in addition that the classes be economically rational; the prices chargeable to all members of a given class must be closely related to the operator's cost of providing service to customers of that class.

The second criterion of an applicant's merit would be 'the ability of the applicant to fulfil its plans'. If interpreted too narrowly, this could be stifling: even the most promising applicant may be disabled, one

way or another, from fulfilling its plans. But interpreted broadly, this criterion is reasonable and necessary. Unless an applicant can show that it possesses the financial means, skilled and technically competent managers, and a reasonable business plan, granting it a licence might simply block entry by other, more plausible applicants. A licensee who proves unable to launch the service he promised not only does not enhance competition but deters and delays its enhancement. The licence should therefore contain the familiar condition that it lapses if after a reasonable interval the proposed service has not been made available to a specified number of potential customers.

The third particular criterion of an application's merit is 'the extent to which it might result in more effective competition' (7.20, WP 3.1) Is this anything more than a ceremonial reiteration of the Government's essential policy? If it is meant to flesh out the policy, then all its weight seems to be concentrated in the word 'extent'. That being the case, the criterion could exclude an applicant proposing to enter on a scale so small that, though he would by definition become a competitor, he would make little contribution to more effective competition. Yet it would be unwise to exclude competitors who started small: many industrial dwarfs have grown into giants. Because this third criterion is obscure and potentially harmful, it should either be deleted or clarified.

The fourth and final particular criterion refers to the 'environmental implications of any request for Code powers'. (7.20, WP 3.1) 'Code powers' are fundamentally the right to dig up streets in order to lay cables. According to the Consultative Document, this consideration was likely to become irrelevant because the Government intends to reform the law concerning street works. (7.18) But the White Paper assumes without any such qualification that environmental implications of street works will carry weight in assessing a licence application. (WP 3.4) Unfortunately the criterion as stated gives no inkling of the kind or degree of disturbance that might be held to disqualify an application.

As various respondents to the Consultative Document pointed out, the four particular criteria are far too loose. (WP 3.2) The Government has answered that those criteria cannot 'be made precise or comprehensive in advance of considering specific applications'. That answer is a confession of failure. Any rule expressed in vague terms – as distinct from necessarily general terms – will confuse rather than guide applicants and regulators alike.

Nor can a vague rule be justified by arguing, as the White Paper

does, that the responsible official (the Secretary of State of DTI) is bound by law to exercise discretion when considering a licence application. (WP 3.2) Of course discretion must be exercised whenever a general rule is applied to a particular case. But the fatal flaw of a vague rule is that it permits or rather requires the exercise of unfettered discretion, contrary to the basic principle of rule by law.

Excessive vagueness is further illustrated by the White Paper's confusing pronouncement on service obligations. (WP 3.7) It opens by declaring that 'as a general rule, the Government does not intend to impose specific service obligations on new operators'. But immediately following, it announces a broad, possibly overwhelming exception to the general rule: 'Applicants proposing to offer an extensive service to the public will, however, normally be expected to provide a service to anyone who reasonably requests it...' And finally it adds that 'applications for more limited licences will be considered on their merits', which might be read as an implicit signal that licences of that sort will not carry a service obligation. If that is what the Government means, it should say so unambiguously. And it could usefully reduce uncertainty among potential applicants by spelling out, albeit in general terms, the difference between 'extensive' and 'more limited' services.

Undue vagueness appears again when the White Paper considers whether licensees should be granted rights only by way of compensating them for obligations they assume, for instance Code powers in exchange for service obligations. (WP 3.5) Here again it announces a general rule, that it will 'take into account the relationship of the rights sought to the obligations accepted'. But it adds that it should not 'try to be precise about the relationship of rights to obligations in the absence of specific licence applications'. This is almost as though a ruler laid down a law that 'persons committing offences will be punished appropriately', while adding the proviso that 'offences' and 'appropriately' would be given precise meaning only when persons were brought to judgement on specific charges. It is, in short, a recipe for the exercise not of properly constrained discretion but of arbitrary discretion.

As the Government's objective is to encourage competition, it ought to make entry as easy as possible. This requires, among other things, that the rules governing entry should be made as clear as possible. To the extent that vagueness of the rules makes their administration unpredictable, applications for entry will be discouraged. In order to further its chief objective, the Government ought at the earliest possible moment to restate the criteria for entry

in terms more precise and in a spirit more accommodating.

Facilitating local telephone service by cable TV companies

Cable TV companies hold franchises to distribute programmes to households within a given local area. Some 70% of the population will have access to cables laid in accordance with the 135 franchises granted to date (3.15).

These cables have 'broad-band' capacity that enables them to carry telephone messages and TV signals simultaneously. But for obstacles that have been attached to their franchises, cable operators could therefore provide local telephone service in competition with BT, Mercury and new entrants. These obstacles, which serve no useful purpose, will now be removed.

The chief obstacle was that cable operators' licences prohibited them from providing voice telephony services except in collaboration with BT or Mercury. From now on the DG will remove this obstacle for any cable operator who chooses to provide voice telephony service on its own facilities. (WP 4.4)

Another obstacle was that before a cable operator could offer voice telephony service the DG had to conduct a formal procedure of inquiry and approval. This requirement will now be lifted. (WP 4.9) The DG will however reserve the power to impose various obligations. In particular, once a cable operator becomes 'well-established' as a provider of voice telephony service, the DG 'would expect it to be obliged to offer service to anyone in its licence area who reasonably requested it' (WP 4.8). So much for the supposedly general rule against imposing service obligations on new competitors. (See page 16.)

If a cable operator were confined to offering only local service within its own franchise area, it could attract only few customers, because almost every telephone user wants at times to reach more distant destinations. Provisions of the White Paper will make it easier for a cable operator to offer services reaching far outside its own franchise area. Operators in adjacent areas will be free to interconnect their systems, though the White Paper is unclear about whether such interconnection would be authorised only for carrying entertainment services or telephone services as well. (WP 4.10) A cable operator who wished to interconnect his telephone network with that of a distant cable operator could apply for a licence on the same terms as pertain to new entrants. (WP 4.11) Cable operators would enjoy the right to interconnect their telephone networks with those of BT and Mercury, subject to a favourable determination by the DG. (WP

7.25) A cryptic passage seems to suggest however that cable operators offering telephone service on their own facilities would not enjoy a right to interconnect with trunk operators other than BT or Mercury. (WP 7.23 - 7.25) This apparent restriction should either be clarified and justified or deleted.

The Government expressed some misgivings about how competition from cable operators would affect the local service market as a whole. (7.22) At issue is the question of how the cost of digging the cable operator's trenches, building subsurface ducts, laying cable and the like would be allocated as between its entertainment service and telephone service. If all these expenses were recovered from its entertainment customers, then the cable operators' average costs for telephone service would be very low and its prices could radically undercut BT's. As customers shifted from BT to cable operators, BT would lose some of its economies of scale, compelling it to raise its price for local service. All the same – so the Government concluded on a hopeful note – the competition from cable operators 'would result in only a small increase in the overall cost of providing telephony services' and would probably spur BT to greater efficiency. (7.22)

In response, BT put the same point more bluntly. It said (BT 14.16) that the Government 'envisages cable companies being entitled to cross subsidise their telecommunications services out of monopoly cable-programming activities, at least to the extent of attributing the whole trench and duct costs to programme services.' This considerably mis-reports the Government's statement; but leaving that aside, it focuses on the same question of whether cross-subsidies flowing from cable operators' programme sales would make them unfair competitors in telecommunications services.

A proper answer to this question pivots on the word 'monopoly' as applied to cable TV programmes. In a narrow and misleading sense, each cable operator does enjoy a franchise monopoly, being the sole purveyor of cable programmes in its franchise area. But in the true economic sense, cable operators enjoy no monopoly power. They face a variety of competitors: satellite broadcasters, BBC and ITV broadcasters, producers and sellers of video tapes, and video rental clubs. Competition among those can be expected to hold down the price that cable operators can charge for their TV programmes, with the result that they would not be likely to reap high profits which could be diverted, or which they would be inclined to divert, to subsidising their telephone services.

BT's further argument (BT 14.16, 15.10-15.11), that if cable

operators are permitted to carry telephone messages, BT should be permitted to carry entertainment programmes, is without merit. Given its dominance in telephone service, BT could quickly establish equivalent dominance in cable distribution of entertainment. Conversely, given that cable operators are relatively unsuccessful competitors in the distribution of entertainment, there is little likelihood that they could seriously threaten BT's dominance in telephone service. Accordingly, the Government's decision to prevent BT, Mercury, or any other national telephone operator who may enter, from conveying entertainment services for the time being is well-founded. (WP 5.1 - 5.19)

Facilitating competition in local services by radio access

Until fairly recently the subscriber's sole means of access to the network service was via a 'local loop', consisting of wires (or optical fibres) connecting his terminal to his local exchange. It has now become possible to replace part or all of the local loop by radio transmission. Two companies – Cellnet and Racal Vodaphone – are licensed to provide cellular mobile service and three others – Mercury PCN, Microtel and Unitel – are licensed to provide Personal Communications Network (PCN) service, which uses a pocket-size handset that will soon be quite cheap. Various other radio-access services link the public switched networks to mobile terminals such as pagers or to specialised fixed terminals.

Until now licences of mobile operators contained restrictions designed to protect the duopoly, especially Mercury, from competitors. (7.37) The Government has now announced that it is willing to consider applications from mobile operators wishing to offer a wider range of telecommunications services. (WP 4.12 -4.16)

If mobile operators are allowed to compete more directly with BT and Mercury, should not BT and Mercury be allowed to compete directly in supplying mobile services? The Consultative Document gave two reasons why such parity or symmetry might be undesirable. It might result in 'unfair cross-subsidy between the fixed and mobile markets'. (7.49) This objection lacks force. Multi-product companies can always cross-subsidise one or more of their products, particularly if some of the product markets are uncompetitive. Cross-subsidies in the telecommunications industry could be eliminated once and for all, if BT, Mercury, and any other multi-product firm were cut up into single-product companies – but such heroic surgery would do more harm than good. Besides, if the possibility of cross-subsidies were an overpowering objection, then why does the Government

propose to permit cable operators, now single-product firms, to become multi-product firms offering network services as well (see p.p. 17-19 above)? Until all the separate network markets become genuinely competitive, the only sensible way to inhibit cross-subsidies is by regulation.

Alternatively the Consultative Document argued that though 'the regulatory distinction ... between fixed and mobile services is becoming less and less relevant', nevertheless the distinction should be maintained for the time being because 'neither the fixed nor mobile markets is [sic] sufficiently well developed'. (7.50) To say that the fixed market is underdeveloped seems strange, unless it means that it is inadequately competitive. But certainly the mobile market is underdeveloped. It is for that reason that the Government has restricted entry into the mobile market to a handful of competitors, protecting them (as it did Mercury) on an infant-industry principle. And it is this which can rationally justify the Government's decision (7.51) that it will not permit fixed operators to provide mobile services for the time being (though only for the time being). It makes sense, up to a point, to allow infants an incubation period, though they should be exposed to the rigours of competition sooner rather than later, lest they subside into permanent dependency.

New entry into the trunk market

Unlike the Consultative Document, the White Paper treats new entry into trunk markets as coordinate with new entry into local markets. (WP 3.1) Specific considerations that shaped the Government's policy on entry into trunk markets were discussed in the Consultative Document, and are incorporated in the White Paper by reference. (WP 2.9)

In the Consultative Document the Government grants that if additional competitors enter the trunk market, some or all of the suppliers might lose economies of scale, with the effect that even if competition were fierce the average price of trunk service might rise. (9.6) But studies by the Director General suggest that the loss of economies of scale following further entry would be only 'moderate'. (9.7) And this 'cost penalty' might be counterbalanced because 'a greater degree of competition, or the threat of it, tends to enhance the efficiency of existing operators'. (9.8)

As to concerns that any new trunk operators might compete more with Mercury than with BT, so weakening the smaller competitors' ability to challenge BT, the Government responded that Mercury has been given ample time to establish itself; customers should be given

the opportunity to benefit from increased competition; and, with increased competition, all operators may benefit from increases in overall demand, resulting, one might suppose, from a decline in prices and the introduction of innovative services. (9.9)

Here, as in the case of local service, the question arises whether new entrants should be subject to service obligations. If not, a prospective entrant might 'target specific routes'. (9.13) Needless to say, unless an applicant proposed to duplicate all existing trunk lines, it not only could but would target specific routes that it judged to be most lucrative, those not yet served by any other trunk operator, except circuitously, or those which though served promised to need increased capacity. Choice of such routes would tend to benefit at least some customers. Accordingly, no service obligations should be imposed, at least at the outset.

The Consultative Document suggested on similar grounds that an application for a trunk licence should be regarded more favourably if it included plans for local service as well, in other words if the applicant proposed a measure of vertical integration allowing it to offer end-to-end service. (9.14) This suggestion should be firmly rejected because it would restrict entry into trunk service without yielding any commensurate benefits.

New entry into international services

On this issue the Government seems to have reversed its position. In the Consultative Document is said that it was 'inclined to consider applications for new licences to provide the full range of international telecommunications services'. (10.20). But a few months later it concluded that, despite intending to terminate BT's and Mercury's exclusive rights in respect of international services, it is 'unlikely' to grant new licences 'in the short term'. (WP 3.12).

Underlying its earlier position was the observation that competition between BT and Mercury has been 'less than fully effective' in cutting the prices of international services. (10.16). Additional competitors might bring about that result. But, said the Government, new entrants would find it difficult to establish profitable agreements with foreign operators, most of whom are state monopolies, and difficult also to get the necessary authorisations from foreign regulators. Despite those difficulties, however, the Government declared its willingness to entertain applications. (10.16-10.20).

What happened in the interval is not clearly revealed by the White Paper. Perhaps the most important event was an agreement that will

cap BT's international tariffs. (WP 3.11, 6.19 and see p.31 below). While not making the British market for international services more competitive, it will yield the second-best solution, namely a regulatory restraint on BT's market power in international services. Another consideration mentioned by the White Paper is whether 'given the importance which the Government attaches to the development of competition in the domestic telecommunications market, it should be a requirement that applications for new international licences be able to demonstrate that they are contributing significantly to the fulfilment of that aim'. (WP 3.10). If that is a question, it ought to be answered with a decisive *no*. Competition in the international market is a good in itself, whether it does or does not contribute to the development of competition in domestic markets, so long as it does not reduce competition in domestic markets, which there is scant reason to suppose it would do. Any requirement such as that mentioned would only restrict competition in international service without in any way serving to enhance competition in domestic service.

Further reasons suggested as justifying the Government's decision are expressed in veiled language appropriate to diplomatic manoeuvre and perhaps designed to extract more favourable treatment from foreign telephone monopolies and foreign regulators. (WP 3.10-3.12). It is to be hoped nevertheless that should some hardy potential competitor present himself, the Government would review its disinclination to consider his application.

In line with the duopoly policy, only BT and Mercury were authorised to supply international switched service by satellite. Several companies have however been licensed to provide 'specialised services by satellite', services that would not in any way compete with BT's or Mercury's public switched services. (10.21-10.24) The Government now intends to issue a class licence which would allow any company in Britain to provide two-way satellite services both domestic and international. (WP 3.14-3.16) But the Government adds to this welcome measure of liberalisation the proviso that the satellite terminals could not be connected to the public switched network because allowing interconnection 'could amount to the establishment of new international operators'. (WP 3.19).

Liberalisation of self-provided circuits

Large organisations typically have numerous and widely dispersed offices, shops, and installations. Their demand for telecommunications may accordingly be large enough to make it

cheaper for them, and more convenient as well, to operate a system of their own rather than to use the public system. But as things stood, they were barred from operating a full-fledged system of their own, except on lines leased from BT and Mercury. Unfortunately BT and Mercury were unable to satisfy the demand for leased circuits. (12.47-12.48)

It may be thought that self-provision, just like the entry of new competitors, would tend to reduce the economies of scale available to network operators, so increasing prices to other customers. But studies undertaken by Oftel find that such impact would probably be minimal. (12.51) It might be added that compelling anyone to buy from a network operator a service that he could produce more cheaply for himself would be as unconscionable as compelling pedestrians and car owners always to travel by public transport.

The Government now intends to issue a class licence for self-provided circuits, authorising them to be interconnected to the public switched network. (WP 3.31) This is a welcome and overdue measure of liberalisation. An attached proviso, that though use of such circuits could be shared by two or more separate companies, the owners could not sell capacity to third parties (WP 3.30-3.31), is purely technical, merely marking the boundary between the open licence for self-provided service and the stricter licensing provisions for operators of public services.

Authorising entry by a firm into multiple network markets

Because local, trunk, and international markets involve different considerations, and entry into them involves different forms of licensing, the Government saw fit to discuss the three sorts of markets in separate chapters of the Consultative Document. As a matter of policy nevertheless, the Government proposes to authorise entry by a company into any one of the markets, or any two, or all three, although the would-be entrant will need to apply for separate licences, to which different conditions may be attached. (WP 3.37-3.41)

In justification of this policy, the Document stated that 'there is nothing inherently anti-competitive in a vertically integrated company in fully competitive markets'. (12.3) Though true, this observation is inapposite. As network markets now fall far short of being 'fully competitive', the relevant question is whether vertical integration is inherently anti-competitive within markets that are duopolistic, or virtually monopolistic, and likely to remain at best oligopolistic during the 1990s. Clearly the answer must be that

vertical integration is inherently anti-competitive if and only if it enables a firm that enjoys monopoly power at one level to extend that power to other levels of its business. If BT were unregulated, it could use its virtual monopoly in the residential local market (12.2) to exclude competitors from all other network markets by refusing to interconnect with them.

It is surely proper to permit relatively small, vertically-integrated companies to enter markets which are virtually monopolistic, duopolistic, or oligopolistic. In those circumstances, vertical integration is pro-competitive and perhaps, because of economies of scope associated with vertical integration, more pro-competitive than entry by firms that are not vertically integrated.

3
Interconnection and equal access

Interconnection

Given the present dominance of BT, which will probably persist for years to come, any company competing or aspiring to compete with part or the whole of BT's public switched services must rely on BT's cooperation. Without access to BT's network, a competitor's customers could reach only a small portion of telephone destinations in Britain and the world; without access to BT's network, a competitor could not attract a significant number of customers. If competition is to flourish, BT must, so to speak, collaborate in undermining its monopoly. As it could not be expected to do so voluntarily, it has been required by the conditions of its licence to provide interconnection to any qualified applicant, and the number of qualified applicants will be enlarged by the Government's new policy.

But though BT is duty-bound to provide interconnection, its licence does not specify what price it may charge for doing so. Instead, the procedure for determining the price that BT may charge for interconnection has been that in the first instance the competing operator and BT negotiate with a view to reaching a mutually satisfactory agreement. Only if they fail to agree can the matter be referred to the DG for his determination. This procedure, time-consuming and risky for the competitor, would tend to delay or discourage competitive entry.

The Government recognises that interconnection, on satisfactory terms, is an essential prerequisite of market entry (9.21). It recognises further that an established operator might be inclined to set interconnection charges so high as to frustrate competition. (9.22) It holds however that the DG should not be overburdened with requests to prescribe interconnection terms among parties unable to agree them. (9.22) The Government therefore suggested in the Document that the DG might issue general guidance on interconnection terms or prescribe standard terms that would prevail in all but exceptional cases.

The DG has now done so. He has set out a series of rules that will empower him to control interconnection agreements more comprehensively than in the past. (WP 7.13-7.22). He will be able to apportion the costs of interconnection in accordance with the enhanced traffic resulting for both operators. He will be able to penalise an operator who unreasonably delays in providing

interconnection. He will require operators to specify standard terms for providing interconnection and will adjudicate complaints that any such terms are unreasonable. All these measures should regularise interconnection, accelerate it, and make its costs more predictable and reasonable. In all these ways it will facilitate more effective competition.

In regulating interconnection the DG ought to bear in mind a single dominant principle. It is that the main public switched networks – those belonging now to BT and Mercury and others that may be established hereafter – should be deemed equivalent to public highways. As such they must be open to use by every member of the public, whether he uses them directly as a customer of BT or Mercury or indirectly as a customer of their competitors. Inasmuch as these public-highway networks are privately owned, their owners are entitled to charge a toll. But the toll must be reasonable in relation to the cost of providing service, and ideally this relation would be the one that prevails in effectively competitive markets, namely that price equals economic cost. Moreover the toll must be the same whether the user is a customer of BT or Mercury or of any of their competitors. Reference to this principle would help guide the DG in resolving the tangled details of interconnection disputes and make his decisions more lucid and consistent.

Equal access

Although interconnection can give competing trunk operators access to BT's network, it does not give them 'equal access'. For if a BT subscriber wants to route his call via a Mercury trunk or international circuit, in order to benefit from Mercury's lower price, he must prefix the number of his destination by a 13-digit code or buy a special handset that will do it for him. Failing that, his message will automatically be carried on a BT line. Equalising access, so that a customer could with equal ease choose the trunk operator he prefers, would obviously improve competition among trunk operators, tending to reduce the price of service.

Various objections are however raised against this apparently fair and beneficial modification.

For one thing, BT sensibly asks (BT 4.5-4.9) why it should bear the costs of modifying its local exchanges so as to provide equal access. It says that the costs would be 'substantial', though the Government says that they would seem 'not ... likely to be significant'. (9.29) More to the point, BT says that the costs should be borne by 'the beneficiaries of the change'. But who would be the

beneficiaries? BT suggests that they would be the competing companies and customers who use their services. This assumes that BT's erstwhile monopoly and present dominance are the natural and normal order of things, from which any defector must pay to depart. Properly understood the beneficiaries of equal access would also include every one of BT's customers using trunk facilities, for they would benefit by being able to choose the trunk services of BT or any of BT's competitors.

Another objection is that equal access might diminish competition in local services. Profit margins in local service are lower than in trunk and international service. In effect the latter cross-subsidise the former, partly because governments are reluctant to raise the price of local service, which is used by all voters, in order to lower the price of trunk and international service, chiefly used by businesses. Equal access would lower the profit margin on trunk service, thus reducing the cross-subsidy to local service, thereby lowering the profit margin on local service, so diminishing the incentive for competitors to enter local-service markets. (9.27; cf. BT 4.7) But this objection can and should be met by equating the profit margins in local service, trunk service, and international service. The regulators should aim to achieve this not only for the sake of equal access but more so for the sake of economic efficiency, since an underpriced service (like local service) encourages wasteful use while an overpriced service (like trunk service) wastefully restricts use.

In the event the DG has concluded that equal access should be introduced as soon as possible, (WP 7.12). Costs incurred in providing it would be apportioned between local and trunk operators by negotiation, or if that failed, by the DG, who would ensure that the apportionment reflected the relative benefits to the parties (WP 7.9, Appendix 3, 3n).

Equal access will obviously promote competition in the trunk and international markets, without noticeably inhibiting competition in local markets. (WP 7.5 - 7.6).

4
The regulatory regime

Diverse theories of regulation

Many people hold that the sovereign cure for monopoly is to break the monopolistic firm into smaller bits that can and will compete with each other. In Britain this surgical procedure has recently been applied to the electricity industry. In the US it was used to 'dissolve' the vertically integrated Bell Telephone monopoly into one long-line company and seven regional companies offering local and trunk services. In some instances, monopolistic markets have in this way been successfully transformed into competitive markets. In industries without significant economies of scale or scope, dismemberment of a monopolist would do little harm and much good.

But dismembering a monopolist who enjoyed considerable economies of scale and scope would sacrifice productive efficiency. Many people, including some experts, believe that the best way to control a private monopolist of this sort is strict and detailed regulation. The regulator would set prices, but only after he had scrupulously examined the specific costs of rendering each of the monopolist's particular services, and he would thus eliminate cross-subsidies and hold the overall rate of return down to a reasonable level. Besides, the regulator would enforce norms of quality, universal service, social obligations, non-discrimination and the like.

A strict and detailed regulatory regime of that sort was imposed on telephone companies (all parts of the Bell System) by American regulators between roughly 1920 and 1970. Regulators approved new tariffs only after long public hearings conducted in adversarial mode, involving dozens of expert witnesses and thousands of pages of evidence and pleadings. Decisions reached by regulators were often appealed in the courts of law, which remanded cases to the regulators for further consideration. In some notorious instances, ten years and more elapsed between the time that the telephone company applied for rate increases and the time when new charges – often much lower and differently structured – were finally sanctioned. This process, which assured the lay public that the monopolists were being kept in check and that prices were being constrained to reasonable levels, was immensely expensive. But the costs of the process were of little concern to the lay public, since they were borne by companies and governments which 'could easily afford them'. In fact, of course, the

regulators and the regulated inevitably passed the costs on to telephone customers and to taxpayers who were those very same customers.

Close studies of that strict and detailed regulatory regime began after 1945 to persuade many economists and lawyers that it was intrinsically wasteful, not only costing more than any benefit it yielded to customers, but positively promoting inefficient management of the telephone system. Indeed many professional experts came to believe that regulators acted as though they were more devoted to protecting suppliers' monopolies than to protecting customers. Faith in regulation evaporated. Disillusionment supplanted it.

A radical response to disillusionment has come from economists who maintain that competition, not regulation, is the proper cure for monopoly. An unregulated monopoly sends out a highly beneficial signal: the surplus profit it earns, higher than the rate of profit available in competitive markets, attracts the attention of entrepreneurs, who rush into the monopolist's market. All that a government need do is demolish barriers to entry established by the government itself or by the monopolist. If, on the other hand, the government misguidedly regulates the monopoly, surplus profit disappears, and with it disappears the incentive to competitive entry.

Clearly the competitive solution would cost customers less than the regulatory solution, though there may (or may not) be some relatively small cost penalties due to diminished economies of scale and scope. Clearly, also, the operation of a competitive market would adjust prices to costs more quickly and more accurately than the wisest and best-intentioned regulator could. Moreover the competitive solution allows for greater play to technological innovation than the regulatory solution, which tends to condone the monopolist's reliance on his familiar equipment and accustomed practices.

Despite these considerable advantages, however, the competitive solution suffers from one important defect. Until enough competitors enter, customers must abide the exactions of the unregulated monopolist. How long would it take enough competitors to enter? Some entrepreneurs might enter quickly, others less so. Installing a telephone network of any size may take several years. Overcoming the inertia of customers takes years, too. And an unregulated monopolist who is more astute than greedy may content himself with modest surplus profit, which offers slight inducement to potential competitors. In the meanwhile customers keep paying more than they should.

Between close regulation (which is costly and partially ineffective) and no regulation (which is at least temporarily costly) there is a middle way. It combines a light regulatory regime with easy opportunity for competitive entry. Thereby it gives customers a measure of protection, at low administrative cost, in the short run; and helps bring about the advantages of unregulated competition in the long run. Just such a middle way is now envisioned in the consultative document. (eg 6.3) The Government and the DG deserve to be congratulated for having designed this well-balanced policy, which should receive widespread support.

Price regulation

The regulatory regime, as it stood just before the duopoly review began, needed to be sharpened and extended in a number of ways. Some improvements have been set in train by the White Paper, notably with respect to interconnection and equal access. Certain others, concerning price regulation, are discussed below.

In order to avoid the complexities and costliness of close regulation, the present system of price regulation was erected on a simple and novel foundation. BT's overall charges – as measured by the average price of a basket of controlled domestic services – would be permitted to rise in any given year by a rate of no greater than RPI-X, that is the percentage rate of price inflation minus 'X' percent. In other words, its overall charges for services (excluding international services) would not be permitted to rise as quickly as inflation. In effect, BT's real charges would fall each year by at least as much as 'X'. In adopting this formula, the Government assumed that BT could reduce its costs by adopting more efficient methods, thus enabling it constantly to reduce its prices.

Despite its elegant simplicity, this formula suffers from two disadvantages, possibly more apparent then real.

One weakness is that the value assigned to 'X' gives an appearance of arbitrariness. Initially it was set at 3%. Then in 1988 the DG prevailed on BT to raise 'X' to 4.5% (11.5-11.6). Now, the basket of services regulated by the formula has been enlarged to include BT's international as well as domestic services, and the DG and BT have agreed that 'X' should be raised to 6.25% (WP 6.27). A rational foundation for assigning any particular value to 'X' is that it should operate to keep BT's rate of return to a reasonable level. Put in another way, BT's revenues would equal the economic cost (including the cost of capital) of generating services. Thus despite its monopoly power, BT would be constrained to meet the long-term ideal of a

competitive industry, of price equal to average economic cost.

The Government should make it clear that the ultimate purpose of the RPI-X formula is to constrain BT's rate of return to a reasonable level, reasonable being defined by reference to the rate that tends to prevail in competitive markets.

To give this rationale practical effect, OFTEL would need to track changes in BT's rate of return and to scrutinise, more closely than it now does, BT's accounts, especially concerning depreciation and other factors affecting the valuation of assets. It is foreseeable that at times OFTEL and BT will disagree about the proper valuation of BT's capital base, or the appropriate rate of return, or the correct size of 'X'. If the disagreement is deep, OFTEL should hold formal hearings to clarify the issues. Such hearings should be public, allow for submissions by third parties, and be a matter of public record. This would be one way of achieving the greater degree of transparency at which the Government aims. (12.7-12.12, WP 8.11 - 8.19)

The second weakness of the RPI-X formula is that, being an average, the constraint it applies does not prevent cross-subsidies by BT. To be sure, the Government and the DG are keenly aware of the existence of cross-subsidies in BT's tariff structure and have taken various steps to limit them. For instance, although BT's connection charges and rental charges for local loops, so far as they affect residential customers and single-line business customers, may rise annually by no more than RPI + 2, such charges to multi-line customers may rise by as much as RPI + 5, which reduces cross-subsidy. (WP 6.1-6.10). Again, prices of international private circuits will now be governed by RPI - 0 (WP 6.27). And BT has been persuaded to reduce its prices for international services by 10%, which will reduce its leeway for cross subsidies. (WP 6.19-6.27).

But more needs to be done toward assuring that the price of each of BT's controlled services conforms to the ideal that price should correspond to economic cost.

The need to identify the costs of each of BT's (and Mercury's) services is indicated in the Document. For instance, the tentative proposal (7.61) that retailers might be authorised to transact business between operators and customers carries the proviso that retailers would have to be 'dealt with on the same terms as the operators' own retailing operations'. That proviso could only be enforced in practice after the DG ascertained the 'price' at which network operators transferred services to their own retailing operations. Similarly, the DG's determination in disputes concerning through charges for

interconnected services (see pp. 25-26 above) should ideally be based on specific data concerning the parties' costs of rendering their respective parts of the through service. Again, the DG's decision to consider proposals from BT to offer discounts to certain users rests on his assuring himself that those discounts are justified by 'genuine cost savings'. (WP 6.11 – 6.19)

At various points (11.9 ff. and 7.22) the Document wisely points out the difficulty of disaggregating total costs so as to allocate them to specific services. This difficulty is well-known and formidable. No procedure for cost allocation in multi-product firms can arrive at demonstrable certainty. Nevertheless, if competition is to be fostered, it will be essential to judge the costs of various specific services. Difficult as the task is, and debatable as the DG's findings may sometimes be, the task must be undertaken.

This undertaking to assess the costs of specific services will no doubt make the regulatory process more expensive for regulators and operators alike, and thus for customers as well. But this increased cost is unavoidable if competition is to prevail, and it should be offset by the benefits that will accrue to customers from increased competition. Whenever network services become effectively competitive, regulation will become largely redundant and its costs will accordingly fall near to vanishing point.

There is, of course, no need to regulate the tariffs of any operator who competes with BT in any given market. In order to survive, the competitor must at least match BT's prices. (WP 6.22) Indeed, inertia would favour BT unless the competitor offered noticeably lower prices or noticeably better service at the same price. As soon as BT's tariff for any given service has been properly limited by regulation, the tariff charges by any competitor for that service need not be directly capped by the DG unless exceptional circumstances prevail. One exceptional circumstance, justifying a direct cap on a competitor's price, would be if a company that generally competed with BT were the sole supplier in some segment of the market.

In general, it is sufficient to regulate the prices of the dominant firm. To that extent one can agree with Mercury's 'main proposal', that a regulatory 'distinction should be drawn between dominant and non-dominant operators'. (M p.5) But Mercury errs when it adds that BT should be 'regulated as dominant, and Mercury and other entrants as non-dominant'. For although BT is undoubtedly dominant in network markets as a whole, any of its competitors including Mercury might become the dominant supplier in some secluded corner of a market. Should that happen, capping its price in

that particular market would be as justifiable as generally price capping BT.

Regulation should be shaped so far as possible to implement the policy of achieving effective competition as soon as may be. Like the benevolent despot, the benevolent regulator strives to bring about the conditions in which he is no longer needed. That is certainly the ultimate aim of the Government's present proposals.

Conclusion

The Government's proposal to abandon the policy of duopoly in favour of more open competition should attract wide support from those who recognise that free markets promote economic efficiency and equity while reducing the cost of government and the oppressive effects of unneeded public supervision.

Particularly welcome is the Government's tacit rejection of the theory that the only path towards effective competition would be to admit one or two vertically integrated companies that would compete with BT and Mercury in all network markets. While leaving the door open to any such entry, the Government propose also to licence smaller companies competing in only one of the basic markets (local, long distance or international), or would offer services in relatively small geographical areas, or which would develop specialised or innovative niche markets. As entry on a small scale limits the amount of capital that a new enterprise must put at risk and the time needed to instal its facilities, this may well attract more competition sooner.

Further to facilitate entry, the Government should ease the conditions that it proposes to attach to new licences.

How quickly new competitors will come in and, more important, how quickly they will diminish BT's dominance, remains to be seen. At best, some years will be needed for markets to become effectively competitive. Although Mercury has now slightly reduced BT's market share, BT still serves some 19 million users compared to Mercury's 100,000. If, as many believe, BT enjoys economies of scale and scope, those may enable it to resist competitive inroads for some time to come.But there are grounds for doubting whether BT has been a 'natural monopoly' and whether it would be one now that it has lost the shield of statutory monopoly and is threatened by rapid technological change.

In any event, the only reliable way of testing whether BT enjoys economies of scale and scope sufficient to disable competitors is to expose it to far more competition than the duopoly policy permitted. Even if entry under the new dispensation failed to affect BT's commanding position, the presence of actual competitors and the threat of potential competitors may, as the Government believes, force BT to defend itself by striving for improved efficiency and may extinguish BT's market dominance. And even if network markets failed to become effectively competitive, customers would stand to gain from reduction in BT's real costs and real prices.

In adopting its new policy the Government has avoided any

visionary and doctrinaire supposition that easier entry will cure things instantly. On the contrary, it recognises that until network markets do become effectively competitive, regulation – especially of BT's prices – will be needed to safeguard the public.

But the present regulatory regime should be strengthened. In particular the Director General of OFTEL should undertake more detailed regulation of BT's prices (rather than relying chiefly on the portmanteau formula of RPI-X), require BT to disclose detailed accounting data, and hold public hearings concerning BT's prices.

Though these steps would make regulation somewhat more costly, they should also make it more effective in protecting customers against overcharging and competitors against anti-competitive practices. However, because BT's competitors will not normally possess any market power, their prices and practices need be regulated only in exceptional cases.

To urge that regulation be tightened is not to suggest that regulation is a good in itself. It is desirable when, as now, network markets are virtually monopolistic. As markets become more competitive, regulation can be relaxed. If and when they become effectively competitive, they will need only that minimum of public superintendence necessary to prevent fraud and force. Although we cannot be altogether sanguine that the ideal of competitive 'self-regulation' will be achieved in network markets, the Government's present effort to move things in that direction is a laudable exercise of liberalisation in both the economic and political sense.

In order to move further and faster in that direction, the following modifications of the Government's policies are *recommended*.

Criteria for granting new licences should be clarified. Doing so will eliminate uncertainties that discourage new entry and will make regulation less arbitrary and more consistent. (pp. 12-17).

Rules concerning service obligations should be clarified, and the burden of obligations lightened so far as possible, in order to facilitate entry. (pp. 16, 18).

Cable operators should be given the right to interconnect with any trunk operator, in order to enhance their ability to compete effectively in local services. (pp. 17-18).

Application for vertically-integrated entry should be regarded neither more nor less favourably than applications for entry into any one market. Nor should applications to enter on a large scale be regarded more favourably than application on a small scale. Decisions about integration and scale are best left to entrepreneurs, who should

not need to surmount obstacles artificially and needlessly erected by regulation. (pp. 12, 15, 22-24).

The inhibition against granting new licences for international service should be relaxed as soon as possible. Reducing the price of international services by regulatory decree is less desirable than reducing them by force of competition, even though beneficial in the short term. (pp. 21,31).

The DG should interpret the new rules on interconnection in light of the principle that the public switched network ought to be deemed a public highway. (p. 26).

The Government should make it clear that the proper purpose of the overall RPI-X formula is to constrain BT's rate of return to the level compatible with an effectively competitive market. More specific price-caps should aim to equate price with economic cost. (pp. 31-32).

In case of prolonged dispute between the DG and an operator concerning price regulation, formal proceedings should be held in public, allowing for submission by third parties, and evidence should be a matter of public record. Transparency in regulation can help to stimulate competitive entry; a lack of it tends to exacerbate uncertainties that discourage entry. (p. 31).

Figure 1

ECONOMIES OF SCALE VS ECONOMY OF FULL EFFICIENCY

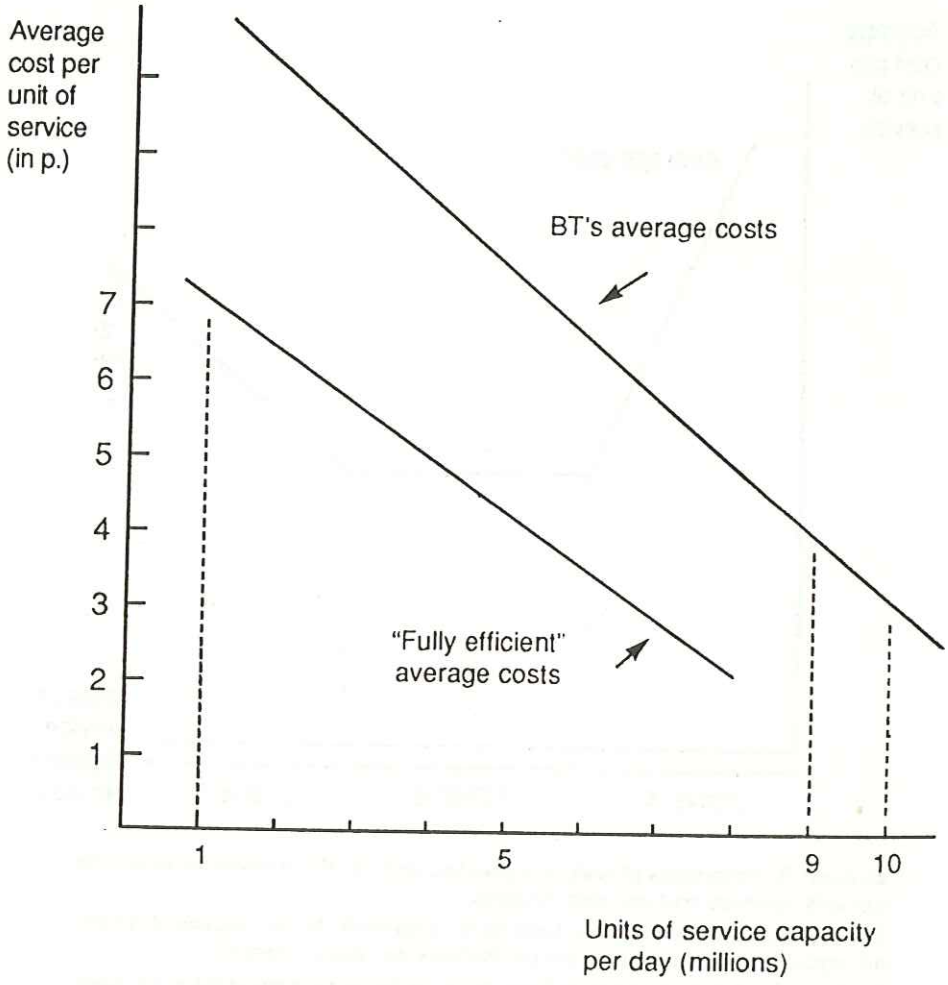
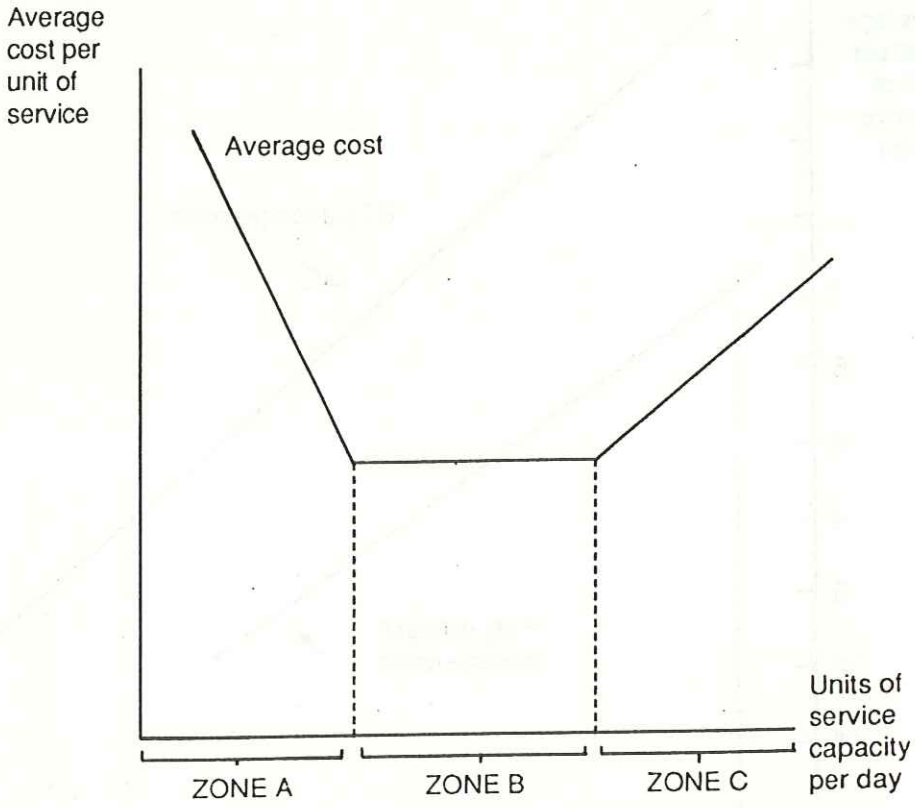


Figure 2

ECONOMIES OF SCALE, UNEXHAUSTED AND EXHAUSTED



In Zone A, economies of scale are unexhausted. As the supplier increases his capacity, average cost per unit declines.

In Zone B, economies of scale have been exhausted. As the supplier increases his capacity, average cost no longer declines but stays constant.

In Zone C, economies of scale have been replaced by diseconomies of scale. As the supplier increases his capacity, average cost per unit rises.

GLOSSARY

Average cost	see: cost
Averaged price	A uniform price for service throughout a given area, averaging the prices that would precisely reflect the differential costs of serving particular customers.
Cable operators	Companies licensed to provide cable TV services within local franchise areas.
Cellular operators	Operators of car telephone service, at present two companies, Cellnet and Vodaphone.
Code powers	Powers granted under the Telecommunications Code (1987) which authorise telecom operators to instal apparatus underground.
Competition	Effective competition prevails when, though the number of suppliers is relatively small, they do not collude, none has a substantially larger share of the market than others, and there are no barriers against competitive entry. Distinct from the idea of perfect competition, which prevails when there are so many independent suppliers that no one of them can materially affect price by altering his own output. Cf. Oligopoly, Duopoly.
Cost	Average cost equals the total cost of producing a number of units of service divided by that number. Economic cost differs from accounting cost in that it includes among total cost the cost of using capital invested by shareholders.
Discrimination	Takes place when a supplier gives unjustifiably preferential treatment to some customers.
Dominance	A supplier is dominant if he has a much larger share of the market than any competitor or even than all competitors together. Not to be confused with market power (q.v.).
Duopoly	Statutory (or *de jure*) duopoly exists when the law authorises only two companies to enter a market. *De facto* duopoly exists if there are only two suppliers though no law prohibits entry of others.
Economic cost	See: cost

Economies of scale	Occur if average cost falls as productive capacity increases. For the distinction between exhausted and unexhausted economies of scale, see Figure 2 (p.38).
Economies of scope	Occur if the average costs of producing two or more different products by a single firm are lower than if the products were each produced by separate firms.
Effective competition	See: Competition.
End-to-end service	Service by a telephone company that carries messages all the way from origin to destination on its own facilities.
Equal access	Is present if the local customer of a telephone company can with equal ease route his call over the trunk or international circuits of any supplier he chooses.
Interconnection	A link between networks operated by different companies, allowing a call originating in one network to reach a destination served by a different company's network.
Leased lines/circuits	A circuit leased by a customer for his exclusive use – though he may share the use with others if he chooses or resell the capacity to others.
Market power	Power of a firm to set prices considerably higher than average costs, so earning excess profit, or set prices unduly low so as to drive out competitors.
Monopoly	Statutory or *de jure* monopoly is sanctioned by law; *de facto* monopoly is not. Virtual monopoly is said to be present when a single supplier provides almost 100% of a market. Natural monopoly is one entirely sustained by a firm's economies of scale and scope.
OFTEL	The Office of Telecommunications, the agency of government empowered to regulate the industry. Its head, the Director General, is Sir Bryan Carsberg.
Oligopoly	A market supplied by a handful of large companies.
Public switched network	The system of lines, switches and terminals that is used by almost all subscribers. Excludes private networks and unswitched point-to-point facilities.
Service obligation	The obligation to supply service to any reasonable applicant within a supplier's licensed service area.

Social obligation	The requirement that a company (generally BT) supply certain services at prices lower than they cost (such as a 'lifeline service' for the elderly).
Through charge	The total price paid by a customer for an interconnected call.
Transparency	Results from the requirement that a company provide regulators (and perhaps the public) with detailed data concerning its costs, charges and finances.
Universal service	The requirement that BT supply service to any reasonable applicant anywhere in Britain.
Vertical integration	Integration within a single firm of various 'levels' of service, particularly local, trunk and international service. The opposite of horizontal integration, when several suppliers of the same level of service are integrated into a single firm. Only a vertically-integrated company can offer end-to-end service (q.v.).

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