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compensation terms for public telephone operators (see Rovizzi and Thompson 1992).

7.5.4 Pricing

Apart from the issue of interconnection charges discussed above, there have been several important episodes of regulatory concern about pricing—the rebalancing of local and long-distance call charges in 1985 and 1986, the first price review in 1988, the controversy over the balance between exchange line rentals and call charges in the 1990 duopoly review, and, most recently, the 1992 price review. Average prices for regulated services were required to fall annually in real terms by 3% until 1989, then by 4.5% until 1991, then by 6.25%, and finally by 7.5% from 1993 onward. As well as this steady tightening of the price cap, the scope of regulation has broadened to include leased lines, connection charges and international call charges, leased lines being regulated by a separate cap, and international calls being included in the principal tariff basket. Within the overall RPI − X constraint, BT was free initially to rebalance its relative prices subject to a ceiling on the real increases in domestic (but not business) rental charges of 2% per annum. However, regulatory control over price structures has also been increasing over time. Table 7.2 shows real price movements of some of BT's regulated services since privatization.

Perhaps the most striking aspect of table 7.2 is the massive drop in the price of peak-time long-distance calls relative to other services. BT chose not to increase rental charges by as much as was permitted in the three years from 1986, something that is perhaps curious given its recent insistence on being freed to increase these further, but even so these charges have not fallen in real terms despite real average charges having fallen by more than 40%. Recently BT has sharply reduced call charges for the weekend period.

Rebalancing of Call Charges The issue of rebalancing became prominent in 1985 when BT made its first price changes as a private company. Some rebalancing was justified because large cross-subsidies from highly priced long-distance calls to cheap local calls and rental charges resulted from the pricing structure inherited from the public sector era. Moreover technological advances such as fiber-optic cable and digital exchanges had amplified these cross-subsidies. In addition to this cost-based motivation, however, BT was keen to rebalance quickly because it feared competition from Mercury. Since Mercury's strategy was primarily aimed at business

Table 7.2 Changes in selected real BT prices (%)

	1984–84	1985–86	1986–87	1987–88	1988–89	1989–90	1990
X in RPI − X formula	3.0	3.0	3.0	3.0	3.0	4.5	4
Actual overall change	−3.1	−3.3	−2.8	4.0	−4.4	−4.4	−4
Residential line rental	+1.9	+1.4	+1.2	−4.0	−4.4	+1.6	+1
Local calls							
Peak	+1.6	−0.5	+16.0	−4.0	−4.4	−7.7	−13
Cheap	+1.6	−0.5	−5.9	−4.0	−4.4	−4.2	+0
National "b" calls							
Peak	−18.2	−12.3	−18.0	−4.0	−4.4	−7.7	−18
Cheap	+1.6	−0.5	−8.5	−4.0	−4.4	−7.7	−2

Source: Calculations based on Oftel Annual Report for 1992, table 5.2
a. Quantity discounts introduced and international calls regulated in 1991–92.
b. In the 1992–93 BT was not required to decrease its average price by as much as 6.25% because of forecasting errors in revenue for the previous year. The precise reduction required is currently under discussion between BT and Oftel.

users, who make a high proportion of peak-time long-distance calls, there was an additional incentive for BT to choose to reduce charges in this area in particular.[25]

However, such rebalancing was problematic in two respects. First, it tended to favor large users (especially off peak-time long-distance services) over smaller users. Many residential customers, especially those on lower incomes, soon discovered that an overall constraint of RPI − 3 was entirely consistent with their bills rising in real terms. Second, BT's rebalancing involved price cuts in the areas where competition was stronger and increases where its market power was most entrenched. (We saw in section 4.3.3 how average price regulation produced these incentives.) If pushed too far, "rebalancing" could undermine liberalization, even in its limited duopoly policy form. Oftel investigated (Oftel 1986) and concluded that rebalancing up to 1986 was justified by relative costs but that there was no need for further rebalancing between local and long-distance call charges. Since then there has been no move of great significance between these two services. Nevertheless, it seems possible that Mercury would have made greater inroads into the long-distance market had BT not been allowed to rebalance in this way, for instance, by regulating long-distance and local services with separate caps.

25. Ideally BT would have liked to reduce its prices only on those routes that faced competition from Mercury, but provisions against such price discrimination in BT's License prohibited such behavior.

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-86	1986–87	1987–88	1988–89	1989–90	1990–91	1991–92[a]	1992–93[b]	Cumulative change
)	3.0	3.0	3.0	4.5	4.5	6.25	6.25	45.3
3	−2.8	−4.0	−4.4	−4.4	−4.1	−6.5	−2.4	43.0
4	+1.2	−4.0	−4.4	+1.6	+1.6	+1.9	+2.0	+4.6
5	+16.0	−4.0	−4.4	−7.7	−13.2	−2.2	−3.8	−17.8
5	−5.9	−4.0	4.4	−4.2	+0.2	−1.1	−3.8	−19.6
3	−18.0	−4.0	−4.4	−7.7	−18.2	−5.5	−3.8	−64.6
5	−8.5	−4.0	−4.4	−7.7	−2.5	−0.8	−3.8	−26.8

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The 1988 Price Review The 1988 price review (see Oftel 1988) determined the regime of price control for BT for the period after July 1989 until the subsequent review period. The main conclusions, which were agreed with BT (thus avoiding an MMC reference), were that there should be

1. a tightening of X in the main cap from 3 to 4.5, with BT not to raise its regulated prices before August 1989,
2. an increase in the scope of control to include connection charges and operator-assisted calls,
3. a continuation of the separate RPI + 2 cap on domestic rental charges, and its extension to include business line rentals and connection charges,
4. a requirement that BT introduce a "low user" scheme,
5. a four-year duration of the new regime, so that the regime would last until 1993.

Additionally prices for BT's previously unregulated domestic leased circuits were brought under a separate cap of RPI − 0.

The low-user scheme that Oftel asked BT to introduce involved giving customers the option of half-price rental charges together with 30 units of free calls per quarter (worth about £1.50 in 1993) but requiring that calls in excess of the 30 unit limit be charged at a much more expensive rate than the standard charge per unit (about 20p instead of 5p per unit in 1993), before charges fell back to the standard rate after 150 units. (Certain types of line were excluded from this scheme, including multi-line users

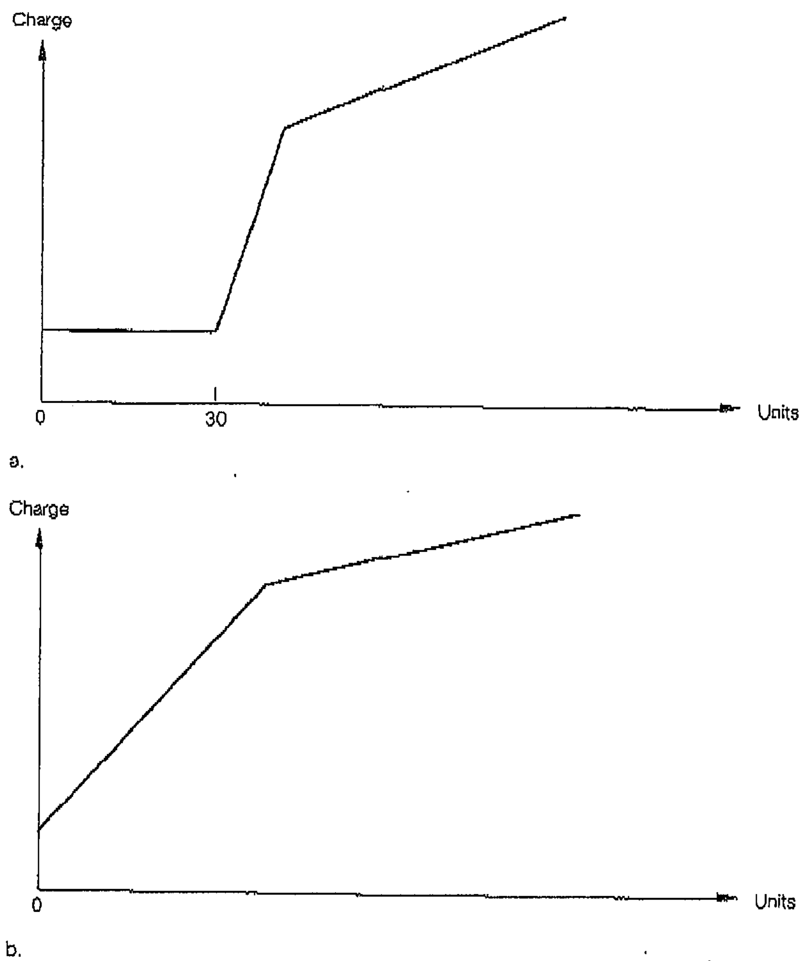

Figure 7.2 The low-user tariff (a) and a tariff with quantity discounts (b)

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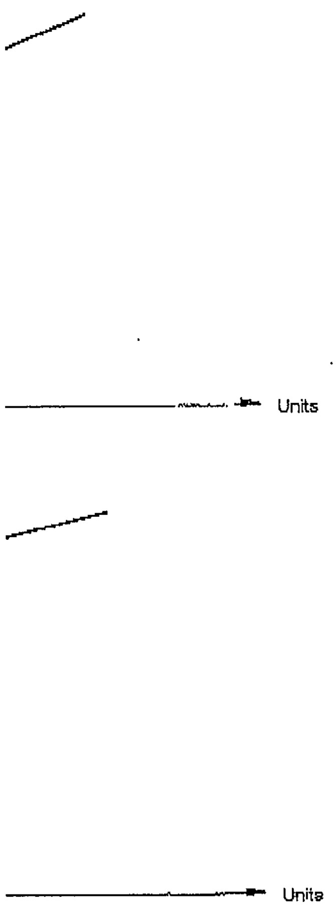

antity discounts (b)

and lines used for burglar alarms, etc.) Oftel (1992a, para. 136) indicates that 1.5 to 2 million customers benefit from this low-user scheme (which was strengthened in the 1992 review). The scheme encourages network membership and so has advantages on network externality grounds, in a way that is targeted on users who might otherwise not join. It also promotes social objectives. However, it seems unlikely that the resulting tariff is the best possible. Figure 7.2a shows schematically the tariff obtained by taking the minimum of the low-user scheme and BT's standard two-part tariff, which in combination is the overall tariff BT offers to its customers (if we ignore the quantity discounts granted to large users). We argued in section 2.1.4 that a good nonlinear tariff would probably offer quantity discounts in some form, so a superior low-user scheme perhaps might look like figure 7.2b, where low users were given the option of choosing a two-part tariff with a low fixed charge and higher usage charges.[26]

BT's rate of return in current cost terms, which is not public information, was a key determinant of the tightening of X to 4.5.[27] The DGT has since stated that X was set "at a level which gives BT an expectation of covering the cost of capital employed for the services under control, and takes account of the risk for BT while providing demanding targets for improvements in customer service and increased efficiency."[28] The role of rate-of-return considerations for regulatory reviews under RPI $- X$ regulation was discussed in chapter 6.

Pricing Changes Resulting from the Duopoly Review The duopoly review, though primarily concerned with liberalization, contained important changes to BT's price cap regime, and it is convenient to describe these now. An important point is that these changes occurred midway between two regulatory reviews and so to some extent went against the spirit of price cap regulation which is to give the firm a *commitment* to a pricing regime for a fixed number of years. This regulatory lag gives the

26. However, the analysis in section 2.1.4 ignored the possibility of network externalities among users, and in some circumstances this might affect the outcome.
27. When investigating whether BT's rebalancing in 1985 and 1986 was justified, Oftel (1986) also analyzed the appropriate rate of return for BT to see whether the company was making excessive profits. The DGT estimated that the acceptable historic cost rate of return fell in the range of 17.5% to 19%, whereas the actual rate of return was about 20% overall, and he concluded that no action need be taken until the 1988 review.
28. See BT Share Prospectus, November 1991, p. 26. See also Oftel (1992b).

firm an incentive to cut its costs by allowing it to keep any extra profits that result from increased efficiency for the duration of the period.

The duopoly review White Paper (Department of Trade and Industry 1991) announced agreement between the DGT and BT that X in the main cap should increase from 4.5 to 6.25 and that international switched services should be included in the main tariff basket, with an immediate 10% reduction in international call charges (to be counted toward the overall RPI − 6.25 reduction).[29] In addition international private circuits were brought under the RPI − 0 cap on domestic private circuits that was introduced in the 1988 review. As a result of these changes, regulated services now account for about 70% of BT's turnover, compared with 50% in 1989.[30]

Second, the DGT indicated willingness to accept greater tariff flexibility subject to some conditions. Thus BT is now able to offer tariffs with quantity discounts together with optional tariff schemes, for instance, low call charges combined with a high rental charge, provided that they are reasonable in relation to costs and not unduly discriminatory.[31] We saw in section 2.1 above that such optional tariffs can be Pareto improving if the regulated firm has no competitors and the good is sold for final consumption. However, as we discussed in section 4.3, the effect of offering these quantity discounts needs to be monitored, since they can otherwise provide BT with a means of selective price cutting in the market for large users, where its main competitive threat from Mercury and the new entrants exists. Thus the duopoly review document (DTI 1991, para. 6.17) states that any quantity discounts offered by BT should satisfy the following: they must apply to a reasonably broad category of customers, they must eventually make the revenues obtained from different classes of customers be proportional to the incremental costs of serving these customers, and they must not amount to predatory pricing. It remains to be seen exactly how it is these principles will be put into practice.

Third, on rebalancing, the DGT decided against relaxing the contentious RPI + 2 cap on exchange line rentals and connection charges for

29. The cost of providing international services is falling relatively quickly, and the figure of 6.25 was derived by keeping constant the estimated stream of BT's profits under the RPI − 4.5 regime after including international services.

30. Oftel (1992a, 9).

31. BT's price list for January 1993 states that all domestic users will receive a discount of 5% on all calls made in excess of £75 (excluding VAT), this discount rising the more calls are made. In addition for a £4 monthly fee a user can obtain a 10% discount on all calls. Thus BT is now offering optional two-part tariffs.

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residential and single-line business users but agreed to an increase to RPI + 5 for multi-line businesses. Being thus constrained in rebalancing between call and rental charges, BT argued that liberalization without a requirement for competitors to make adequate payments toward its access deficit would lead to unfair and inefficient cream-skimming. We will discuss this issue, which is the crux of recent disputes between BT, its actual and potential rivals, and Oftel, in section 7.5.6.

The 1992 Price Review The 1992 price review (see Oftel 1992c) determined the regime of price control that will hold for the period from July 1993 until July 1997. Its main conclusions, which again were agreed with BT (thus avoiding an MMC reference), were that there should be

1. a further tightening of X in the main price cap from 6.25 to 7.5,
2. a reduction in the standard connection charge from £152.75 to £99,
3. a continuation of the RPI + 2 cap on domestic and single-line business exchange line rentals,
4. a requirement that no other individual prices should increase by more than RPI + 0 in any year,
5. a stipulation that any quantity discounts offered by BT will *not* count when assessing BT's compliance with the RPI – 7.5 price cap (i.e., that such discounts will fall outside the tariff basket),
6. an extension of the low-user scheme introduced in the 1988 review to cover roughly that quarter of BT's customers who use the network least.

This new regime constitutes a yet further strengthening of regulation compared to the outcome of the 1988 price review and the duopoly review. The DGT has stated (Oftel Annual Report for 1992, para. 1.11) that under this new regime BT should be able to earn between 16.5% and 18.5% on capital employed by the end of 1997 (on an historic cost basis), which is broadly in line with Oftel's estimate of BT's cost of capital.

The standard connection charge applies to any connections that require fewer than 100 hours of labor. Since 100 hours of labor would cost BT well in excess of £99, there is ample scope for it incurring losses in connecting at least some customers (especially those in rural areas). If it is the case that by charging £99 BT is required to subsidize connections even in typical urban areas, this could inhibit the scale of entry of the cable TV companies into local telecommunications. The fact that any quantity discounts offered by BT will not count toward the calculation of BT's average price index reduces the incentive for BT to use quantity discounts as a means of predatory pricing against its present and future rivals.

This section has described the history of the regulation of BT's prices since privatization. We have seen that the basic principle of price cap regulation has been retained in each of the regulatory reviews, but that the cap has been tightened and extended in scope over time. BT's profits during this period were probably at a rather high level initially but have gradually fallen as a result of tighter regulation together with the slow reduction in its market share.

7.5.5 The Duopoly Review of Entry Conditions

Some measures of liberalization occurred in the year or so before the review of the fixed-link duopoly policy.[32] The government's commitment not to allow simple resale expired in 1989, and domestic, but not international, simple resale was permitted. Also the various somewhat arcane restrictions on connecting private networks were lifted. The duopoly policy in the mobile area also expired in 1989. In that year, following the advice of Oftel, the government announced its intention to license Telepoint and Personal Communications Network (PCN) operators to compete with Cellnet and Vodafone.[33]

The main duopoly review began in November 1990 when the government's commitment not to license fixed-link network operators to compete with BT and Mercury expired, and the result was the White Paper *Competition and Choice: Telecommunications Policy for the 1990s* (Department of Trade and Industry 1991). Its central conclusion was that the duopoly policy should be ended and that any application for a new license to offer domestic telecommunications services should be considered "on its merits," although the duopoly policy in respect of international calls was to be retained for the "short term."

International services present special problems because they require arrangements with overseas operators. When someone in Britain makes an overseas call, the British operator must pay the overseas operator to

32. For an analysis of policy and policy options toward entry in the British telecommunications industry, see Beesley and Laidlaw (1989).

33. Telepoint is a portable technology whereby users can make, but not receive, calls provided that they are within range of a suitable base station. To date it has not been commercially successful, and none of the original licensees now offers the service. PCNs use a more sophisticated version of the traditional cellular technology with smaller cells, higher frequencies, and the ability to carry digital signals. There are two PCN operators of which one, Mercury one-2-one, launched its service in 1993.

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