

Call set-up costs

Introduction

1. This appendix sets out the effect of moving to a two-part costing arrangement for calls to mobile phones. It also sets out how the trend in call durations would affect any adjustments made as a result of a move to two-part costing.

Two-part costing

2. In order to calculate the effect of a two-part costing regime (that is, a cost per call attempt and a cost per call minute) we first examined the network cost of fixed-to-mobile calls for the year 1997/98 in detail.

3. This was not straightforward. As set out in Appendix 5.1, the charging regime changed on 1 October 1997. One consequence of this was that network routing factors were only published for the six months to 30 September 1997. However, BT provided us with the routing factors for the full 12-month period which it used internally. Using these figures, we determined the notional cost of fixed-to-mobile calls averaged over the 12-month period to 31 March 1997 using the accounting separation (AS) methodology. The calculations are set out in Table 1, which shows the cost in ppm of each element and the network routing factor by which it is multiplied to give the cost for a fixed-to-mobile call. The result is a *notional* 24-hour averaged figure for the full 12 months of 0.585 ppm, which is equivalent to the 0.604 ppm calculated in Table 1 of Appendix 5.1 for the first six months of the year.

TABLE 1 Network cost of fixed-to-mobile calls using AS methodology, 1997/98

	LE concentrator	LE pro- cessor	TE	Remote- local link	Remote- local length	Local- tandem link	Local- tandem length	Tandem- tandem link	Tandem- tandem length	Network cost per minute
Element cost (ppm)	0.098	0.204	0.08	0.053	0.045	0.056	0.017	0.049	0.008	
Network routing factor	0.968	1.002	1.384	0.707	0.995	0.66	1.32	0.361	2.017	
Cost (ppm)	0.095	0.204	0.111	0.037	0.045	0.037	0.022	0.018	0.016	0.585

Source: BT.

4. In order to calculate the impact of the higher call set-up costs on the 24-hour averaged cost of fixed-to-mobile calls, we next examined how the cost of each of the elements should be allocated between calls attempts and call duration.

5. BT's allocation is shown in Table 2. LE costs were apportioned between call attempts and call duration in the ratio [3:1]. TE costs were allocated [3:1] and transmission costs [3:1].

TABLE 2 Allocation of elements to call attempts and call duration

per cent

<i>Element</i>	<i>Allocation to</i>	
	<i>Call attempts</i>	<i>Call duration</i>
LE-processor	<i>Figures omitted. See note on page iv.</i>	
LE-concentrator		
TE		
Remote-local: link		
Remote-local: length		
Local-tandem: link		
Local-tandem: length		
Tandem-tandem: link		
Tandem-tandem: length		

Source: BT.

6. These proportions were then used to allocate the total costs of each element to call attempts and call duration. Table 3 shows the total cost of each element together with the allocation of the costs between call attempts and call durations, in line with Table 2.

TABLE 3 Allocation of costs between call attempts and call duration, 1997/98

<i>Element</i>	<i>Call attempts (‘000 million)</i>	<i>Call durations (‘000 million minutes)</i>	<i>Total costs (£m)</i>	<i>Total costs allocated to calls attempts (£m)</i>	<i>Total costs allocated to call durations (£m)</i>	<i>Unit cost (pence per call)</i>	<i>Unit cost (ppm)</i>
Local exchange-processor	<i>Figures omitted. See note on page iv.</i>						
Local exchange concentrator							
Main exchange							
Remote-local: link							
Remote-local: length							
Local-tandem: link							
Local-tandem: length							
Tandem-tandem: link							
Tandem-tandem: length							

Source: BT.

7. Using this methodology, the cost of a call now depends on its duration. The average cost per minute is given by the formula:

$$\text{Average cost per minute} = \frac{\text{Cost per call attempt} + \text{cost per call minute} \times \text{call duration}}{\text{Call duration}}$$

8. BT said that, in 1997/98, the average duration of a fixed-to-mobile call was 1.28 minutes. Table 4 shows the average cost per minute of these calls. First, it shows, for each element, the cost per call attempt and the cost per call minute derived from Table 3. Then it shows the total cost per minute using the formula above for a call duration of 1.28 minutes, and finally this is multiplied by the routing factor as before.

TABLE 4 Network cost of fixed-to-mobile calls using two-part methodology, 1997/98

	LE concen- trator	LE pro- cessor	TE	Remote -local link	Remote -local length	Local- tandem link	Local- tandem length	Tandem- tandem link	Tandem- tandem length	Network cost per minute
Element cost per call (p)	(
Element cost per minute (p)										
Total cost per minute (p)										
Routing factor										
Cost (ppm)										
<i>Figures omitted. See note on page iv.</i>										

Source: BT.

Table 4 shows that the total cost of a fixed-to-mobile call in 1997/98 was 0.851 ppm. This is 0.266 ppm more than the 0.585 ppm derived using the AS methodology, as shown in Table 1. BT then applied an uplift of 11 per cent, giving 0.295 ppm, to take into account the skewed distribution of fixed-to-mobile calls through the day (see Appendix 5.1).

9. BT's calculations assumed that a proportion ([\approx] per cent) of transmission element costs should be allocated to call set-up. Our technical advisers suggested that this would overstate the proportion of transmission element capacity taken up by signalling traffic. When the calculations are repeated with this component removed, the cost became 0.844 ppm, 0.255 ppm more than using the AS methodology averaged over 24 hours, or 0.287 ppm when adjusted for time of day. With this exception, our advisers saw no reason to question BT's calculations for the adjustment in 1997/98.

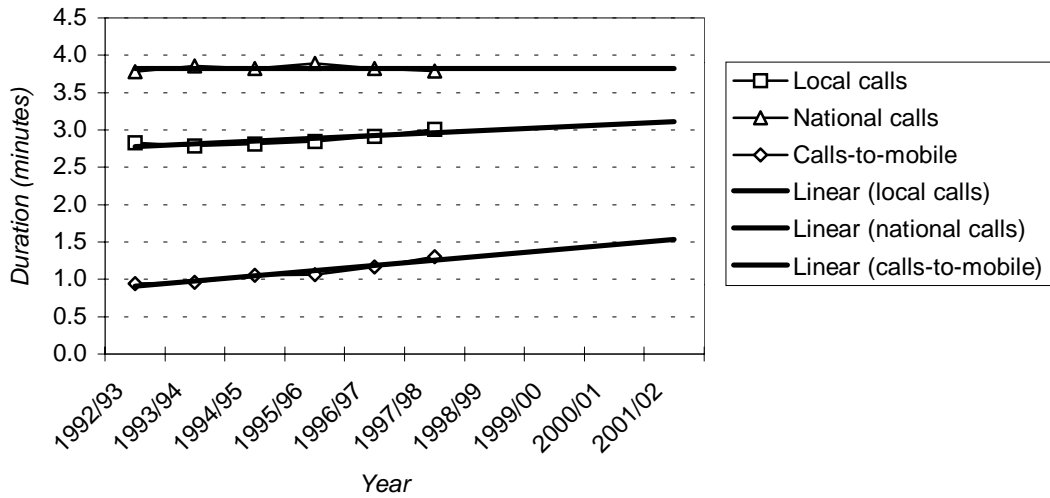
Trends in call duration

10. The results produced by the two-part costing are dependent upon the average duration of the different types of calls, and the above analysis is based upon 1997/98 durations. We noted, however, that there has been a clear trend for the duration of fixed-to-mobile calls (and also local calls) to increase in duration. Figure 1 shows historic call durations and also a linear extrapolation of the trends.¹

¹The linear extrapolations gave durations of:
 For local calls, 2.7398 mins + 0.0363 mins per year.
 For national calls, 3.8287 mins-0.0006 mins per year.
 For calls to mobile telephones, 0.8368 mins + 0.0695 mins per year,
 where the base year is 1991/92.

FIGURE 1

Trend of call durations



Source: MMC calculations from BT data.

11. On the basis of these trends, we calculated that the adjustment for fixed-to-mobile calls would be 32 per cent lower if the projected call durations for 2001/02 were used. This is equivalent to a 44 per cent drop at 2001/02 prices and costs, assuming retail price inflation of 3 per cent a year and costs falling at RPI-8 (see paragraph 3.52).

12. BT argued that a linear extrapolation of historic figures did not truly reflect current trends in call duration. In particular, it said that the increase in average local call duration resulting from an increasing proportion of long calls to the Internet should be taken into account. BT calculated that, if this were taken into account, the two-part costing adjustment would fall from 0.295 ppm in 1997/98 to 0.195 ppm in 2001/02 at out-turn prices and costs, a reduction of 35 per cent rather than the 44 per cent calculated from linear extrapolation.

13. If the 35 per cent fall is applied to a 1997/98 start figure of 0.287 ppm (see paragraph 10), the costs in 2001/02, at out-turn costs and prices, would be 0.187 ppm. For the purposes of Tables 5.6 and 5.7, we rounded these figures to 0.29 ppm in 1997/98 falling to 0.19 ppm in 2001/02.