

7 The economics of number portability

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7.1. This chapter summarizes work carried out to assess the economics of NP. There is agreement that the absence of NP may deter customers from changing suppliers and thus may be a barrier to the development of competition. We first consider the recent evidence on the significance of NP as a barrier to customers switching suppliers; next we discuss estimates of the impact of the introduction of NP. Then we summarize analyses of the benefits of NP, including the NERA cost-benefit analysis which had to be carried out in order to satisfy the terms of BT's licence. Finally, we consider evidence on the basis on which one operator might charge another operator for porting numbers.

Survey and other evidence of the importance of NP

7.2. A number of recent surveys have included questions about attitudes to keeping or changing telephone numbers. The surveys are summarized in Table 7.1. They have different coverage and methods: in all cases there are some difficulties of interpretation and the results need to be treated with a degree of caution, but it is likely that the results of all the surveys taken together show a more complete picture than any one individual survey. The results discussed below relate to responses by BT customers only, as porting of numbers is most likely in the first instance to be from BT to other operators.

Residential customers

7.3. Table 7.2 shows responses to questions about why customers did not switch from BT to cable or other suppliers. Not wanting to change their telephone numbers was one of a number of reasons customers gave for not switching supplier but was generally not the most important reason. The survey responses suggest that a high proportion of respondents were happy with the range and quality of services provided by BT and that this was a deterrent to changing supplier. Other significant deterrents to changing supplier suggested by the surveys include lack of information and 'hassle'. OFTEL pointed out that 'hassle' may itself reflect problems arising from the absence of NP.¹

¹30 per cent of respondents to the OFTEL survey who said taking a cable telephone would be a 'hassle' quoted the difficulty of telling everyone the new number as one of the reasons for 'hassle'.

TABLE 7.1 Surveys including questions about keeping or changing telephone number

<i>Carried out for</i>	<i>Date</i>	<i>Carried out by</i>	<i>Type</i>	<i>Sample size</i>	<i>Areas covered</i>
A. Surveys of residential customers					
CA	March '95		Telephone survey	1,036	National
OFTEL	April/ May '95	BMRB	Interviews	780	Three areas where cable company telephone service is available (Bristol, Liverpool, S Herts)
BT	June '95	The Research Business	Telephone survey	1,026	National
BT	June '95	The Research Business	Interviews	559	Cable franchise areas (homes not necessarily passed yet)
B. Surveys of business customers					
OFTEL	May '95	BMRB	Telephone survey	780	Three areas where cable company telephone service is available (Bristol, Liverpool, Watford)
BT	June '95	The Research Business	Telephone survey	607	National
BT	June '95	The Research Business	Interviews	554	Cable franchise areas (homes not necessarily passed yet)

Source: MMC based on information provided by CA, OFTEL and BT.

Note: Sample size indicates the number of businesses in sample. There was typically one respondent in each business.

TABLE 7.2 Reasons for not switching from BT to cable/another supplier: residential surveys

	<i>Survey</i>				
	<i>CA Prompted</i>	<i>BT Prompted</i>	<i>BT telephone Prompted</i>	<i>BT interview Unprompted</i>	<i>OFTEL telephone Unprompted</i>
Base number of respondents	566	667	503	667	370
	<i>per cent</i>				
<i>Given as a reason</i>					
Happy with BT/positive factors of existing supplier	87	43-63*	32-73*	13-20*	55
Hassle/can't be bothered	55	24	23	21	28
Lack of information	50	61	45	11	
Don't want to change number	36	52	34	1	9
Concerns about alternative suppliers such as quality of service or value for money	14	34-42†	30-52†	0-1†	10
Haven't got round to it		9	12	5	8
Cost/not convinced would get saving	22	33	31	1	16
<i>Given as the most important reason</i>					
Happy with BT/positive factors of existing supplier	47	42	22		34
Hassle/can't be bothered	13	14	8		15
Lack of information	16	9	11		
Don't want to change number	9	2	8		5
Concerns about alternative suppliers such as quality of service or value for money	2	7	21		4
Haven't got round to it		1	1		4
Cost/not convinced would get saving	5	2	7		7

Source: See Table 7.1.

Note: Not all reasons were included in all surveys. 'Prompted' indicates that respondents were given a list of reasons and asked to choose between them.

*The responses to the BT surveys are recorded as four positive factors about the current supplier. The range shown is for the percentage of positive responses to each of these questions. The percentage of respondents answering positively to at least one of the four questions may be greater than the upper end of the range shown.

†The responses to the BT surveys are recorded as six negative factors about rival suppliers. See previous note.

7.4. Table 7.3 summarizes the views of BT's customers about changing number. Around a half of residential respondents thought changing number was a problem for them (very big or quite big) and 'agreed a lot' with the statement that they did not want to change number and felt unhappy (very or quite unhappy) about changing number. Around [†] per cent said that it would prevent them from switching supplier and a further [‡] to [‡] per cent said that it would make them much less likely to switch. [‡] to [‡] per cent said that it would not matter to them.

TABLE 7.3 Views of BT customers about changing telephone number*

	<i>Survey</i>				
	<i>OFTEL Residential</i>	<i>BT telephone Residential</i>	<i>BT interview Residential</i>	<i>BT telephone Business</i>	<i>BT telephone Business</i>
Base number of respondents	370†	793	503	502	507
					<i>per cent</i>
<i>Effect of number change on decision to switch operator</i>					
Prevent from switching	14	[
Much less likely					
Slightly less likely					
Would not matter					
Don't know]
<i>Whether changing number was a problem</i>					
Very big problem	17				
Quite big	33				
Not much	32				
Not a problem at all	15				
Don't know	4				
<i>Agreement that did not want to change phone number</i>					
Agree a lot	49				
Agree a little	11				
Disagree a little	11				
Disagree a lot	12				
Don't know	17				
<i>Feelings about changing number</i>					
Very unhappy		[
Quite unhappy					
Makes no difference					
Quite happy					
Very happy]

Source: See Table 7.1.

*Totals may not sum to 100 due to rounding.

†The base for the question about 'agreement that did not want to change phone number' was 341 (excluding those unaware of cable's availability).

7.5. Table 7.4 shows the results of asking respondents what level of discount they would require on their BT bill before seriously considering changing supplier. In all cases, the necessary discounts declined when respondents were able to keep their number but the extent of the effect varied between the surveys.¹ The BT face-to-face interview survey, which according to BT's researchers provided a stronger and more realistic test of the importance of portability in switching decisions, showed the largest effect: around [‡] per cent more customers were likely to consider switching if they could keep their number free of charge. This result needs to be considered in the light of other results, particularly the importance of factors such as lack of information.

¹A part of the variation is likely to be due to coverage: the interview survey had a higher proportion of respondents in areas with cable telephony available and therefore the BT customers would exclude a higher proportion of those who had already switched to cable telephony. This would reduce the proportion of those likely to switch (especially without NP) in the interview survey compared with the two telephone surveys which had national coverage.

‡Figures omitted. See note on page iv.

TABLE 7.4 **How much cheaper telephone bills would have to be before seriously considering changing supplier when respondent can and cannot keep number: residential surveys**

Whether can keep number	CA*			BT telephone			BT interview		
	Can	Cannot	Difference	Can	Cannot	Difference†	Can	Cannot	Difference
Base no of respondents	487	487		398	395				
									<i>per cent</i>
<i>Assuming £30 cable connection fee and no charge for keeping number</i>									
5% discount									[
10% discount									
15% discount									
20% discount									
30% discount									
Would not switch]
Don't know				‡	‡				
<i>Assuming £20 cable connection fee and no charge for keeping number</i>									
5% discount									[
10% discount									
15% discount									
20% discount									
30% discount									
Would not switch]
Don't know							‡	‡	
<i>Assuming £10 cable connection fee and no charge for keeping number</i>									
5% discount									[
10% discount									
15% discount									
20% discount									
30% discount									
Would not switch]
Don't know				‡	‡				
<i>Assuming no cable connection fee and no charge for keeping number</i>									
5% discount	7	7	0						[
10% discount	24	18	6						
15% discount	52	36	16						
20% discount	60	47	13						
30% discount	91	80	11						
Would not switch	4	17]
Don't know	6	4		‡	‡				

Source: See Table 7.1.

Note: Figures shown are the cumulative totals of customers saying they would seriously consider changing supplier at that discount and all smaller discounts. In the CA survey and the BT telephone survey the sample was divided into two: half were asked the question relating to changing supplier with numbers being kept and the other half were asked the question on the basis of supplier and number change. In the BT interview survey, all respondents were asked the questions under both assumptions (keeping and changing number).

*The figures shown against 5 per cent for the CA survey relate to discounts of 0 to 4 per cent and similarly for higher discounts. Thus the figure against 15 per cent relates to discounts of 10 to 14 per cent. Also the figure for 30 per cent relates to 20 per cent or more.

†(Can-cannot) may not equal Difference due to rounding.

‡Included in percentage who would not switch.

7.6. The results of the surveys suggest that not being able to retain numbers is one of the factors that deter residential customers from changing suppliers. The surveys do not provide any strong evidence of how much switching would result from the introduction of NP. This is likely to depend on a number of factors, including the strength of marketing by cable companies and other suppliers; the speed with which the cable networks are built; the price discounts offered compared with BT; and the extent of charges for NP.

Business customers

7.7. A higher proportion of businesses than residential customers referred to having to change their telephone number as a reason for not switching supplier: in the OFTEL survey, for example, 16 per cent of non-cable users said that changing number was the main reason for not taking cable telephony. Table 7.3 suggests moreover that changing number is more of a problem for businesses. Around [†] per cent of respondents said that it would prevent them from switching supplier and only [‡] to [†] per cent said that it would make no difference to their decision. Multi-line business customers may choose to dual source and are thus able to retain their BT numbers: they may decide to use their BT lines for incoming calls and their non-BT lines mainly for outgoing calls and thus avoid the disadvantages associated with changing their telephone numbers. Evidence suggests that operators other than BT have a significantly higher proportion of outgoing than incoming call traffic and this would support the idea that it is important to businesses to keep their numbers. However, businesses may dual source for security or other reasons as well as to keep their number.

Estimates of the impact of the introduction of NP

7.8. Table 7.5 summarizes the estimates that have been made of the impact of NP on the share of residential and business lines held by BT's competitors in the UK as a whole (the share of cable companies in areas where cable is available will be somewhat higher). There is uncertainty about the position both with and without portability. In some cases the estimates shown in the table are point estimates around which there would clearly be a range of uncertainty; in other cases a range is shown reflecting the uncertainty about future projections.

TABLE 7.5 Estimates of the share of lines held by BT's competitors in the UK as a whole, with and without porting

Source and date for estimate	Type of competitor considered	per cent			
		Residential lines		Business lines	
		Without porting	With porting	Without porting	With porting
NERA, 2000/01	All	10.0	13.8	13.8	19.6
NERA, 2004/05	All	13.0	22.0	21.4	31.5
BT(1)*, 1999/2000	Cable only	[Figures omitted.]
BT(2)*, 1999/2000	Cable only	See note on page iv.			

Source: MMC.

*BT(1) and NERA assume the cable companies maintain the same prices with NP as without. BT(2) assumes the cable companies impose a £15 initial charge per number ported and impose further charges equivalent to a 3 per cent reduction in the bill discount (relative to BT) for lines which are ported. BT also looked at other assumptions (not shown in the table).

7.9. In addition to causing some customers to switch supplier, the availability of NP is likely to lead other customers, who in the absence of NP would have switched to non-BT suppliers on a new number, to keep their old number. These customers avoid a number change as a result of NP. Estimates of the number of lines ported by such customers are shown in Table 7.6.

TABLE 7.6 Estimates of the number of lines ported which would otherwise have had new numbers

Source and date for estimate	Type of competitor considered	'000		
		Residential lines ported	Business lines ported	
NERA 2000/01	All	1,648	39*	
NERA 2004/05	All	2,286	72*	
BT(1)†, 1999/2000	Cable only	[Figures omitted.	
BT(2)†, 1999/2000	Cable only	See note on page iv.]		

Source: MMC.

*Number of subscribers, not number of lines.

†See note to Table 7.5.

Benefits compared to costs of NP

7.10. The cost-benefit analysis, required under Condition 34B of BT's licence and carried out by NERA for OFTEL, defined three categories of benefits:

- *Type 1 benefits*: the benefits to customers who retain their telephone number when switching suppliers net of any effects on these suppliers;
- *Type 2 benefits*: the efficiency improvements and price reductions which may result from increased competitive pressure; and
- *Type 3 benefits*: the other resource savings arising from fewer number changes (fewer misdialled calls, directory enquiry calls, updates to directory information and changes to information stored in customer equipment).

NERA's estimates of the benefits and costs¹ of NP based on its estimates of the impact of the introduction of NP (see Tables 7.5 and 7.6) are shown in Table 7.7. Although more up-to-date information would no doubt produce somewhat different numbers, it is useful to quote NERA's results as they have been the basis for subsequent debate. NERA found that the most important benefits were the Type 2 benefits and that the total benefits substantially exceeded the costs of NP,² ie that the net benefits were positive.

TABLE 7.7 NERA's estimates of the benefits and costs of NP

Benefits	£ million, 1993 prices	
	Total 1995/96-2004/05	
	Undiscounted	Discounted at 6% real
Type 1		
-Customers switching supplier due to NP	487	
-Customers avoiding number change	67	
Type 2	1,280	
Type 3	19	
Total	1,851	
Costs	423*	
Net benefits	1,427	915

Source: NERA study.

Note: Undiscounted figures are shown as these were the figures quoted in the NERA study for benefits and costs (but not net benefits).
*See footnote 1 to this paragraph.

7.11. During the course of the inquiry a number of further studies, carried out by economists and firms of economic consultants, have been made available to the MMC. Table 7.8 shows a list of all the studies.

¹NERA considered costs under a number of different assumptions about technology. Costs shown in Table 7.7 are for the lowest cost technology (described by NERA as call redirection-DLE interconnect).

²This was the case for all assumptions about technology except for the immediate introduction of a full IN solution.

TABLE 7.8 Economic studies of NP made available to the MMC

<i>Study and author</i>	<i>Date</i>	<i>Description</i>	<i>Commissioned by</i>
1. Cost-Benefit Analysis of NP, NERA	July 1993 (published by OFTEL in January 1994)	Cost-benefit analysis required under Condition 34B of BT's licence	OFTEL
2. Cost-Benefit Analysis of the introduction of NP: an assessment of benefit estimates, George Yarrow	February 1994	Reviews NERA study (1), comments on reliability and robustness of the benefit estimates as bases for regulatory decisions	BT
3. NERA's response to Yarrow's critique	May 1994	Responds to Yarrow (2)	OFTEL
4. The Economic Analysis of the introduction of NP in the UK Telecommunications market, London Economics	June 1995	Reviews the main economic issues involved in the MMC inquiry and comments on NERA study (1) and Yarrow (2)	NYNEX, TeleWest and Videotron
5. Estimating the Haskel and Szymanski model using only BT data, Lexecon	August 1995	Further analysis of one of the estimates on which NERA (1) relied	BT
6. Yarrow's response to NERA's response to Yarrow's critique of NERA's original study	(Sent to MMC) August 1995	Responds to NERA (3)	BT
7. An Economic Analysis of NP, Paul Grout and Jeremy Turk	September 1995	Response to cable companies' arguments and London Economics study (4)	BT
8. Estimating the welfare gains from price changes due to NP, London Economics	September 1995	Quantifies one of the points made in earlier study (4)	NYNEX, TeleWest and Videotron

Source: MMC.

7.12. The main points made in these studies are summarized below. In order to assist exposition, and to take account of new information on technology and costs (summarized in Chapters 5 and 6), which was not available at the time of the NERA study, the net effects of NP are divided into the following categories:

- Type 1 net effects in the period up to the introduction of IN, consisting of the Type 1 benefits during this period less the variable costs of NP (ie the line set-up and conveyance costs associated with tromboning and call drop-back);
- Type 2 benefits during this period;
- Type 3 benefits during this period; and
- system set-up costs for tromboning and drop-back.

This categorization differs slightly from that in the NERA report; as both variable costs and Type 1 benefits are directly dependent on the number of lines ported, the variable costs of tromboning and drop-back are set against the Type 1 benefits whereas the NERA report simply dealt with these in the overall measurement of costs. Also, the relevant period is that up to the introduction of IN, because this is the period for which estimates of take-up and cost of NP are available.

7.13. A standard procedure in economic cost-benefit analysis is to add together (the monetary value of) the benefits and subtract the costs that accrue to different consumers and producers. This procedure was adopted by NERA in its study and in all the other studies shown in Table 7.8.

Net Type 1 benefits

7.14. This category includes the net benefits arising from customers switching suppliers, for some or all of their telephone lines, as a result of NP being available. It also covers the net benefits arising from customers, who would switch suppliers even in the absence of portability, retaining the same telephone number. Type 1 effects are estimated on the assumption that each supplier's price and cost are the same with and without NP (to the extent that NP affects the price and cost of each supplier this is included in the Type 2 effects). The net benefits to customers and suppliers are shown in Table 7.9 on the assumption that the customer ports his/her number from BT to the other supplier; that there is no change in the pattern of the customer's calls as a result of changing supplier; and (for simplicity) that all calls to that customer are from BT lines.¹ The arguments submitted to us ranged over a wide spectrum of points. To provide a clear and consistent framework, we summarize the position in Table 7.9.

TABLE 7.9 **Net Type 1 benefits associated with porting numbers**

The table shows the net benefit accruing to the porting customer, to BT and to the other supplier when the customer is (1) with BT; (2) with the other supplier on a new number; and (3) when with the other supplier on a ported number. It is assumed that the customer's pattern of calling is the same in each case; that all calls to/from that customer are from/to BT lines and that the other supplier obtains interconnection from BT. The cost to BT of porting the number may be passed on (in whole or part) to the other supplier but is not charged by the other supplier to the customer.

- V = Value placed by customer on having a telephone and making calls.
- b_{BT} = Customer's bill with BT.
- b_0 = Customer's bill with other supplier.
- C_{BT} = Marginal cost to BT of supplying customer (over relevant time period).
- C_0 = Marginal cost to other supplier of supplying customer.
- n = Marginal cost to BT of porting number.
- n_0 = Charge by BT to the other supplier for porting the number.
- n_{BT} = $n - n_0$ = porting cost paid by BT.
- i = Interconnection payments from other supplier to BT for outgoing calls (including call termination payments).
- t = Call termination payments from BT to other supplier for incoming calls.
- S_T = Customer's switching cost when moving to other supplier on new number.*
- S_N = Customer's switching cost when moving to other supplier on ported number.* Hence $S_T - S_N$ = benefit to the customer of porting rather than changing number.
- C_i = Marginal cost to BT of providing interconnection (other than call termination) on customer's outgoing calls.

<i>Customer supplied by</i>	<i>Net benefit accruing to</i>			
	<i>Customer</i>	<i>BT</i>	<i>Other supplier</i>	<i>Total</i>
1. BT	$V - b_{BT}$	$b_{BT} - C_{BT}$		$V - C_{BT}$
2. Other supplier with new number	$V - b_0 - S_T$	$i - t - C_i$	$b_0 - C_0 - i + t$	$V - S_T - (C_0 + C_i)$
3. Other supplier with ported number	$V - b_0 - S_N$	$i - t - C_i - n_{BT}$	$b_0 - C_0 - i + t - n_0$	$V - S_N - (C_0 + C_i) - n$
4. Net benefit for customer switching because of NP (= 3-1)	$b_{BT} - b_0 - S_N$	$C_{BT} - b_{BT} + i - t - C_i - n_{BT}$	$b_0 - C_0 - i + t - n_0$	$(C_{BT} - C_0) - S_N - C_i + n$
5. Net benefit of keeping number for customer switching anyway (= 3-2)	$S_T - S_N$	$-n_{BT}$	$-n_0$	$S_T - S_N - n$

Source: MMC.

*For a customer who stops dual sourcing as a result of NP there is a benefit from not having to deal with two suppliers and hence it is likely that $S_N < 0$.

¹Other assumptions are shown in the table.

Customers switching supplier as a result of NP

7.15. In this case, the customer receives a net benefit equal to the reduction in his/her bill less any costs associated with switching supplier without changing number; BT loses the bill that the customer would have paid less the marginal cost of supplying that customer; and the other supplier gains the bill paid by the customer less its marginal cost of supplying the customer. BT also loses an amount equal to the marginal cost of porting the number, but this may be passed on to the other supplier who may in turn pass it on in some way to the customer.¹ The net effect for all parties can be expressed as:

- the difference in marginal cost (between BT and the other supplier) of supplying the customer;
- less the customer's cost of switching supplier;²
- less the marginal cost to BT of porting calls.

The economic studies listed in Table 7.8 contain differences of view about the first two parts of this expression and these are discussed below. There are also differences of view about the third part which are discussed in Chapter 6.

7.16. The NERA study assumed that the difference between BT and the other supplier in the marginal cost of supplying customers was equal to the difference in call bills plus half of the difference in line rental. The reason for only including half of the difference in line rental was that BT's most unprofitable customers may be less likely to switch to other suppliers, the result of so-called 'cream-skimming',³ making it less likely that lower prices reflect higher efficiency of other operators. The difference in call prices was assumed by NERA to be 20 per cent of the BT bill in 1995/96, falling to 17 per cent in 2000/01 and 15 per cent in 2004/05,⁴ and the difference in rentals was assumed to be 10 per cent in 1995/96, falling to 7 per cent in 2000/01 and 5 per cent in 2004/05.

7.17. London Economics (LE) commented that NERA's procedure rested upon a number of fairly stringent assumptions and might result in an over- or underestimate of net benefits. NERA's procedure could be justified if it was assumed, *inter alia*, that suppliers have constant returns to scale (so that average costs do not change as output changes) and that suppliers price at marginal cost (which is also equal to average cost) or have equal price-cost margins. LE went on to suggest that, when these assumptions were not satisfied, NERA's methodology was questionable.

7.18. One of the points made by Yarrow was that 'cream-skimming' could imply that price differences did not reflect marginal cost differences and this could contribute to the overestimation of net benefits by NERA. NERA responded that it had made an allowance for 'cream-skimming', and moreover that it was unlikely that 'cream-skimming' was of great importance in the context of the study (essentially because in NERA's models the most profitable of BT's customers were assumed to switch to other suppliers even in the absence of NP). NERA went on to argue that there was evidence that entrants have lower marginal costs than BT as a result of new technology, economies of scope (in the case of cable companies) and more efficient working practices.⁵ Consequently NERA believed a significant part of other suppliers' price discounts reflected differential efficiency.

¹For simplicity, Table 7.9 assumes the charge is not passed on to the customer.

²In the case of dual sourcing customers, however, there is a benefit from not having to deal with two suppliers if all lines could be switched from BT to the other supplier as a result of NP.

³A possible reason is that BT's unprofitable customers are disproportionately located in rural areas which are less likely to be served by cable companies.

⁴The difference in call prices to large businesses was assumed to be 15 per cent in all years. The difference in price for calls other than local, national and international calls was assumed to be the same as the difference in rental.

⁵No specific evidence was cited by NERA.

7.19. Yarrow also referred to the likely loss of economies of scale by BT,¹ which implied that BT's marginal cost was below average cost. In its response NERA accepted this but argued that BT's average cost curve was of the form:

$$AC = FC/Q + MC \quad \text{where } AC = \text{average cost, } FC = \text{fixed cost, } Q = \text{output,} \\ MC = \text{marginal cost}$$

and that the cost curves of the other suppliers had a broadly similar structure (with lower marginal cost-see paragraph 7.16). Hence, while loss of customers by BT as a result of NP would raise BT's average cost, there would be an offsetting reduction in average cost of other suppliers already in the market. The economies of scale point was therefore only of relevance to net benefits if the introduction of NP attracted new entrants into the market and this led to an increase in total fixed costs of all suppliers (taken together) compared with what they would have been in the absence of NP.² But NERA considered that it was not reasonable to suggest that anything but a very small part of BT's loss of market share would go to companies entering as a result of NP.

7.20. The second element in the expression in paragraph 7.15 was the customer's cost of switching supplier (but not number). NERA assumed this was zero after netting off the customer's connection charge (because the only customer-switching costs were those associated with changing number). NERA's assumption was criticized by Yarrow. Yarrow's criticism was generally supported by LE. The thrust of Yarrow's criticism was that NERA's assumption of zero cost of switching supplier was inconsistent with its assumption that other suppliers continued to offer lower prices than BT even after the introduction of NP. Yarrow pointed out that, under standard cost-benefit analysis procedures, the continued existence of such lower prices (with NP) would be taken to reveal continued switching costs. NERA responded to this with two points:

- (a) The discount was assumed to result from consumer inertia, reflecting the fact that people often used rules of thumb to simplify decision-making, and this was consistent with ideas of 'bounded rationality' and the cognitive limitations of decision-makers. In his counter-response, Yarrow suggested that bounded rationality did not necessarily imply the existence of inertia of any type, let alone the consistent, mass inertia ascribed to telephone users in the NERA work. LE argued that the factors apparently behind NERA's consumer inertia, such as costly information gathering and processing as well as the likely lack of established reputation and uncertain product quality of suppliers other than BT, either were switching costs or reflected a perceived risk on the part of consumers in taking up a new supplier's service. LE further argued that this risk was a real economic (and hence switching) cost. LE therefore agreed with Yarrow that NERA's treatment represented a departure from the standard approach to cost-benefit analysis.
- (b) NERA claimed that Yarrow's point did not necessarily make much difference to its estimate of net benefit. NERA stated that, using Yarrow's approach of assessing the customer-switching cost from the post-portability price discount, the relevant Type 1 benefits would be around one-quarter of those originally estimated by NERA. This assumed, as in the original NERA study, that residential customers on average regarded the cost of changing number as being equivalent to an income stream equal to 2.5 per cent of the BT bill, but for the purpose of assessing Yarrow's point it was more appropriate³ to assume that the cost was equal to 7.5 per cent⁴ of the BT bill. When this was done, the Type 1 benefits using Yarrow's approach were increased to at least 85 per cent of the level originally estimated by NERA.

It may be noted that the debate here revolves around the assumptions regarding post-portability discounts in NERA's model and their interpretation. Since NP has not yet been introduced, there is no evidence on the actual discounts offered on the BT bill by other suppliers in that situation.

¹He dealt with this under Type 2 benefits.

²The point would, however, also be of relevance if existing entrants expanded the geographical scope of their operations as a result of NP and this led to an increase in their fixed costs.

³For consistency with the 'revealed preference' approach to consumer behaviour.

⁴The figure was based on early survey work by the consultants, Ovum Limited.

Customers avoiding a number change

7.21. We next consider customers who would move to another supplier even in the absence of portability but who decide to retain the BT number. In this case, the customer receives a benefit equal to the difference between his/her switching cost when having to take a different number and his/her switching cost when retaining the same (ported) number. This is simply his/her willingness to pay for porting the number. BT experiences a net cost equal to its marginal cost of porting numbers, which may be passed on to the other supplier and/or the porting customer. The total net benefit is thus equal to the customer's willingness to pay for porting less the marginal cost of porting. It may be noted that this will always be positive if the porting cost can be passed on to the customer.

7.22. NERA assumed that residential customers' cost of changing numbers was £5 each but NERA added that responses to the survey¹ (on which the £5 was indirectly based) might have underestimated the cost by not attaching a value to the time and inconvenience involved. For businesses, NERA assumed that the one-off cost of changing number was 80 per cent of the annual telephone bill for one- to four-line businesses and 40 per cent for larger businesses.²

Effect of price changes on demand

7.23. The NERA study and the above discussion assume that the number and duration of calls are unaffected by decisions to change supplier, whether or not numbers are ported. LE pointed out that, as the price of calls tends to change for some customers as a result of NP being available, this would only be the case if demand was completely price inelastic. A similar point was made in the NERA response to Yarrow (in arguing that the original NERA estimates understated Type 1 benefits). LE suggested that, as NP results in more customers switching to lower-priced suppliers, this may bring about an increase in the number and duration of calls made by those customers which in turn would result in net benefits to both customers and suppliers (see Figure 7.1). These benefits would be in addition to those set out in Table 7.9.

7.24. If, however, the conveyance cost of porting numbers is passed on to the customer, customers who switch supplier even in the absence of NP but port when offered the opportunity may face an increase in the price of calls. This would reduce the net Type 1 benefits accruing to such customers (described above as those avoiding a number change).

Type 2 benefits

7.25. We next consider the general benefits of increased competition. Type 2 benefits arise if the introduction of NP leads to an intensification of competition and hence price and/or cost reductions by one or more suppliers, including both BT and others. Type 2 cost reductions may arise if the intensification of competition causes one or more suppliers to cut marginal and/or intra-marginal (such as fixed) costs. They thus reflect shifts in the cost curve of one or more supplier (while cost reductions associated with Type 1 benefits reflect movements along the cost curve of each supplier, as well as changes in the market share of the different suppliers).

Price effects

7.26. LE drew the MMC's attention to recent theoretical analysis of entry and competition in markets with customer-switching costs. LE said that such analysis was complex and few *universally valid* generalizations could be derived. Nevertheless, drawing on a survey article by Klemperer,³ LE argued

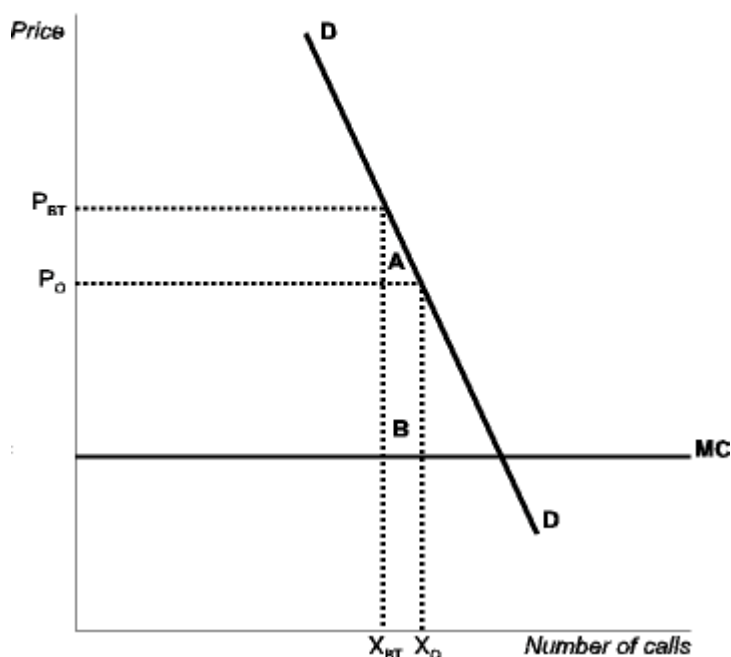
¹The survey showed a mean cost of £8.10 per line but more than half of respondents said that the cost was zero.

²20 per cent of this cost was assumed to represent business lost by that company but gained by other companies operating in the UK. Under standard cost-benefit analysis procedures (see paragraph 7.13), the gain was netted off in calculating the net benefit.

³Klemperer, P *Competition when consumers have switching costs: an overview*, Review of Economic Studies Lecture to the Royal Economic Society Conference, 1990.

FIGURE 7.1

Benefit from reduction in call prices



Line DD shows the customer's demand for calls: the lower the price, the more calls are made. If, as shown on the diagram, the price of calls goes down as a result of switching from BT to another supplier, there is a benefit to the customer associated with the increase in the number and duration of calls. This benefit is equal to the difference between the average value placed on additional calls (the average of the BT price, P_{BT} , and the other supplier's price, P_O , at least when the DD line is straight) and the price paid, P_O , multiplied by the number of additional calls made ($X_O - X_{BT}$). The net benefit to the customer of the additional calls is then equal to area A on the diagram. If the other supplier's marginal cost (MC^* on the diagram) is lower than its price, the other supplier together with its interconnecting suppliers will make additional profits, shown as area B on the diagram. Following the traditional cost-benefit approach, the total net benefit associated with the extra calls is therefore the sum of areas A and B on the diagram. This is in addition to the benefits and costs of changing supplier for the original calls (X_{BT}) which are shown in Table 7.9.

*Including marginal cost of interconnection. Thus $MC = (C_o + C_i)$ in Table 7.9.

Source: MMC.

that there was a theoretical presumption that switching costs had a negative effect on competition, entry and welfare and only in very special cases would they result in overall net benefits. Moreover, switching costs tended to raise prices. LE therefore argued that the introduction of NP, which was a way of reducing switching costs, could be expected to reduce all prices and thus to yield net benefits to customers and suppliers for the reasons set out in Figure 7.1. LE further argued that the decrease in prices could far exceed the level of the switching costs. LE provided illustrative calculations which showed that if the introduction of NP reduced prices over ten years by about 2.5 per cent, the overall net benefit to customers and suppliers would be almost £300 million (the nature of these benefits is discussed in paragraph 7.23 and Figure 7.1). Larger assumed price reductions yielded correspondingly larger net benefits. The LE calculations envisaged that lower call prices would generate more calls;¹ that lower rentals would result in more connections² (and hence more calls as well); and also that lower call prices would induce more connections through cross-price effects (arising because lower call prices cause more people to want to be connected to the network). The cross-price effects (including the effect of rentals on the volume of calls and the effect of call prices on connections) accounted for about half of LE's estimated net benefit of lower prices.

7.27. LE's interpretation of the theoretical literature was contested by Grout & Turk for the following reasons:

¹The assumed own-price elasticities were: local calls -0.1; national calls -0.4; international calls -0.6.

²The assumed own-price elasticity was -0.1.

- (a) Grout & Turk argued that the literature suggested that, in a market with switching costs, during the period when new suppliers entered the market and competed for market share, competition was strong and prices low; it was only in later periods that competition was weakened by switching costs. The significance of this point was that UK telephony was now in the entry period, when theory suggested competition was strong and prices low, but in the longer run switching costs due to lack of NP would decline to a very low level (because of the introduction of IN). Hence the theoretical reduction in competition in later periods would not come about. In response to Grout & Turk, OFTEL and the cable companies suggested that if, as is acknowledged to be the case, switching costs fall with the introduction of new methods of NP, the underlying rationale for strong competition in the entry phase disappeared. Moreover, even in the entry period prices in Klemperer's models were higher with than without switching costs. In any event, OFTEL argued, it was wrong to suggest that the introduction of NP could lead to a reduction in competition in the present phase of the market.
- (b) Grout & Turk stated that BT was regulated and other suppliers had received entry assistance (see paragraphs 4.23 to 4.25). This affected the appropriate theoretical conclusions. Most importantly, since BT was subject to price-cap regulation, it was unable to extract excess prices and profits from the future existence of switching costs, even if such costs existed. Entry assistance and the regulation of BT's conduct (see paragraphs 4.26 to 4.28) would enhance the theoretical presumption that competition was strong in the current entry phase of the market. OFTEL agreed that the presence of price-cap regulation affected the conclusions that could be drawn from the switching cost literature. OFTEL and the cable companies argued that, by enhancing competition, the reduction of switching costs increased the effectiveness of regulation and would eventually help permit the withdrawal of detailed regulation.
- (c) With regard to LE's quantitative estimates of the effect of price reductions (see paragraph 7.26), Grout & Turk argued that price reductions in one sector of the market may be offset by price increases elsewhere. According to Grout & Turk, without a reduction in costs, any beneficial effects of price reductions may be offset by other negative effects elsewhere.

Productivity and cost effects

7.28. In its study, NERA did not take account of any net benefits from lower prices of the type shown in Figure 7.1. NERA argued that the introduction of NP would remove a significant barrier to entry, greatly increasing the ease with which customers could move between competing suppliers, thus putting increased pressure on both BT and other suppliers to improve productivity. LE agreed with this general statement and its study included a helpful summary of recent theoretical and empirical evidence on the links between the strength of competition and productive efficiency (see Appendix 7.1). LE concluded that it seemed beyond doubt that increased competitiveness resulted in significant static efficiency gains and a boost to productivity growth. This was in line with NERA's conclusions. Yarrow agreed that there were good grounds for believing increased competition led to increased incentives for cost reduction.

7.29. Both Yarrow and Grout & Turk argued that price-cap regulation was an alternative method of inducing productive efficiency improvements by BT. Yarrow argued in his first response that NERA implicitly assumed the price cap was ineffective and that, while not impossible, this assumption was at one end of a spectrum of plausible alternatives and was more likely than not to lead to overestimation of Type 2 benefits. In its response to Yarrow, NERA suggested that there were practical reasons for doubting that price-cap regulation could be as effective as competition in bringing about efficiency improvements, *inter alia*, because:

- first, OFTEL had less than full information; and
- secondly, when setting the price cap, OFTEL had to be mindful of its duty to promote competition and the danger that too severe a price cap could restrict the development of BT's competitors.

Yarrow expressed some sympathy with these points in his second response. Grout & Turk, however, argued that there was no reason to suppose that the incremental effect of NP could have any further significant effect on efficiency over and above that of the price cap and existing competition. Grout & Turk thought that the

existing RPI-7.5 per cent price cap was extremely tough and BT's manpower reductions and other similar increases in productivity (achieved through efficient outsourcing and large-scale organizational changes) were now largely complete.

7.30. NERA's quantitative estimate of Type 2 benefits relied on estimating the change in market share from the introduction of NP and assuming that each 1 per cent decrease in market share led to a 0.47 per cent increase in BT's productivity.¹ This procedure was criticized on two main grounds:

- first, changes in BT's market share were not necessarily an indicator of changes in the strength of competition; and
- secondly, a single unpublished study was inadequate evidence to support the assumed relationship between market share and BT's productivity.

Each of these points is discussed below. A further argument was that economies of scale were not taken into account: this is considered in paragraph 7.19 (under Type 1 benefits).

7.31. On the first point, Yarrow argued that the relationship between market share and competition was necessarily a contingent one: the form of the relationship found in different circumstances was, in general, dependent on those circumstances. Yarrow pointed out that deregulation or other pro-competitive measures sometimes led to an increase in concentration, since regulation (or self-regulation through pricing agreements) may protect smaller, less efficient suppliers. In the case of telecommunications, it could be argued that the more effective was BT's response to competition (for example, in the way it improved the range and quality of services provided), the fewer the customers it would lose to its competitors and the smaller the decline in BT's market share. In this case BT's market share would be directly related to the success of pro-competitive regulation in improving its performance.

7.32. NERA cited three studies carried out in the USA and Japan to assess the effect on productivity and costs of measures to liberalize the telecommunication market, and pointed out that in each case the percentage increase in productivity was larger than the percentage decrease in market share. Thus, NERA argued, even if only half of the efficiency improvement was the result of increased competition (as opposed to other factors), the results were consistent with NERA's assumption that each 1 per cent decrease in market share led to a 0.47 per cent increase in productivity. Yarrow suggested that these studies provided support for the view that substantial efficiency benefits resulted from major liberalization measures but did not provide much help in assessing the effects of the introduction of NP which was an incremental change to a market already fundamentally transformed by privatization, liberalization and regulatory reform. The implication of Yarrow's argument was that the effect of the introduction of NP on productivity would be much less than that of major liberalization measures, irrespective of the estimated impact of NP on market share. (Moreover the estimated change in market share would itself depend on uncertain projections of the market up to ten years ahead.) Hence, Yarrow argued that the evidence served to undermine the assumption that there was a well-defined, stable relationship between market share and efficiency.

7.33. On the second point, NERA's assumption regarding the relationship between market share and productivity was criticized on a number of grounds:

- (a) It relied on the results of a single piece of evidence. NERA, however, responded that this appeared to be the only relevant study.²
- (b) The Haskel & Szymanski paper covered a wide range of former publicly-owned companies;³ and the resulting estimate of the relationship between market share and productivity was therefore an average across different types of firm and could not be assumed to apply straightforwardly to individual firms within the sample.

¹This assumption was based on an unpublished study by Haskel & Szymanski of the productivity growth of existing and former public enterprises.

²NERA also pointed out that it had carried out a 'sanity check' on its estimated Type 2 benefits: this involved calculating the extent to which BT would have to reduce its costs to maintain profits, given the reduction in BT's market share resulting from the introduction of NP.

³Including BT.

- (c) Productivity improvements and market share changes in the study were dominated by trends in the coal and steel industries, where reductions in the scale of operations could be expected to be associated with productivity improvements (through closure of least productive sites), in contrast to the position in network industries, such as telecommunications. While, in principle, Haskel & Szymanski's approach should take care of this problem by separating the scale effect from the competition effect, there were practical difficulties in doing this because of the unreliability of some of the data inputs. Yarrow considered that it was quite possible, therefore, that the -0.47 coefficient could be picking up scale effects in the coal and steel industries.
- (d) Although Haskel & Szymanski found a negative relationship between changes in market share and the following year's productivity-the result used by NERA-they had also found a positive relationship between the level of market share and productivity in the same year. This suggested that the dynamics of the link between market share and productivity were complex and could not be ignored in serious policy analysis.

7.34. Lexecon carried out further examination of the relationship between market share and productivity for BT only, using data supplied by BT that were not available to NERA or Haskel & Szymanski. Lexecon's time series analysis showed that a reduction in market share of 1 per cent was associated with a reduction in the following year's productivity of about 0.4 per cent rather than the increase found by Haskel & Szymanski. OFTEL suggested that the Lexecon results were unreliable; in part, because Lexecon had used the price-cap formula as an independent variable but it was not independent of productivity (the dependent variable) since OFTEL determined the price cap on the basis of projections of productivity and cost reductions. A further problem is that, while Lexecon set out to estimate the Haskel & Szymanski equation for BT only, Lexecon's results imply that large changes in BT's employment and capital employed have only a small effect on BT's output, which is contrary to the underlying assumptions of the analysis. Moreover, in contrast to Lexecon's results, Figure 7.2 which shows the data on productivity and market share provided by BT to Lexecon, tends to suggest that there is a negative rather than positive association between productivity and market share.

7.35. While Yarrow agreed with NERA's general view that the literature suggested that deregulation and competition could bring substantial benefits to consumers, he considered that the evidence provided no support for NERA's quantification of the Type 2 benefits. Grout & Turk went somewhat further than Yarrow arguing that, since BT was in a market situation of unusual regulatory and competitive pressure, it seemed highly unlikely that further measures to promote competition would have a significant effect on the level or growth of BT's productivity. OFTEL told us that it thought BT was capable of achieving significant further efficiency savings and that the regulatory regime was an imperfect substitute for competition.

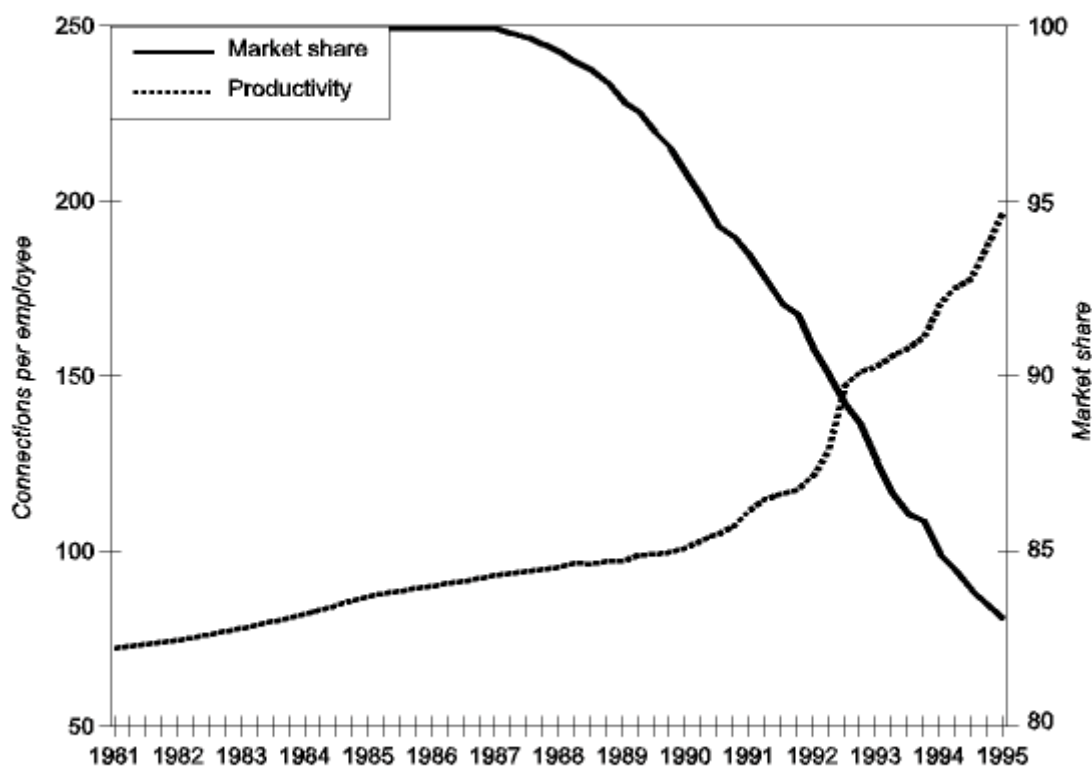
Type 3 benefits

7.36. One effect of the introduction of NP would be that there would be fewer number changes arising from customers switching suppliers. NERA identified a number of benefits accruing mainly to residential and business customers calling numbers which would have changed in the absence of NP: fewer misdialled calls; fewer directory enquiry calls; and fewer adjustments to equipment (such as telephone handsets and fax machines) with stored numbers. A further benefit, also included in Type 3, was that fewer changes would be required to the telephone directory information maintained by BT and other operators.

7.37. NERA's assumptions on Type 3 benefits are shown in Table 7.10. None of the economic studies commented on NERA's estimates of Type 3 benefits, possibly because the estimated Type 3 benefits were much smaller than the Type 1 and Type 2 benefits. A number of points were, however, made during the course of the MMC inquiry concerning the Type 3 benefits:

FIGURE 7.2

BT productivity* and market share



Source: BT.

*Productivity is measured by BT connections per employee.

Note: Annual data to 1987Q1, quarterly data from 1987Q2.

- (a) Every regular contact of a subscriber changing his or her number must take some action to record or memorize the new number. In the case of residential customers¹ this includes most obviously friends and relatives and also contacts such as employers, doctors, dentists, and other businesses used by the customer, including electricity and gas, all of which may well maintain a list of their users' telephone numbers. There is anecdotal evidence that the costs of changing number in this second category are significant and likely to be more in total than the £1 per changed number allowed by NERA for changes to equipment with stored numbers.
- (b) On the other hand, customers changing number in the absence of NP may take into account the effects on those wishing to call them: residential customers might not wish to risk losing contact with friends while businesses would not wish to risk losing clients. This suggests that there might be a risk of double counting the benefits² of number changes avoided, but this would not necessarily apply to costs incurred by doctors, dentists etc.
- (c) Businesses, particularly large businesses, face the problem of incorrect information about those they might wish to call all the time and for a wide variety of reasons. BT suggested that, as a result, they may well use commercial services to update their records on a regular basis and would do this even in the absence of customers changing number as a result of switching operator. Thus extra costs might not be involved as a result of a customer changing his number.

¹Residential customers are likely to account for the majority of number changes avoided as a result of NP (see Table 7.6).

²In the case of the NERA estimates, this risk would seem to be minimal since the Type 1 benefits were assumed to be only £5 each for residential customers.

- (d) There is no reliable evidence available as to the number of callers liable to be affected by a telephone number change nor of the costs to them of discovering and accommodating the number change.
- (e) OFTEL said that other benefits of reducing the extent of telephone number changes included improved accuracy of telephone directories and better utilization of the limited supply of telephone numbers.
- (f) In some cases the called customer may welcome the opportunity afforded by changing numbers to cease contact with one or more callers. If the cost to the callers is to be taken into account then so should this benefit. However, in such circumstances, the called customer may decide on balance not to port his/her number.

TABLE 7.10 NERA assumptions on Type 3 benefits

	<i>Residential</i>	<i>Business</i>
<i>Misdialled calls</i>		
% misdialled (%)	1	2
Average length (minutes)	1.0	1.0
% of misdialled calls during work time (%)	33	75
Operators' cost (£ per misdialled call)	0.03	0.03
<i>Directory enquiry (DQ) calls</i>		
% of misdialled calls leading to DQ calls (%)	25	25
Average length (minutes)	1.0	1.0
Operators' cost (£ per call)	0.38	0.38
<i>Value of time (£ per hour)</i>		
Work	8.0	8.0
Leisure	3.2	3.2
Average usage (minutes per line, 1993/94 average)*	3,044	6,257
Average call length (minutes, MMC estimate)*	3.0	3.0
<i>Estimated cost (£ per line) based on above assumptions</i>		
Misdialled calls†	1.11	5.98
Directory enquiries‡	1.17	5.14
<i>Other Type 3 benefits (£ per number)</i>		
Directory updates	1.00	1.00
Customer equipment changes	1.00	10.00
Total (assuming one line per number) (£ per number)	4.28	22.12

Source: MMC estimates based on NERA study, OFTEL market information.

*MMC figures: the precise assumptions used by NERA are not known.

†The estimated cost is the length of time spent by callers on misdialled calls multiplied by the average value of callers' time.

‡The estimated cost is the operators' cost plus the callers' cost (calculated as for misdialled calls).

Basis for charging for ported numbers

7.38. Although there were differences of view as to the size of the benefits to be obtained from NP, its introduction has been supported by BT as well as the other operators. Differences of view remain, however, about the level of charges that may be made by the exporting operator to the importing operator.

7.39. OFTEL believed there were six principles relevant to the recovery of the costs of NP by the exporting operator:

- cost causation, which implied that those whose actions caused costs to be incurred at the margin should pay the costs;
- cost minimization, which required that those who had the ability to affect the size of costs should have the incentive to minimize costs, through operational efficiency and rapid adoption of cost-reducing technology;

- distribution of benefits: economic efficiency required that porting customers should pay prices that reflected the benefits to other customers resulting from the porting customers retaining their numbers, and the general principle of equity required that cost recovery reflected the benefits to customers generally from portability;
- effective competition, which should not be weakened by the charging system for ported numbers;
- reciprocity and symmetry, which required that as far as possible the charging system should be the same whether numbers were ported to BT or ported from BT; and
- practicability and ease of implementation.

The last two of these principles (reciprocity and practicability) appear to be uncontroversial. The first four are discussed further below.

Cost causation

7.40. The porting of numbers may cause additional line set-up and conveyance costs to be incurred. BT argued that, in the absence of charges for porting, customers who would switch from BT to cable anyway would be induced to port their number even if they placed little or no value on retaining the number. BT's survey suggested that if there were no charge for NP, [*] per cent of residential customers changing supplier would port their number. However, the survey also showed that if charges were made for portability, the number of such customers choosing to port declined significantly. Thus BT argued that charges for NP were required to induce efficient choices by customers who would have changed supplier anyway: in the absence of such charges, customers for whom the net benefits of porting were less than the costs would still opt to retain their number. Grout & Turk made the additional point that, as conveyance costs would fall rapidly over time, it might be efficient for some customers to delay porting their numbers for a period (eg until drop-back was available) but, in the absence of charges for NP, there would be no incentive for them to do this.

7.41. The efficiency benefits of charging for porting will only arise if the cable company or other importing operator in one way or another passes on the charge to those of its customers who have ported. BT accepted that it was an open question on what terms the cable companies would offer portability to their customers. The Managing Director of BT's Personal Communications business told us that he thought the cable companies would not explicitly pass the charge on only to porting customers, though cable company prices to all customers might be changed.

7.42. OFTEL and the cable companies argued that the cost causation principle was of little importance with respect to conveyance costs (under both tromboning and drop-back), since the extra costs associated with porting were very small and in particular were much less than BT's fully allocated cost or its long-run incremental cost (see paragraphs 6.37, 6.38, 6.42 and 6.43).

Cost minimization

7.43. Both OFTEL and the cable companies emphasized the importance of incentives to minimize costs and hence to implement NP in the most efficient way. LE argued that there were two potential problems which might prevent efficient implementation:

- (a) If there were trade-offs between different cost items, such as system set-up and line set-up, and each operator paid its own system set-up costs while charging for line set-up, there would be an incentive to shift costs from system set-up to line set-up and this would be unlikely to result in efficient implementation.

*Figure omitted. See note on page iv.

- (b) If costs could be passed on through charges there was no incentive to introduce portability efficiently; the exporting operator would instead be tempted to opt for inefficient implementation so as to raise rivals' costs and thus gain a competitive advantage.

Incentives for cost minimization would be improved if charges were determined in advance and not altered in the light of the actual costs incurred. One way of doing this would be to set the charge at zero: this was the option favoured by the cable companies and by LE.

7.44. Grout & Turk argued that the incentive problem was not relevant in practice. Appropriate technical solutions for the foreseeable future (tromboning and drop-back) had been agreed and it was not now possible for BT to distort choices. BT had committed itself to a timetable for drop-back and had agreed that charges could reflect drop-back costs after October 1997 even if there were unforeseen delays in implementation. This removed the incentive for BT to raise its rivals' costs by delaying the introduction of lower-cost technology. However, according to OFTEL, this would not provide a continuing incentive for BT to implement NP nor to eliminate delays in the period up to October 1997.

7.45. BT argued moreover that regulation was an alternative method of ensuring cost minimization and that the DGT already had the power under the existing licence (Condition 34B.15) to exclude any costs that could not properly be said to be reasonably incurred. OFTEL pointed out in response that the asymmetry of information as between BT and the regulator meant that it was difficult for OFTEL to judge the reasonableness of BT's costs. LE argued that minimization of the regulatory burden was a further aspect of cost minimization and that if each operator bore its own cost, the need for continuing and expensive regulatory intervention would be avoided. Grout & Turk clarified this by pointing out that it was the incremental costs of regulation that were relevant; that BT's proposals fitted neatly into the existing framework; and hence that the incremental regulatory costs associated with BT's proposals were small. This latter point was disputed by the cable companies which pointed to the large amount of regulatory effort that had already been expended.

7.46. A further point made by Grout & Turk was that operators would only have the appropriate incentive to introduce alternative technologies for providing NP if customers faced the correct incentives with respect to the take-up of portability; as discussed earlier, this might not be the case if exporting operators did not charge for portability (see paragraph 7.41).

Distribution of benefits and effective competition

7.47. The main issues here concern whether there are (external) benefits to persons other than the porting customer and the importing operator which would justify setting the charge for NP at below cost. Such external benefits may be of Type 2 (benefits of increased competition) or Type 3 (other benefits principally accruing to callers of ported numbers). OFTEL, the cable companies and other operators argued that at least some of the costs of NP should be borne by exporting operators (and their customers) to reflect the external benefits.

Type 2 benefits

7.48. BT argued that any competitive benefits from the introduction of NP would be achieved with or without a cost-based charge: according to BT, setting the charge below cost would not necessarily increase the competitive benefits.

7.49. Competitive benefits could, in principle, be achieved either through an intensification of competition between existing operators or through reducing barriers to entry. The DGT said that entry assistance was not the reason for his seeking more discretion over the charges for NP, implying that the benefits reflected increased competition between existing suppliers. In the NERA study, competitive benefits were assumed to result directly from the reduction in BT's market share and associated improvements in BT's efficiency (see discussion in paragraphs 7.30 to 7.35). BT suggested that portability played a minor role in adding to the strong regulatory and competitive pressures facing BT. OFTEL disagreed, arguing that portability would provide a strong stimulus to competition which was still highly imperfect. The cable companies suggested that, with a cost-based charge, not all of the competitive benefits would be realized.

7.50. In their study, Grout & Turk argued that the cost of implementing NP was a cost of changing supplier, the difference between this and other switching costs being that it fell in the first instance on the exporting operator. This would imply that, if there were general competitive benefits from reducing switching costs such that a subsidy would be justified, such a subsidy should apply equally to all switching costs, not just to the costs of NP. In addition, they argued that there was no evidence that the benefits of a subsidy would be ring-fenced within telephony, rather than spilling over into broader TV markets.

Type 3 benefits

7.51. The MMC received little evidence on the significance of Type 3 benefits to charges for NP. BT accepted that there might be benefits to those calling ported numbers but argued that these were not dissimilar to external benefits arising in other areas. Hence BT argued that the existence of Type 3 benefits did not justify a departure from existing charging principles established for interconnection.