PERSONAL AND CONFIDENTIAL

JH 415

DEPARTMENT OF INDUSTRY
ASHDOWN HOUSE
123 VICTORIA STREET
LONDON SW1E 6RB
TELEPHONE DIRECT LINE 01-212 3301
SWITCHBOARD 01-212 7676

Secretary of State for Industry

9 July 1981

Sir George Jefferson CBE
Chairman
British Telecom
2-12 Gresham Street
London EC2V 7AG

1197

Dear George,

The CPRS have undertaken a study of Britain's telecommunications needs in the next ten to fifteen years and the way in which investment should be financed. I have now received their report and enclose a copy. I hope that you will find it a constructive document which recognises the importance of modernising the telecommunications network and seeks to make practical proposals about finance.

We need to initiate follow-up action. A number of the financial recommendations are under consideration in this year's Investment and Financing Review. The report's recommendations on efficiency might, if you agree, be considered in the working party which is reviewing BT's real unit cost objective. In addition, it was agreed at the time of the increase in BT's 1981/82 EFL that officials and BT management would consider the timing for forming subsidiaries and introducing private capital in the light of the CPRS report and with a view to establishing a clearer timetable. I suggest that officials and BT management should study the CPRS recommendations on joint ventures in the context of this remit.

I appreciate the importance of the financing issues to you and to the future development of BT. I would be interested in any comments you may wish to make on the CPRS conclusions and on our handling of them. In particular I look forward to seeing shortly the outcome of the current discussions the Treasury is having with Warburgs about a performance bond, which might give increased flexibility in BT's financing arrangements.

Yours,

Keith

Treasury Chambers, Parliament Street, SW1P 3AG
01-233 3000

24 July 1981

2

Ian Ellison Esq
Private Secretary
Department of Industry
Ashdown House
123 Victoria Street
LONDON SW1

Dear Ian

BRITISH TELECOM FINANCING

At the meeting this morning with your Secretary of State and Mr Baker, it was agreed that the following assurances could be given privately to Sir George Jefferson:-

> "The Government fully recognises the importance of BT's modernisation programme - the additional £200 million on that 1981-82 year target is evidence of that. The Government accept that they have a strong case for a higher level of finance than in Cmnd 8175, but no firm commitments can be given at this stage of the year.

The Government is examining the latest Warburg bond proposals sympathetically. If accepted money provided would have to be within the overall limit for external finance decided for BT - although the proposals would mean the level of the overall limit would be higher than it would otherwise be."

It was to be made clear that while the level would be higher with a bond than without, there could be no question of a "one-to-one" increase, i.e. there could be no question of adding all the expected proceeds from the bond to the level which would have been set without it. Mr Baker expressed a preference for the term "preference share" rather than "bond". Presumably a final decision on this need not be taken now.

It was agreed that in the public statement which your Secretary of State proposes to make next week something on the following lines might be used:-

> "The Government is concerned to respond as positively as the constraints of public expenditure and the PSBR permit

/to the needs of

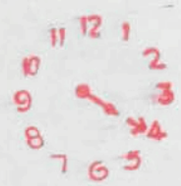
to the needs of British Telecoms investment programme. The Government will in particular keep in mind the need for the Corporation to be able to compete successfully in the new environment it will increasingly face."

I am copying this letter to Tim Lankester and Johnathan Hudson.

Yours ever,

Peter

P S JENKINS
Private Secretary



JH 414

Post + Tels

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Secretary of State for Industry

9 July 1981

J R Ibbs Esq
Central Policy Review Staff
Cabinet Office
70 Whitehall
London SW1

12 [illegible]/7

Dear Robin,

Thank you for your letter of 19 June enclosing a copy of the CPRS report on telecommunications investment and financing.

I welcome your report, which I have read with interest. You argue with force that the creation of a modern digital telecommunications system should be given priority as a national objective. I am sure we shall all give careful consideration to your conclusions about financing during the course of this year's Investment and Financing Review and I am asking officials of this Department to pursue urgently with Treasury and CPRS your recommendations on the wider issues. In particular, I attach importance to your support for the promotion of competition and your recommendation to introduce greater flexibility in financing profitable investment, points also highlighted by Professor Beesley in his report. I expect to receive some proposals shortly from George Jefferson on a new form of borrowing instrument on which this Department will be seeking the Treasury's urgent advice.

May I express my appreciation of the realism and care with which the CPRS have approached their remit. As you suggest, I am transmitting a copy of the report to George Jefferson for his consideration.

I am copying this letter to the Prime Minister, the Chancellor and to Sir Robert Armstrong.

Yours ever,

Keith

Part 7 Telecom.

Treasury Chambers, Parliament Street, SW1P 3AG

The Rt Hon Sir Keith Joseph MP
Secretary of State
Department of Industry
Ashdown House
123 Victoria Street
London SW1E 6RB

1 July 1981

Dear Keith,

TELECOMMUNICATIONS IN THE UK : INVESTMENT AND FINANCING

I have read with interest the report by the CPRS which Mr Ibbs circulated with his letter to you of 19 June.

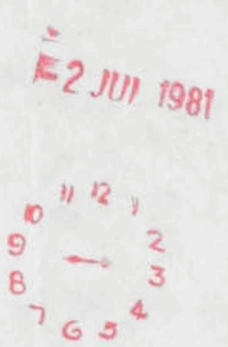
The report provides a most useful point of reference for our handling of a complex subject which has lately commanded considerable attention. I especially welcomed its emphasis on the need, if BT's investment programme is to be seen as deserving of special consideration for reasons set out in paragraph 44 of the report, to give effect to that policy by establishing priorities between nationalised industry programmes - to which I am glad to see the CPRS are giving further thought as part of their current wider study. I also very much agree with the conclusion that BT must first show they are doing all they can by way of efficiency, joint ventures, and asset sales, before further bids for additional finance can be considered.

Efficiency is the key to a lot of this and I am sure that the best hope of achieving it, as the report suggests, is to maximise competition. Thus I strongly support your current efforts to implement as early as possible Professor Beesley's recommendations on liberalising the network, whose impact should be fundamental.

I am sending copies of this letter to the Prime Minister, Kenneth Baker, Mr Ibbs and Sir Robert Armstrong.

Yours ever,

LEON BRITTAN


2 JUI 1981

Prime Minister Post + Telecoms 2

Robin Ibbs' response to the comment you made on the CPRS study.

CONFIDENTIAL

Qa 05404

23 June 1981

To: MR LANKESTER

From: J R IBBS

MC

TL

22/6

Telecommunications in the UK:
Investments and Financing.

1. Thank you for your Minute dated 22 June. I should emphasize that our view that if BT were in the private sector "it would have no difficulty in raising money" was based not on the monopoly but on the attractive prospects for the telecommunications business. This is confirmed by the interest already being shown by the private sector in the possibility of setting up alternative networks and other services to compete for parts of BT's business. The thrust of our report is to encourage the creating of such competition as quickly as possible.

2. I am sending a copy of this Minute to Sir Robert Armstrong.

JRI

CONFIDENTIAL


23 JUN 1981

CONFIDENTIAL

MT.

Post + Telecoms.

10 DOWNING STREET

From the Private Secretary

MR IBBS

Telecommunications in the UK: Investments and Financing

I showed the Prime Minister your minute of 19 June and the study on investment and financing in the telecommunications sector which you enclosed with it. The Prime Minister read the study's conclusions at paragraph 49 onwards. Her one comment was in relation to paragraph 53 where you say that if BT were in the private sector, "it would have no difficulty raising money". The Prime Minister feels that the real reason why it would have no difficulty in raising money if it were in the private sector is because it is a monopoly and can always charge higher prices to cover inefficiency.

I am sending a copy of this note to David Wright (Cabinet Office).

R

22 June 1981

CONFIDENTIAL

The National Archives

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Covering CONFIDENTIAL

Qa 05404

19 June 1981

To: MR LANKESTER

From: J R IBBS

Telecommunications in the UK:
Investment and Financing

1. You may remember that on 1 September last year the Prime Minister approved a proposal by the Secretary of State for Industry that the CPRS should study the financing of investment in the public telecommunications service, including those aspects where private sector companies could in future have a role.

2. I enclose a copy of our report and of my covering letter to Sir Keith Joseph. The Prime Minister will not want to read the detailed annexes, but she might be interested to glance at the report itself, and especially at the conclusions from paragraph 49 onwards.

for. J.R. Ibbs

Covering CONFIDENTIAL

CABINET OFFICE
Central Policy Review Staff
70 Whitehall, London SW1A 2AS Telephone 01-233 7765

From: J. R. Ibbs

Covering CONFIDENTIAL

Qa 05403

19 June 1981

Telecommunications in the UK:
Investment and Financing

In your Private Secretary's letter to No. 10 of 19 August 1980, you proposed a CPRS study of the financing of investment in the public telecommunications service, including those aspects where private sector companies could in future have a role. I now attach six copies of our report. You may want to send some to Sir George Jefferson, since as you will recall the initiative for this study came from his predecessor. Department of Industry, Treasury and British Telecom officials saw our report in draft form, and have been of the greatest assistance to us throughout.

I will not try to summarise our report; the conclusions and recommendations are set out in paragraphs 49 onwards. It has taken us longer to prepare than we anticipated, partly because of other commitments but also because of the size and complexity of BT's investment programme and the fast-changing nature of the market. Our studies have convinced us of the central importance to the economy of a good telecommunications system. We paid particular attention to the impact of competition upon BT and the scope for private enterprise in telecommunications. I shall be writing separately about our suggestion that a Ministerial discussion of the export prospects of of System X might be appropriate.

The Rt Hon Sir Keith Joseph Bt MP
Secretary of State for Industry
Ashdown House
S W 1

Covering CONFIDENTIAL

CPRS members have taken part in this year s IFR of British Telecom. Although our remit extended over the next 10-15 years, we were well aware of Ministers' concerns about the financing of the investment programme in the short term. It is clear that there is no easy solution, but I believe that in the course of the meetings, we have made some constructive suggestions.

I am sending copies of this report to the Chancellor and Kenneth Baker and under separate cover to the Prime Minister's office. Your original letter went to all members of E, but perhaps I can leave you to judge whether you would wish your E colleagues to receive copies of our report.

A copy of this minute and the report also goes to Sir Robert Armstrong.

Rodney L. Smith

for J R Ibbs

TELECOMMUNICATIONS IN THE UK: INVESTMENT AND FINANCING

A Report by the Central Policy Review Staff

Terms of Reference

1. On 30 July 1980 the then chairman of the Post Office, Sir William Barlow, proposed to the Secretary of State for Industry that the CPRS should undertake a study with the following terms of reference :

> "To examine Britain's needs for a public telecommunications service in the next ten to fifteen years, and how the investment needed should be financed."

In supporting this proposal, the Secretary of State stressed that these terms of reference embraced the financing of all the public telecommunications services provided by the Post Office (referred to henceforth as British Telecom (BT)), including those where private sector companies could in future have a role. On 1 September 1980 the Prime Minister approved the study.

2. Although the remit was for the longer term, the CPRS was aware of both government's and BT's concerns about the financing of BT's investment programme over the next few years. If the present monopoly arrangements were to continue, then the present concerns over BT's future financing could doubtless be resolved in the course of the annual public expenditure survey. But in the period of ten to fifteen years covered by our remit, the Government's policies to promote competition and private sector participation will substantially change the picture. This report therefore deliberately takes competition as its starting point and analyses both the short and longer-term impact on BT's finances and investment. It does not contain a detailed analysis of BT's 1981/6 Medium Term Plan (MTP). Nor does it reach final conclusions on access to private sector finance which falls outside present PSBR definitions. Nor does the report discuss the organisation and international competitiveness of the telecommunications equipment supplying industry, as being beyond our remit (though there are some important and related questions here which we believe deserve Ministerial consideration).

Growth and change in Telecommunications

3. This section briefly discusses growth trends and the impact of new technology.

4. Growth. BT is the largest enterprise in the UK, employing a quarter of a million people, investing two billion pounds in 1981/2 and accounting for 2.9 per cent of GDP in 1980. Telecommunications has been a growth industry ever since it began. Between 1960 and 1980, the number of exchange connections (a measure of network size) increased 3.7 times, and the number of inland calls per year by 4.6. The percentage of homes "on the telephone" has risen from 15 per cent in 1960 to 74 per cent in 1980/81. Between 1975 and 1980, BT's revenue as a share of GDP rose from 2.1 per cent to 2.9 per cent. Even in the recession year of 1980/81, when GDP fell by about 4 per cent, the number of exchange connections grew by 4.7 per cent and call traffic by 4.6 per cent.

5. Similar figures could be quoted for most other developed countries. Two fundamental forces have powered historical growth world wide: increasing residential penetration and expansion in overall economic activity. A telephone network is a single communicating system. The more people connected to it, the more use it is to an individual subscriber, so the more calls he makes. And for the business world in an advanced economy, telecommunications is as essential to the national infrastructure as road or rail; perhaps more so as energy costs continue to rise in real terms and telecommunications costs decline in real terms.

6. The present recession has inevitably called in question the continuing growth of telecommunications in the UK. A quarter of homes are, however, still untelephoned; so growth potential certainly exists. As with television ownership, residential penetration seems likely to approach 100 per cent eventually, though the rate at which it should do so is an open question, particularly as it is an important determinant of telecommunications investment. Moreover, when the economy recovers, the growth in demand for telecommunications by existing customers will increase still further. But exchange capacity has to be planned four years in advance, and transmission capacity seven years in advance. To increase the capacity of an existing exchange or transmission link at shorter intervals entails excessive labour costs. The greatest economies in installation result from laying down capacity in advance of need.

7. Future years will resolve other uncertainties too. Service industries like banking, insurance, market operations and news services make relatively greater use of telecommunications (2.0 per cent of their output in 1978/9) than

manufacturing industries (1.4 per cent of their output). If the general trend towards expansion of service industries and decline of manufacturing continues, then more telecommunications will be required. Continuing real increases in the costs of travel and of postal and other labour-intensive services may lead to their substitution by telecommunications. And as information technology gradually replaces manual methods of storing and processing information by electronics, so people will increasingly need to communicate with computers, and one computer with another. There is uncertainty over the pace at which such developments will occur worldwide, and about the telecommunications capacity they will require.

8. Modernisation. Many of BT's exchanges (some £4180m book value at 1979/80 replacement cost) are worn out and obsolete. They need replacing anyway. Replacing mechanical by electronic switches, and analog transmission and switching by digital techniques brings several benefits: lower maintenance costs; better quality of service to the customer; more capacity per unit of investment; lower floor space requirements in exchange buildings and greater flexibility in handling of voice and non-voice (text, pictures, data) traffic. Although the UK is well up in the development of advanced techniques, many other countries are ahead of us in investing to diffuse new technology throughout their economies, thus stimulating their supplying industries. And the full benefits will not be felt until the deployment of digital equipment reaches a certain "critical mass", which in the UK will be in the early 1990s if BT's pressnt plans are allowed to mature. So it is important to press ahead. There are wider benefits too. The country which first reaches the point of "critical mass" will in the process have given its information technology industries a head start in the competition to win new international markets for attachments and services, and should in principle enable its telecommunications equipment suppliers to export at competitive prices.

The increasing influence of competition

9. There are two significant dimensions to competition in telecommunications. Internationally, the various national telecommunications authorities compete to entice internationally mobile organisations to locate in their countries. The UK is well placed. A number of international cables terminate here, call charges from the UK to many overseas countries are lower than from them to us and in consequence BT has attracted several such organisations to base themselves here. But domestic infrastructure is vital to international traffic. If France and Germany forge ahead in improving their domestic infrastructure and we fall behind,

then we shall cease to be able to attract this type of inward investment and the revenue it generates in this country. The British Bankers' Association and others fear that the City will lose ground as a major world financial and trading centre.

10. In national domestic telecommunications markets, only the US and to some extent Canada promote free competition at present. The introduction of greater competition within the UK, following the passage of the Telecommunications Bill, will signal a major difference between the UK and the rest of Europe. It will allow market forces to allocate venture capital, rather than the present pattern of centrally directed and state-funded investment. In three areas - attachments to the network, resale of network capacity (often with enhanced services) and alternative networks themselves - competition to BT could become important well before 1986 if the government were to license private sector ventures, as recommended by Professor Beesley in the latter two instances, and as already intended in the first. The next few paragraphs describe in a little more detail the effects of competition in these three sectors.

11. Competition for attachments will increase the diversity of products available and stimulate new domestic businesses in a high technology growth sector. To the extent that such competition increases the number of telephone instruments, this will also increase traffic on the network.

12. Competing alternative networks will remove BT's transmission monopoly, but only reduce its market share a little. The BT network has taken most of this century to build; even with new technology, instant wayleaves and unlimited finance, rival networks would take a decade or two to approach the scale of BT's operations, assuming they could do so profitably. So the major responsibility for public telecommunications, and particularly the local lines, will rest with BT, at least for the next ten to fifteen years. But rival networks do not need to be large to exert an important influence on tariffs, service and attitudes. They should spur BT to increase its efficiency in a way which EFLs and investment reviews never can, and should therefore be encouraged.

13. Competition for services is less clear cut, for such services will largely depend on BT for infrastructure as well as competing directly with BT in the market for services. But limbs cannot develop without a healthy trunk. If network modernisation is delayed, then the services which can be offered both by BT and the private sector will be correspondingly delayed. Conversely, a healthy

competitive services sector will stimuulate additional demands both for modern network facilities and for capacity.

14. We favour the maximum possible competition in domestic telecommunications. It will increase the UK's attractions over Europe both as a supplier and as a place to invest. It will stimulate new domestic businesses in a sector of high growth and high technology. It should bring cheaper telecommunications and a wider choice of products and services. In the long run it will spur BT to increase its efficiency. In all these areas, competition will in our view exert a more profound influence than privatisation, as indeed it has in the United States.

Issues for government

15. There are five main sets of issues for the Government :

i. What overall scale of investment in public telecommunications is justified? What assumptions should be made for the rate of growth, the pace of modernisation and the balance to be struck between commercial and non-commercial objectives? How will competition affect demand, tariffs and the financing of BT's investment programme?

ii. How much private sector participation in BT's activities should be sought? Conversely, how much should BT participate in private sector ventures?

iii. How should the investment programme be financed both in 1981/6 and in the longer term? What are the options - higher tariffs, sale of assets, greater efficiency, external finance? What would BT gain from participating in joint ventures with the private sector?

iv. If recourse to external finance is inevitable, have telecommunications a higher claim than other sectors of the economy?

v. What degree of control can the Government retain over BT's strategy and activities and how should it prevent BT from abusing its dominant market share and stifling competition?

In what follows we touch on all of these, though concentrating on i. to iii.

The Investment Programme

16. BT plans to spend £10½bn at 1980/1 outturn prices over the period 1981/6. Table 3 summarises the main features of BT's current medium-term plan; Tables 1 and 2 provide supporting financial and performance information for 1971-80, and comparable forecasts, where they exist, for 1981-6. The main difference between the 1980 and 1981 medium-term plans are, first, that the strategy for modernisation has been decided, and second that the related investment has been calculated and appraised with a greater precision than was possible in 1980. This part of the investment bid has increased, partly offset by a lower investment in local exchanges and subscribers circuits over the five-year period, in line with the recession and with reduced growth assumptions for GDP. Also in the 1981 MTP, BT has assumed a self-financing ratio of 80 to 85 per cent, leading to a 5 per cent real return on assets (RRA) and consequently to a higher call on external finance over the five-year period.

17. The plan assumes that competition will be limited to added value services which BT does not provide or intend to provide and that neither capacity resale nor alternative networks will be permitted. In the absence of declared government decisions, these were reasonable planning assumptions for BT to make; but if as we hope the Government takes a more liberal approach, then BT's investment programme will need recalculating. Competition will affect it in several ways. It will both expand the total market and reduce BT's share of it. In the short term both effects will be small in relation to the total investment programme and will therefore not affect it much. The longer term effects will depend on how new developments are divided between BT and the private sector. BT will clearly need to finance its share of new and expanding activities. And if competition drives tariffs down faster than presently planned, BT will need more finance. On the other hand, if it leads to greater gains in internal efficiency than BT presently assumes, then more resources will be released for investment, and less finance will be required from other sources. We cannot yet assess which of these factors will eventually dominate.

18. The investment plan rests on two pillars, modernisation (including improved quality) and growth. We said earlier that modernisation was desirable on broad industrial grounds. It is also economically justifiable. A recent quantitative study by BT and Treasury officials showed that the cost of modernisation foregone would exceed the financial gain from delaying network investment of £200m for a year, even before taking revenue gains from improved

service into account. There seems no reason to doubt the wider validity of these calculations. The question then becomes whether to modernise rapidly (Strategy R) or slowly (Strategy S). A comparative economic appraisal by BT of Strategy R against Strategy S gave a positive though comparatively small NPV of £35m in favour of Strategy R. There are qualitative advantages in rapid modernisation. By 1992, trunk call set up times (presently about sixteen seconds) will be reduced by 40 per cent, call failures by 25 per cent, and noisy calls by 70 per cent. New services will be accessible to 75 per cent of customers, against 14 per cent for the slower strategy. The case for telecommunications modernisation does not depend on calculations of the optimum size and profitability of the telecommunications network. BT's trunk network is profitable and growing and enjoys significant economies of scale. When digitisation is complete, maintenance costs per exchange connection will be less than half the costs of a system based on cross-bar exchanges. We believe that the economic impact of advanced telecommunications will be dramatic and far greater, for example, than that of railway modernisation.

19. The modernisation programme is centred around System X, whose major design parameters were selected in 1975. DoI officials have expressed doubts about its export prospects and we return to this later. For the UK, however, we saw no point in re-examining its suitability as the procurement programme is now well advanced.

20. So far as growth is concerned, BT intends to add a further 4.1m exchange connections in 1981-6, and has provided £3,472m for this in the Medium Term Plan. Network size will increase by 22 per cent, and residential penetration from 74 per cent to 86 per cent.

21. We have examined the methodology used by BT to forecast growth. The forecast is based on modest GDP growth assumptions which are consistent with mainstream economic forecasts. BT has assumed that tariffs will be re-balanced by 1986 to bring them more into line with underlying costs. Trunk tariffs will fall; local tariffs and rentals will increase, but in a way which increases the average residential bill by less than the RPI. The effect of recession and lower GDP growth forecasts has been to drive down the demand for telephone connections, and the 1981/6 MTP provides for one million fewer than last year's

MTP. Connection charges in themselves yield little extra net revenue because of the relatively high elasticities, and the current high rate of cessations means lost rental and call income. But BT still gains from system growth because new subscribers make and receive calls at a profitable level.

22. BT's growth forecasts are probably right if one accepts the traditional assumptions of network monopoly, connection charges geared only to recouping irrecoverable costs and negligible information traffic. But we have longer term worries. First, BT has no methodology to take account of competition, which is generally expected to speed up the process of tariff re-balancing and to produce a steeper rate of increase in residential bills. This could reduce the rate of system growth; full residential penetration would take longer, with a loss of rental and call revenue meanwhile. Secondly, competition may indirectly force BT to raise connection charges faster and this will choke off residential growth. Thirdly, in a digital system it is no longer possible to distinguish voice from pictures, text or other types of information. BT's methodology is geared to voice traffic, and it will have to develop new models for non-voice traffic which barely exists today.

23. In any case, <u>forecasts</u> made in a monopolist's world will, we believe, have to give way to the setting of <u>priorities</u> when competition develops. BT will have to allocate investment according to the resources available - which may not be enough to enable it to compete across the board - and the likely profitability of its various market sectors. In particular, we believe that universal residential penetration, even if ultimately inevitable, is a lower priority than satisfying the needs of the business sector through the modernisation of the trunk network. It may of course be a sensible non-commercial objective, on grounds of regional policy, but if so this should be clearly stated and government finance made available. If, on the other hand, business needs have priority, the government should be prepared to defend BT against complaints by frustrated would-be customers.

24. We are ready to develop these points further in any future Treasury/DOI study of growth forecasts and priorities.

25. There are two further points about the investment programme. First, from confidential information available to BT (Table 4), it seems clear that other PTTs investment programme are larger than BT's. There are no doubt special factors, but if the UK is to remain a leading world centre for service industries we ignore other countries' telecommunications programmes at our peril. Secondly, the 1981-91 business plan and the information BT has given us on its procurement profile suggest that investment on modernisation will reach a peak around 1985-7 and then decline. By that stage the cost savings from earlier investment should begin to help BT's finances and produce self-financing ratios (SFRs) of 100 per cent or more. Clearly this is speculative, and the effect of competition on tariffs could well be to reduce revenue. So far as investment is concerned, however, we believe that government and BT are essentially faced with a short-term hump. If so, the government should take a long-term view and bear in mind that inadequate investment now will mean poor telecommunications in the later 1980's, just at the time when the new private enterprises that the government wants to encourage in this sector will be in full development.

26. We conclude that the 1981/6 investment programme is broadly justified both on economic and wider industrial grounds. The needs of business should have priority over those of the residential sector. The provision for new information services may be inadequate.

"Privatisation"

27. In this short report we can only touch on the issues. The main aims of government policy are to move the business of supplying public telecommunications

into the private sector and to reduce BT's net demands on the PSBR. The Telecommunications Bill, once law, would allow BT to create joint ventures with private sector companies. So we have examined three ways of introducing private capital into public telecommunications :

i. division of the public network, on a US pattern, between a publicly-owned trunk (or "long lines") system and privately owned regional systems

ii. distinguishing between the network and the devices attached to it

iii. distinguishing between the transmission facilities provided by BT and the various telecommunications services they can be used to provide.

28. Annexes 1-3 examine the issues. The following paragraphs summarise their conclusions.

29. **Annex 1 considers private regional companies. We argue that the balance of advantage is against replacing a single public monopoly by several private monopolies;** their tariff levels and standards of service will still have to be regulated and monitored by government, and because there will be many of them, such regulation would require a large bureaucracy. This prospect alone will discourage investors, and so will the inherent unprofitability of local call traffic. Despite tariff re-balancing it is trunk traffic which will continue to generate most of the profit while local infrastructure absorbs most of the investment. We think that regional companies will not be an attractive investment. The proposal by Cable and Wireless underlines this point: the network they wish to establish is a trunk network, not a local one. BT in any case plans to make its regions more accountable and autonomous. Whether seen as an end in itself or as a prerequisite to further consideration of private regional companies, this is surely a sensible path to take.

30. We recommend that setting up private regional companies should not be pursued as a priority item. There is however one case which deserves further study: the provision of advanced telecommunications in the City of London, such as the current proposal to build an overlay network. We favour this, and it seems entirely appropriate that City finance rather than government funds should be harnessed to make the City a centre of excellence in telecommunications.

We therefore recommend that the joint venture approach to its financing be carefully examined by BT, in conjunction with the DOI and the Treasury.

31. Annex 2 considers the setting up of joint ventures to sell attachments to the network, such as private branch exchange (PABXs). The Telecommunications Bill, once law, will open up this market over the next three years. Joint ventures between BT and the private sector would enable BT to attract private finance into new business activities which under present PSBR constraints it would be unable to finance in full. The main benefit over time will be to relieve BT's forward investment programme of up to £200m annually. There could be some direct financial benefit in 1984/6 from the sale of equity by BT, but at an estimated £40-60m, not enough to bridge the likely financing gap in those years.

32. Annex 3 considers the formation of joint ventures to sell specialised telecommunications services to particular market sectors. If Professor Beesley's recommendations are adopted then this market could develop quite quickly. BT's existing strengths in operating services such as voice telephony and telex could sensibly take it into new large-scale services such as electronic mail and electronic funds transfer. As with attachments subsidiaries, private sector partners could bring to such ventures not only cash but also knowledge of particular technologies, applications or markets which would complement BT's skills. The effect on BT's investment programme will be more to relieve it of future investment than to raise cash directly. We recommend that BT explores and reports on the kinds of service which might be developed in this way and the investment implications.

Financing the investment programme

33. Moves to establish joint ventures will shift the boundary between the public and private sectors and yield some direct financial contribution in the longer term from sales of equity. But the financing gap remains wide in the years to 1986. The following paragraphs discuss ways of increasing the finance available to BT in the next few years, from higher tariffs, further sales of existing assets, increased internal efficiencies, and external sources, private or public.

34. Tariffs could be increased at a faster rate than has been assumed in the Medium Term Plan, which would result in residential bills rising faster than the RPI. The arguments for this are, from BT's point of view, that demand from existing customers is not particularly sensitive to price; and from the Government's, that BT should be used as an instrument of fiscal policy in a time of PSBR constraint.

35. But the arguments against are substantial. First, customers should in principle expect to benefit from the cost savings of the modernisation programme, especially when the self-financing ratio (SFR) is already high and present customers are paying for the investment through tariffs rather than future customers through borrowing. Second, higher tariffs must involve higher than planned trunk call charges since there are limits, both political and economic, to what residential customers will be prepared to pay for rentals and local calls. This conflicts with BT's objective of balancing tariffs to reflect costs. Its profits on trunk traffic are already being criticised, and higher prices will be poorly received when prices in the private sector are under such pressure. Higher telephone charges will penalise business, hinder the development of IT industries and private telecommunications service companies, create a price umbrella under which rival networks can make easy profits, and all without putting any pressure on BT to improve its efficiency.

36. Nor should longer term objectives be neglected. Once competition develops BT will be less free to set tariffs at the level required to achieve a stated RRA. This will put pressure on BT to cut costs and become more market-conscious: exactly what the government wants. It would do BT a disservice to set tariffs in the next few years at levels such that BT lost all incentive to prepare to face competition. There is a policy conflict for government between promoting competition and using BT's tariffs to gain revenue as if BT were still a monopoly. The first objective is the more important.

37. None of this rules out further tariff increases if all else fails. But clear, agreed priorities are vital. The Government should favour stable prices for business users, which will also encourage new telecommunications industries. It follows that residential customers should be required to bear the brunt of tariff increases if such there had to be despite the likelihood

of higher cessations. It should be noted that 100 per cent self-financing would yield RRAs of 7-8 per cent in the early years of the plan period, which few other businesses (including nationalised industries) could match.

38 Before leaving tariffs we should comment on BT's estimate that they will have to raise residential rentals by 50 per cent in real terms if the government licenses alternative networks. To this should be added Professor Beesley's estimate of a maximum 10½ per cent rental increase to offset any diversion of BT revenue following the licensing of capacity resale. BT will submit its considered views to the Department of Industry in the next month or two. We cannot judge the estimates' accuracy, nor their impact on the RPI, but :

i. rentals are of course only one component of residential bills;

ii. competition on the network will simply force BT to drive trunk tariffs down, and increase rentals, faster than it already intends. While this puts pressure on BT finances in the difficult next two years, the overall aim of lower trunk charges (and profits) must be right; and BT already aims at a 5 per cent real return on residential rentals by 1986 which is consistent with its stated policy of relating tariffs more closely to costs;

iii. competition should increase overall demand;

iv. BT's existing system gives it enormous strengths;

v. BT assumes that private network operators will pitch their charges below its own. This may not always be so; a quality service for business could well sell at a premium; but clearly this would be a dangerous assumption to make for all time;

vi. BT's tariff policy will discriminate more between different markets and geographical areas. Inter-city charges will fall. Local call charges and trunk charges on less used regional lines will rise. Insofar as this reflects different costs, it is desirable, but competition will inevitably call in question the traditional practice of uniform pricing throughout the whole country.

39. Sale of assets. BT could sell installed PABXs and attachments in the competitive area of the business to its existing customers. The book value of eligible assets would be up to £400m. The equipment is obsolescent and vulnerable to lease arrangements that customers can terminate at one month's notice. There is a strong marketing case for selling it all as quickly as possible, at whatever price BT can get. BT could also offer private circuits on long leases, say up to five years, for a lump sum payable in advance. The takeup would depend on the discount rate offered, and the customer's desire for protection against tariff increases at the expense of flexibility. It should be possible to raise at least £50m by this route quite quickly; perhaps more in later years. Annexes 2 and 3 expand on these points. If BT is allowed to retain the proceeds from such sales, then the cash raised will reduce the gap between BT's EFRs and its current EFLs, and provide an incentive to proceed. There is nothing to stop BT acting now on these two suggestions, and we recommend that it does so.

Efficiency

40. This is so important a subject that we have discussed it in a separate Annex 4, attached. In brief, we welcome BT's decision to appoint management consultants to advise on its efficiency and cost-saving. We suggest in the Annex a number of further questions on which BT should report to the Government. The main issue is labour costs. The introduction of computer-based equipment will provide opportunities to streamline working practices, centralise maintenance and repair functions and introduce group working. Although the benefits will not arrive with the first electronic exchanges (in fact maintenance costs for the early System X exchanges will be higher than for existing equipment due to training costs) the ground needs to be prepared now. Innovation will present other opportunities too - to introduce incentive payment schemes and more locally based supervision and administration to reduce waste. Other important questions include the effect of competition and joint ventures on staff levels, buying in equipment from suppliers in assembled form, and property management.

41. Although in the short term the investment hump will make it hard to cut staff levels, it is all the more important for BT to minimise net new recruitment once equipment procurement and exchange maintenance manpower have passed their peaks around 1986-7. We recommend the speedy selection of appropriate BT

performance criteria and effective monitoring by the DOI. In this context it will be important to maintain international PTT performance comparisons on a regular basis (though they can never be entirely comparable) and to have effective programmes to raise BT from the middle of the pack, or below, to among the world leaders.

42. There are also procurement inefficiencies introduced by the present investment approval process. There is reason to believe that BT could negotiate lower prices from its suppliers if it could enter into long term procurement contracts. The savings could be greater than those regularly under contention in the annual reviews. We are glad that BT and the Treasury are respectively studying the scope for savings and the feasibility of approving investment further in advance. On a related point, we are unhappy about the prospects for exporting System X switching equipment (which would likewise help to cut unit costs) and will propose separately that Ministers discuss the role of government and BT in improving the prospects for System X in the light of our poor past performance in international markets.

External finance: Priorities

43. External finance must be the residual option. In the light of the above discussion we believe that BT's putative EFLs are likely to be too low, and that other sources of finance are either inappropriate or will not cover the gap, at least in the short term.

44. Given current PSBR constraints, any increase in BT's EFL will have to be found from other public sector programmes. The CPRS is considering how priorities between programmes might be determined as part of its wider study on the relationship between NIs and government. In general, however, the arguments for giving BT a degree of priority, in the absence so far of common investment appraisal techniques, are that telecommunications is a growth industry; the development of a healthy private telecommunications sector, and of business in general, depends on having a modern network; BT's demands on government have been relatively slight (steel's was four times greater in 1979-82); it is a nationwide business with an assured future; real capital costs are falling thanks to microelectronics; the inputs are generally cheap and available; and modernisation will allow more functions to be carried out more cheaply.

45. We do not discuss in this report the injection of private sector finance (including the proposals for performance and customer bonds) into BT's main operations, as distinct from the attachment and service joint ventures considered earlier. All the schemes put forward so far have foundered on the point that borrowing by BT from the private sector is de facto borrowing by the Government, because it carries the same gilt-edged guarantee of repayment. Therefore it falls within the PSBR as presently defined. We would like to explore these questions further in any renewed examination by departments of financing schemes. The main question to be considered is the measure of performance that will determine the return to the investor. In previous discussions the Treasury has pressed for a real unit cost indicator to be used, to put pressure for improved labour productivity on BT. But this may not be realistic. Investors will want a yield linked to the overall return on the capital they are lending to the Telecommunications Business rather than to incremental improvements in labour productivity. Improvements in efficiency are best tackled head-on rather than indirectly.

Control and Regulation

46. We discuss this also in Annex 4. Competition will reduce the need for government involvement in matters of efficiency, and its ability to determine tariff policy. Market pressures will impose their own constraints. The residual concerns of government are investment appraisal and access to finance, to the extent that BT continues to depend on government money. A balance will have to be struck here. On the one hand, network modernisation is important and should be funded. On the other, BT should not be so liberally funded that it competes across the board and clings to market sectors which private enterprise may be better placed to develop.

47. Competition will however increase the need for government supervision in certain areas. The transition from monopoly supply to competitive market-place will not be easy. The government will have to guard against BT abusing its dominant market position or its remaining monopoly powers, concerning maintenance for example. It will have to ensure scrupulous fairness in areas where BT is regulator as well as competitive supplier: in those parts of the radio frequency spectrum which BT administers, for example. And where BT currently represents the UK in international standards-making activities, the

government will need to ensure that the interests of the UK telecommunications sector as a whole are represented, and not merely the narrower and perhaps conflicting interests of BT.

48. It may be that BT can perform this dual role. But the German Monopolies Commission has recently expressed the opinion that the Bundespost (German Telecommunications Authority) cannot. And some of those to whom we spoke doubt that BT can. The question of a separate regulatory authority is outside the strict terms of our remit. But it is essential that the regulatory function should consciously favour competition, on which many of our recommendations depend.

Conclusions and Recommendations

49. We hope that what follows will be considered as a balanced overall set of proposals.

Investment

50. The next ten to fifteen years will see unprecedented growth and change in telecommunications. The telecommunications network is infrastructure, and the greatest economies of provision result from laying down capacity well in advance. A modern digital system is so central to our economic performance in the mid-1980s and beyond that it should be given priority now as a national objective.

51. We have examined BT's investment plans for 1981-6 and its modernisation plans beyond. We believe them to be broadly of the right size, though we have reservations about the justification for further growth in residential connections. BT should set its priorities to favour the needs of business.

Financing

52. There will be an investment bulge and a corresponding financing gap in 1981-6 due to the build-up of the modernisation programme. On present plans investment modernisation will peak in 1986. Beyond then, BT may become self-financing, though stiff competition may delay this. But for the next few years the financing gap will have to be bridged by a combination of tariff increases, sale of assets, gains in internal efficiency, external finance and (in later years) sale of equity in joint ventures to the private sector.

a. Tariffs. Competition will accelerate the pace at which BT brings tariffs into line with costs. This is a desirable objective and we do not favour interfering with this process for reasons of short-term fiscal policy.
We therefore do not recommend further increases in real tariffs except as a last resort.

b. Sale of assets. BT could raise money quite quickly from the sale of installed PABXs and competitive attachments to its existing customers, and from offering long pre-paid leases of private circuits. We recommend that it does so.

c. Efficiency. BT should make its Regions more autonomous and accountable both to central management and, through the publication of performance statistics, to the general public. BT and the DOI should agree on carefully chosen indicators of BT's internal efficiency against which to monitor BT's long-term performance. The DOI should press BT for its plans to take the maximum advantage of the opportunities presented by new technology to reduce labour costs.

d. Joint Ventures. The creation of joint ventures in the attachments and services sector should be pursued urgently within the framework of an agreed five-year timetable even though they will not yield cash in the early years. The presumption should be that most new developments in BT's telecommunications business should be funded through joint ventures. The greatest immediate opportunity for such collaboration lies in the development of the City as a major telecommunications centre.

e. External Finance. The investment programme is important. So are efficiency, joint ventures and asset sales. If the government can satisfy itself that BT has taken steps in all these areas to minimise its call on external finance then we recommend that it should adjust BT's EFL to allow modernisation to proceed.
We also recommend that the Treasury investigate ways of allowing BT to commit investment funds up to seven years ahead, if BT can show that this will help to negotiate lower prices with its equipment suppliers.

53. We have argued above that the financing of telecommunications investment should not depend on devising performance bonds or similar financial instruments outside the PSBR. However, BT is a profitable and growing enterprise; if it were in the private sector, it would have no difficulty raising money. We therefore believe that it is worth persevering with efforts to finance profitable investment outside the PSBR, despite the difficulties encountered so far. If ways can be found either for BT alone or for nationalised industries in general then greater flexibility will be possible in other areas of public expenditure. We recommend that Treasury officials in conjunction with the DOI pursue this.

Competition

54. There should be maximum competition throughout the telecommunications system, for attachments, services and by way of an alternative transmission network. The Government will need to recognise that competition will entail reducing the control it currently exercises over BT's tariffs and efficiency and increase the need for regulatory functions to be performed impartially.

System X

55. We recommend (paragraph 42) that the DOI submit a paper for Ministerial consideration on the export potential for System X.

ANNEX 1: LOCAL OPERATING SUBSIDIARIES

1.1 This annex considers one approach to the formation of subsidiaries by BT. Under it, BT would be split into several local operating companies, corresponding perhaps to the existing regions, and a single separate operating company for trunk traffic, perhaps called BT Longlines after its US counterpart. The local operating companies would be offered for sale to the private sector, though BT might well retain a minority stake in them. BT Longlines would remain in the public sector.

1.2 BT already intends to make its regions more accountable and autonomous. We support this aim as desirable in itself. Regional working practices and efficiency would be easier to compare; management would be better placed to bring standards up to those of the best regions; and ultimately it might prove possible to conduct pay and productivity negotiations on a regional rather than national basis. The questions we have asked ourselves are whether the sale of local companies to the private sector would yield further benefits, whether it would be an attractive proposition, and whether it would best serve the national interests.

Structure

1.3 Each private local company would be responsible for providing and operating local exchanges, local lines, and subscribers' apparatus within its geographical area. BT Longlines would provide trunk exchanges and trunk transmission circuits. Revenue from connection charges and local call traffic would accrue to the local companies. Trunk revenue would be shared between BT Longlines and the local operating companies.

1.4 Each local company would be a local monopoly. As such, its natural tendency would be to maximise profits by raising tariffs and lowering the quality of service. In the US, whose example this approach consciously copies, the Federal Communications Commission (FCC) has authority to regulate tariffs and some interstate services and to license new carriers. We would need some similar regulatory mechanism to set limits on the behaviour of the local monopoly companies. They would not be competing with each other for customers, so market forces would not operate. It is true that a form of competition would exist through publication of a league table of performance statistics; but this will be the

case within BT once BT management have carried out the changes described above. Tariffs could be set to allow only the top half of the league table to make a profit and thereby provide, it is suggested, an incentive for the bottom half of the table to become more efficient. But in practice the pressures on tariffs would be all one way.

1.5 On operational grounds alone we seriously doubt the value of this approach. The US structure has evolved against a very different constitutional and legislative background: a Federal Government, and laws restricting interstate trading. From an operational standpoint, the UK's national telephone network is an integrated whole; to break it up into organisational subunits would raise artificial barriers to change and in our view inhibit progress towards the creation of an integrated digital network (IDN). It also raises complex demarcation issues about the sharing of revenue, investment and particular types of traffic.

Financing the local operating companies

1.6 Despite these reservations we have considered how such companies might finance themselves and the effect on BT Longlines, which would remain in the public sector. We would welcome the publication of a wider variety of regional statistics, including performance indicators, irrespective of whether or not the government requires BT to sell off its local operations. There are as yet no fully separate accounts for BT's regions. But clearly some will be less attractive than others to private investors. The cost and traffic patterns of Scotland, Wales and Northern Ireland are inherently unfavourable; on the revenues and costs attributable to their local operations they run at a loss. On the same basis, the North-East and the South-East generate a profit. Maintenance costs per exchange connection are about 40 per cent higher in Scotland than in the North-East, while subscribers' call revenue (including trunk calls) per exchange connection is about the same. Mean net asset value per exchange connection is 25 per cent higher in Scotland than in the North-East. To earn the same revenue Scotland therefore has to provide 25 per cent more assets and incur 40 per cent higher maintenance costs. At present these disparities are shielded from the individual subscriber by the currently accepted practice of uniform tariff and service levels. With a regional organisation this would no longer be possible. The government would have to accede to the principle that

subscribers in poor or rural areas should pay more than those in the cities. But if there were to be disparities at all, the general thrust of regional policy would suggest the opposite course: that the poorer regions should be provided with cheaper telecommunications as an incentive to the development of service and information industries. Going one stage further, the cost and revenue patterns may make it uneconomic to supply small villages and isolated homes at all with telecommunications. If a local telephone company is to operate on a commercial basis, then it cannot be expected to sustain the present public service obligations which BT observes without some explicit subsidy or transfer payment.

1.7 A more fundamental problem is that local call traffic is not very profitable in this country. Nor is it in the US. Most local calls there are free at present (though charging is under consideration), which incidentally runs counter to the direction of the government's pricing policy in this country. It is characteristic of all telecommunications that the value of communication, and hence the price that can be charged, increases with distance. The profits from trunk calls cross-subsidise the provision of local networks one way or another. In 1978/9, BT's trunk and international services accounted for £309m profits on an asset base of £2145m. The Telephone Regions taken together only accounted for £37m profit on an asset base of £9554m. The regional profit total conceals variations from a profit of £40m to a loss of £28m. Over time this imbalance will be reduced, as BT moves to cost-related tariffs. The essential point, however, is that, even though BT intends to increase both local call charges and residential rentals, local tariffs would have to rise substantially more than presently planned if local telephone companies are to be viable and if they are to modernise their infrastructure, which accounts for £3½ billion of BT's investment programme in 1981-6. The following paragraphs examine various ways of improving the viability of local companies.

1.8 First, there are practical and political constraints on the extent to which local tariffs could be allowed to rise. They are a component of the Retail Price Index, a determinant of demand and a factor in decisions by businesses on where to locate. Those in the poorer and sparsely populated regions would have to pay more for the use of the telephone. While the better-off

could afford to do so, the overall impact would probably be a downward spiral of cessations, slack demand, and no new businesses. In short, present regional disparities would be amplified. So the government or a regulatory body would have to set tariff ceilings on a national basis, as part of regional policy.

1.9 Second, the poorer local companies could minimise their capital spending. Over time this would lead to serious disparities in service standards and coverage between one region and another; it would also retard the digitisation of the network, undermine BT Longlines' own investment in System X, and slow down the exploitation of information technology by the business sector. In short, both local residents and the national business community would suffer.

1.10 Third, the government could subsidise on social policy grounds those parts of the country where it was not economic to provide service. But such arrangements would not be easy to operate. And we think it would be a step backwards to have to introduce direct subsidies to private monopolies when the government does not subsidise the present public monopoly.

1.11 Fourth, the government could instead require BT Longlines to subsidise the local companies, for example by charging the lossmakers a cheaper rate for the use of its trunk network, recouped perhaps by higher charges on profitable regions. This would amount to asking investors in a South-East or Midlands company to subsidise investors in a Welsh company, and seems unattractive and discriminatory.

1.12 It seems therefore that investors would have to rely on arrangements whereby BT Longlines' trunk revenue was shared out between it and the local operating companies according to a formula which was common to all regions and yet allowed the higher cost regions to finance future investment, earn a profit and carry out their legal obligation to provide service to all who want it. This would be complex, and require decisions on a revenue sharing formula outside the companies' control, perhaps administered by an FCC-like body. (Incidentally - but a further complication - if a competitive trunk transmission company were to be licensed it should presumably also make some contribution to local infrastructure; otherwise it would be profiting unfairly). The government would also have to set minimum standards of service, and provide safeguards against the abuse of local monopoly power, perhaps through the Office of Fair Trading and the Monopolies and Mergers Commission. Further, if a local company ran into

financial difficulties then the government would have to come to its aid one way or another, or witness the blacking out of telecommunications in part of the country. All-in-all, this does not add up to an exciting prospectus for the investor. Nor could the government disengage itself from the heavy burden of financing the modernisation of local infrastructure.

1.13 In short, we believe that the hiving off of local operating companies will either :

i. lead to local tariffs rising still faster than BT already envisage, in other words at considerably higher rates than the increase in RPI, or

ii. force local companies to cut quality of service, or

iii. require the government to step in with subsidies, or

iv. lead to some highly complex arguments between BT Longlines and the local companies about revenue-sharing, investment, business planning and day-to-day operations such as fault-finding. The regulatory task will be difficult, and additional staff will have to be provided; the dividing line between the public and private network will be hard to establish with any consistency;

v. or some combination of the above.

1.14 We do not wholly exclude a revenue-sharing solution on the lines discussed above. We accept that private local companies ought to have a strong incentive to maximise efficiency; and they would of course serve the government's wider aims of privatisation. But this solution is not a high priority when so much needs first to be done to stimulate the competitive services and attachments sector. It does little or nothing to promote competition; it would be complicated; and there is something basically unattractive about creating private monopolies that, in order to make a profit, require a revenue-sharing arrangement with a public monopoly. The local companies would certainly be under greater financial pressure to cut their current expenditure; but there are risks of wide variations in service standards, and we think that clearer public presentation of BT's regional financial and performance statistics could achieve the same effect over time. It also seems doubtful whether regulated monopolies would attract equity finance, though no doubt loan stock could be sold if the

terms competed favourably with those of other utilities. The structural arguments against splitting up an investment programme designed to create a nationwide integrated digital network are in our view powerful. Finally, while we believe that some degree of discrimination against the residential sector may become inevitable, even if BT continues to control the network as a whole, we would rather see a slowing down in the rate of new residential connections than the emergence of large differentials between residential charges in different regions. With local companies this might well be an inescapable outcome.

Conclusions

1.15 We have serious doubts about proposals to form privately owned and controlled local operating companies, and recommend that these should not be pursued as a priority item for government.

"Telecity"

1.16 There has been much discussion of "Telecity"; broadly speaking, of various tentative ideas to harness City finance to make the City a telecommunications centre of excellence and so maintain its competitive position against other financial centres. Many of the complaints about BT's performance stem from the City; equally, City telecommunications account for about 5 per cent of BT's investment programme. The following considerations seem important to us:

i. there is certainly a need for City institutions, individually or collectively, to define and forecast their future telecommunications accurately, and for BT to help them to do so. At present BT does not sufficiently seek out major customers to find out what they are likely to want. The City is not blameless either. While the new commodities markets were well planned, the abolition of exchange control, which inevitably increased foreign exchange dealers' demand for telecommunications, seems to have taken them all by surprise;

ii. leaving money supply arguments on one side, there is a lot to be said for the City and BT drawing up a "City telecommunications plan" covering overall City requirements over, say, the next five years, and for City institutions to help finance investment from which they would directly benefit. If BT were in private hands such schemes would be welcomed, not least by the government;

iii. we wonder, however, whether such a solution is feasible given the enormous diversity of City interests. This is not to say an effort should not be made; but banks, shipping companies, commodities dealers and so on may well be more interested in financing their own direct concerns than in coming together for the City's overall good. The danger is a series of ad hoc demands on BT which make planning difficult and lead to unnecessary duplication of facilities;

iv. if as Sir Eric Faulkner of the British Bankers' Association, and chairman of the City Liaison Committee, believes, the insurance houses and pension funds might well be willing to put long term money into improving City telecommunications, then this would give the investment programme a necessary long-term degree of certainty; though again money supply considerations would be a complication;

v. it is possible to envisage a non-profit making City/BT joint venture, akin to the French groupements d'interet economique (GIEs), to finance and coordinate the development of City telecommunications;

vi. we welcome BT's intention to build an overlay network in the City, and believe it would be entirely appropriate in this and other instances to harness City rather than government funds to make the City a centre of excellence in telecommunications.

1.17 This is no more than a preliminary examination of the issues. They deserve further study. BT and the City Liaison Committee have established a joint working group. We recommend that the Department of Industry and Treasury should maintain close contact with it through the Bank of England, and be ready to pursue any promising areas that require the collaboration of government, for example in cases where PSBR or money supply considerations seem likely to present obstacles. We would hope that these studies could be pursued with some urgency. The government cannot allow the City to be disadvantaged as a financial centre, and other European countries are fast improving their telecommunications infrastructure.

ANNEX 2: THE ATTACHMENT MARKET AND THE CREATION OF JOINT VENTURES

Introduction

2.1 Whereas the approach in Annex 1 draws a boundary between the local network and trunk facilities, this one draws a boundary between the network, considered as a single entity, and the devices attached to it. The telephone instrument is the most obvious, but others are proliferating such as call answering machines, computer terminals, computers themselves and facsimile copiers. It is the attachments which turn the switching and transmission facilities of the telephone network into a communications service of value to the user. Each type of attachment has its own problems of R and D, production, and marketing. Under this approach BT would set up subsidiaries for each family of attachments, each competing with the private sector. Some could then be offered for sale to the private sector, or joint ventures could be created. The parent company, BT Network, would retain responsibility for providing switching and transmission facilities up to a termination point in the subscribers' premises. Its subsidiaries would sell or lease attachments. This approach would be consistent with Professor Beesley's argument that a distinction should be drawn between the network and the uses to which it is put. BT may well find this form of organisation appropriate, quite apart from the potential it offers of attracting private sector finance.

2.2 Neither this approach nor the one described in Annex 3 have been tried on any scale before. For the investor (who might be another company in the telecommunications industry), an attachment company, private or public, is an investment vehicle with a clearly defined business interest, on whose chances of success he can take a view. It should be able to raise investment funds from the market to design, develop, produce and sell attachments. Aside from normal commercial risks, the greatest uncertainty facing such a company, irrespective of the distribution of equity in it between BT and private capital, is the attitude Government adopts over capacity resale and the maintenance of attachments. Professor Beesley has recommended complete liberalisation of the domestic market; BT would prefer competition to be limited to those services which it does not provide. And even after the Telecommunications Bill becomes law BT will retain the monopoly power to discriminate against private sector competitors. At best BT could delegate

by licensing independent maintenance companies. At worst, it could develop and impose its own idiosyncratic technical standards and approval procedures.

Joint Ventures and Subsidiaries

2.3 These could take several forms, each with different financing implications. Common to all are the assumptions that they would be Companies Act companies, free to deal with BT on an arms length basis for common services such as data processing, and separately assessable for tax. The differences between them arise from present Treasury rules about ownership, control and financing. A wholly owned subsidiary would have its borrowing counted against the PSBR and against BT's EFL. At the other extreme, an associate company in which the private sector had majority ownership and control would fall completely outside the public sector. In between, there are two further possible forms. First is the "Ryrie concession" company. Subsidiaries in which BT retains control, but has sold 50% or more of the equity, and in which private sector equity is at least 40% of the balance sheet, may borrow money on their own account outside BT's EFL. The Treasury may also consider allowing such borrowing to fall outside the PSBR. Second is the case where BT retains control and majority ownership. Borrowing by such a subsidiary does count against BT's EFL and the PSBR, but it has yet to be decided whether BT could retain the proceeds of sale without their EFL being correspondingly reduced. For the purposes of this annex we define joint ventures as either "Ryrie concession" companies or privately controlled associate companies.

2.4 DOI and BT officials have already begun to examine the scope for setting up joint ventures once the Telecommunications Bill becomes law. They have so far considered three possibilities covering the sale of PABXs, radiopaging services, and Prestel; and a fourth which groups all these into a single subsidiary selling all competitive products and services. Table 1 estimates the cash which could be raised, assuming that they were able to take advantage of the "Ryrie concession" :

TABLE 1

Jan 1981 prices £m	PABX	Radiopaging	Prestel	All competitive Products and services
Value of net assets	8-15	2-3		60-120
Cash receipts from sale of 40% capital	3-6	3-4	22-60	40-60
Cash receipts from sale of existing asset base	100-200	2-3		200-400
Possible timing	1983-4	1983		1983-4

Prestel's valuation depends critically on when the sale of shares takes place. BT believes that the business might have a current value to investors of only £15-20m, but that by 1985 it could be valued at £75-150m.

2.5 The sale of an existing asset base is in principle a quite separate transaction from the creation of a subsidiary, though it may help to prepare the way. The case for selling existing assets is to raise cash and protect against cancellations. With the advent of competition the customer will have a greater choice of PABX's and other equipmen . Many will decide to return their leases of BT equipment, much of which is obsolete, at the standard one month's notice. We return to this later.

2.6 The creation of joint ventures will take time. Depending on their size and structure, it will take 2 to 5 years before equity can be sold. Only Prestel is a profit centre at present. BT's other service and attachment operations have no separate accounts, and all will need to start life as wholly owned BT subsidiaries to develop a track record before sale. Staff terms of employment and pension rights will need to be negotiated; tax implications studied; and transfer prices and management charges apportioned between BT and the new companies.

2.7 There are some general advantages in the creation of BT subsidiaries, and others that apply more particularly to joint ventures. The formation of BT subsidiaries, dealing at arms length with BT, will allow competition with the private sector to take place on an equal footing; whereas if BT were itself competing difficult regulatory issues would arise, along with suspicions, however ill-founded, of discrimination against competitors who themselves needed to use BT's network. Secondly, subsidiaries competing in particular markets will make BT as a whole and its employees individually more conscious of customer needs. Joint ventures will, in addition, both enable BT and the private sector to tap each other's strengths and skills, and help BT to finance its investment programme. They should attract private capital provided investors are satisfied that they will be run and staffed efficiently as free-standing concerns; and they will be able to raise private capital where BT itself and its majority-owned subsidiaries would under present rules, not be free to do so. The expanding market for attachments will create new demand for network services. Admittedly BT would be selling a future stream of profits; but we believe this consideration is outweighed by the advantages described above.

2.8 The question arises whether BT should relinquish control over joint ventures. They would then no longer be part of the BT group, their accounts would not be consolidated, and their expansion would not be constrained by any curbs on BT's overall investment levels that led to the rationing of investments in or loans to BT's subsidiaries. BT could raise more money from further sales of the companies' equity, which could then be reinvested in development of the network.

2.9 But we do not recommend going as far as 100 per cent privatisation of all BT's activities in the competitive sector. One of the government's - and BT's management's - objectives is that BT should become more market-conscious and efficient. Simply redrawing the boundaries of the monopoly, and confining BT to the network, will not achieve this. Nor will BT employees be brought to recognise that customers have a choice and that pay levels depend on productivity gains.

2.10 We believe that BT should set itself a time limit for bringing the subsidiary or subsidiaries to the market. There are always good reasons for delay, such as the impossibility of creating subsidiaries and selling equity in time to meet short term EFL pressures. All the more reason to have a clear medium term programme and for both government and BT to stick to it.

2.11 But this brings into sharp relief the handling of sales during the transitional period. It may not always be possible to sell half or more of a new subsidiary's equity on favourable terms in one go. At present BT would not be allowed to retain the proceeds of a sale of, say, 20 per cent without a corresponding reduction in its EFL; nor would the subsidiary's borrowings count outside the PSBR.

2.12 This may be too inflexible a ruling. We do not want to argue the case for "staging" of divestment in the narrow context of BT; the Treasury will want to consider the wider implications. Moreover, there are solid arguments against allowing a subsidiary of which BT still has majority ownership and control to borrow outside the PSBR. But :-

i. BT will need flexibility in determining the time and amount of sales, to secure the best return;

ii. if as we have suggested BT commits itself to a clear timetable for divestment, its hand in negotiating with potential investors could be weakened if staging were not permitted;

iii. it may be easier to gain union cooperation by a more gradual approach.

We recommend that the DoI explore this issue further in conjunction with BT and the Treasury; but the first priority is to establish an agreed timetable for divestment and the creation of joint ventures and associates.

2.13 What we broadly have in mind is that BT should first determine and cost the asset base of all its activities in the competitive sector (in the post-Beesley climate) and should reach agreement with the government to sell an agreed average percentage, say between 50 and 60%, of those assets to private interests at the best price it can obtain. These sales should be completed by an agreed date, say summer 1986, but BT would have flexibility to sell equity any time between now and then; in practice between 1983 and 1986 since it will take at least two years to form subsidiaries for the reasons given in paragraph 2.6 above. In IFR terms, this would mean that a 1983-6 block target figure for sales of assets would be set, but it would not be broken down into annual targets because this would unduly constrain BT in its search for suitable partners and weaken its hand in seeking the best price. Provided the overall average target was achieved it would not matter if BT sold a high proportion of equity in one company and only a minority in another; but in the latter case staging arrangements would not apply.

Impact of attachment subsidiaries on BT's investment programme

2.14 BT's latest Medium Term Plan anticipates net investment in 1981-6 (allowing for apparatus leasing) in what it terms the "competitive area" amounting to £1091m in 1980-1 outturn prices, or 10½ per cent of estimated overall investment requirements of £10334m. To this figure should be added an appropriate share of the £1661m to be spent on accommodation, computers, transport and so on. The "competitive area" as defined by BT includes extension telephones, PABXs and call connect systems, radiopagers, modems, text terminals and Prestel. Investment in these areas will therefore run at rather more than £200m annually, again at 1980-1 prices.

2.15 These plans reflect BT's expectation of a dominant, though reducing, market share in the competitive area in the years after the Telecommunications Bill becomes law. Over 1981-6, for example, BT has told us that it assumes a reduction in its share of the telephone instrument market overall from 99 per cent to 93 per cent, and a reduction from 93 per cent to 90 per cent of its share of annual new business, masking a steeper predicted decline in its share of business demand and an improvement in residential market share, which is likely to be less attractive to competitors anyway. If the first 'monopoly' telephone were excluded, the private sector's inroads into the available market would look more impressive. In other sectors, BT tells us that it forecasts a reduction in its share of the medium size PABX market from 100 per cent to 72 per cent over the period, and of callmakers and loudspeaking telephones from 85 per cent to 75 per cent.

2.16 BT itself would not rely on these estimates either of the size of the "competitive sector" or of BT's share of it. First, BT has assumed that there will be no duplication of services provided or "to be provided" by it. Assuming, however, that Professor Beesley's recommendations are accepted, we would expect increased demand for telecommunications services to lead to growth both in the attachments market and in network traffic. Secondly, the size of the competitive market will also depend on the economic climate and the speed with which apparatus standards are written and approved.

2.17 BT's share of the "competitive market" will depend on the speed with which new UK supplier companies emerge and the extent of foreign competition once the proposed three-year period of adjustment has ended. The effect of abolishing the present restrictions is likely to cut both ways, enlarging the total market but reducing BT's share of it. In this report, however, we do not try to predict either the size of the competitive market or BT's share of it. If BT creates joint ventures, they will raise their own funds in the markets. The "saving" to the investment programme of "BT Network" would then take three forms :

i. a once-for-all sale of existing assets by BT Network to its customers, which as we have said could proceed irrespective of (ii) and (iii) below;

ii. the sale of equity to private investors. In both cases (i) and (ii), we believe that BT Network should be allowed to retain the proceeds if it is to have any incentive to sell;

iii. the assumption of responsibility by the joint ventures for future borrowing for capital investment in their market sectors.

2.18 Paragraph 2.4 set out BT's estimate of maximum receipts of £40-60m from a sale of 40% of equity, and a further estimate that if the entire existing asset base could be sold this might realise some £2-400m. BT has since told the government that in its view only 10% of its existing customers would in fact exercise an option to purchase rather than continue with present leasing arrangements, yielding perhaps £15m in 1981-2, £10m in 1982-3 and nothing thereafter, all on the assumption that the sale price will equal an average three years' rental. We believe that BT should aim to sell most of its existing and obsolescent asset base, to guard against its being displaced by competition (which would reduce its earning capacity to zero). BT has also allowed in the MTP for a 20% take-up rate among customers for new PABXs, to yield £120m in 1982-3 on the basis of a front-loaded lease equal to eight years' rental.

2.19 Paragraph 2.14 suggested that BT's forward investment programme could be relieved of £200m (more in outturn prices) if, as we strongly believe, its investment in the competitive sector should be financed through joint ventures borrowing the funds they require from the markets. These sums are small by comparison with BT's annual expenditure on fixed assets. They look better, however, when compared to the external financing requirements that BT has forecast for 1982-3 onwards.

2.20 However, the joint venture approach is unlikely to release enough capital in 1981-6 to fund the modernisation programme. Indeed the investment 'savings' are in that part of the programme which is easiest for BT to justify at present, for the payback period on telephones, PABXs and so on is short - about a year in the case of an ordinary telephone. So BT's EFL should not simply be reduced by the extent of the 'savings' from joint ventures. This would force BT to cut the important modernisation programme.

Conclusions

2.21 We support the creation of joint ventures throughout the attachments sector and believe they would attract private capital. BT and the government should establish and commit themselves as soon as possible to a clear medium-term timetable and quantified target for the creation of joint ventures. Provided the targets are clear the interim arrangements can in our view be flexible. We are opposed, however, to a 100 per cent sale of assets because this would cut BT off from the stimulus of competition.

2.22 Joint ventures will yield some financial benefit to BT in the longer term, and the sale of the existing asset base in the short term, but in neither case enough to finance the modernisation programme in 1981-6. The case for our recommendations is mainly operational but also has financial benefits. BT's new developments in the competitive sector should be driven and funded by the markets. This together with an appropriate regulatory climate will stimulate efficiency and ensure fair competition and equal access.

ANNEX 3: BT AND THE TELECOMMUNICATIONS SERVICE SECTOR

Introduction

3.1 What follows is a preliminary discussion of a complex subject. The best way to proceed will only become clear once the government has responded to Professor Beesley's recommendations on capacity resale. We have tried to look 'beyond Beesley' but do not pretend that the recommendations in this annex are the only way ahead.

3.2 The approach developed in this annex would argue that the fundamental distinction to draw is between a transmission facility and the service it provides. Voice telephony and telex are two separate services, but provided by the same physical transmission system; in this context, BT is both transmission supplier and service provider. But the two roles are distinct. At present, organisations with special service requirements are permitted to procure their own communications equipment and attach it to private circuits leased from BT. Airlines communicate passenger and flight information; banks carry financial transactions; news services distribute information gathered at one point to many others. The crucial restriction at present is that none of them except BT is allowed to resell their services, nor to transmit information between third parties for a fee. The services market is therefore limited by what BT chooses to provide.

3.3 The forces for change are strong. They arise both from the push of new technology, which makes new services possible, and from the pull of new markets as customers and would-be service operators see potential for new services. It is against such a background that Professor Beesley has recommended that the resale of services be permitted. If as we hope it is, then two developments could take place in the private sector quite quickly. First, existing specialised services now confined to an organisation's own needs will be offered more widely and on a commercial basis. The effect of permitting resale is hard to quantify; many organisations will have no desire to sell services to third parties. And those organisations which have developed specialised information services, such as Reuters and the Stock Exchange, will go on using their networks primarily for that purpose. The main difference is that, in the Stock Exchange case for example, one broker will be permitted to communicate

with another across the Stock Exchange network rather than the public network, and the Stock Exchange will be able to charge for the call.

3.4 Second, there will be those who wish to challenge BT in its traditional service markets of voice telephony and telex. BT is naturally worried about damage to its business arising from the latter. We think that the opportunities facing BT outweigh the threats. Further, in the world of digital technology, where all forms of information including voice are reduced to a stream of pulses, it is logically impossible to sustain (or enforce) a distinction between voice telephony, telex, and other services.

3.5 We see two strategic options facing BT. Either it could withdraw from services markets (including in extremis, telephony) and concentrate on providing transmission facilities. The planning, provision and funding of a nationwide transmission system will in any case be an important task, and the lack of adequate capacity may be the pacing factor which limits the growth of information technology industries. But under this scenario BT would be largely removed from the marketplace, and for the reasons given in the previous annex we think this the wrong way to go. Or it could develop and market new services as will the private sector. Two such services whose development seems particularly suited to BT's strengths and capabilities are text transmission by communicating word processors, and electronic funds transfer at the point of sale. Both are briefly described below.

3.6 Communicating Word Processors (CWPs): A word processor consists of a computer linked to one or more terminals equipped with keyboard and visual display unit (VDU). Letters, reports and memos can be entered and edited at the keyboard and displayed on the VDU. They can be sent to other terminals ('electronic mail'). Thus within an office the functions of manipulating, transmitting and filing documents can be handled electronically, reducing the need for conventional filing systems, memoranda written on paper, and so on. Some organisations in the UK are using such systems in a small way and seeing the benefits of fewer delays and lower costs. In a CWP system word processors on different sites are connected through the telecommunications network, thus extending their advantages to a whole organisation and ultimately to the entire business community.

3.7 Electronic Funds Transfer (EFT) is intended to replace cash payment at retail shops. At the point of sale the customer hands the cashier a machine readable card. The card is read by a terminal connected over the telecommunications network to a computer holding up-to-date information on customers' accounts. The assistant enters the amount to be paid. The computer checks the customer's account and, if there are sufficient funds, debits it, transfers the funds to the shop's account and sends confirmation back to the terminal. The main benefits are the savings in the costs of handling cash and in convenience for the customer. But without good telecommunications EFT cannot even be contemplated.

3.8 The systems management problems facing CWP and EFT networks are formidable; it could be that these have discouraged their development so far. At present the banks are interested in launching EFT on the public switched network; but BT accepts that if the organisational hurdles can be overcome the banks might in time want a stake in a dedicated network. On the other hand, it could be that only an organisation like BT is capable of developing nationwide EFT and CWP systems, the banks and office products companies having so far failed to do so. These are both areas in which the Minister for Information Technology might seek to stimulate progress.

3.9 In this introduction we have defined "services" to embrace all communications services using dedicated circuits. These might be leased from BT as at present, or in the post-Beesley climate, leased or bought from rival suppliers of alternative networks, or perhaps bought from BT; the possibilities are many. They will all be able to carry third party traffic if they wish. Finally, we would expect a number of these new private networks to carry voice as well as non-voice traffic, since in the early years voice traffic will be necessary to achieve high load factors. This has implications for BT's tariffs, and in itself makes it important for BT to consider its market response.

A possible BT approach to the services market

3.10 We envisage that BT would set up joint ventures for EFT and other specialised communications services. Each would seek private sector investors and business partners, perhaps an equipment supplier, a major potential user or a financial institution. They would research market requirements, define the

services to be provided and the tariffs, develop equipment specifications, raise the necessary capital and procure appropriate network facilities. If they qualified for the 'Ryrie concession', or indeed had majority private ownership and control, then their borrowing would not count against BT's EFL.

Alternative networks

3.11 In our report we have described the effects of 'alternative networks' on both the supply of competing services and the provision of raw transmission capacity independent of BT. In response to the latter, BT could choose to extend its terms of business to embrace the sale or front-loaded leasing of private circuits as distinct from the present practice of renting them on an annual basis. There are precedents for the sale of circuits in the funding by national PTTs of international cables: each national PTT intending to use the cable puts up capital in exchange for the indefeasible right to use a certain amount of the cable's capacity. Subject to Inland Revenue ruling, there could also be tax advantages if a company bought physical assets such as transmission lines and were allowed accelerated depreciation of the asset value.

3.12 BT opposes alternative networks, and the government has not yet made its decision. We strongly support a decision to license them, for reasons which this report as a whole makes clear.

BT's preliminary response

3.13 BT has doubts about the sale of private circuits. It points out that the needs of private network operators tend to be specialised. The average life of a private circuit is only five years and a quarter of all private circuits undergo some reconfiguration every year because the operators' business premises and plant are constantly changing location. It doubts therefore whether sale in perpetuity makes operational sense and, more important, whether the new owner of a physical network would have an asset he could easily resell given that the network ends in a number of particular sites in which potential buyers will have no interest. BT itself might well be the only organisation with an interest in buying the network back. We asked whether the right to a specified amount of circuit capacity might not be a more saleable asset than the physical lines; but BT doubts whether such a scheme would have any tax advantages for the 'owner'. This needs confirmation.

3.14 BT is prepared, however, to give both existing and new private sector operators a choice between present lease arrangements and a front-loaded lease of 2-4 years' rental, with an appropriate discount. As in all such schemes, there is an immediate gain to BT and lower revenue in later years. BT does not expect a high take-up, perhaps only 10 per cent.

3.15 Underlying BT's reaction is its belief that the network is indivisible and that in the longer term the integrated services digital network will remove any need for private circuits. We find it hard to believe however that some large business customers will not continue to prefer the security of ownership and freedom from maintenance restrictions or possible strike action that dedicated independent networks offer. They should certainly retain the freedom to choose.

3.16 This last point requires further consideration by government. For the time being, we see two ways ahead:

i. BT to offer the choice of front-loaded leases to private network operators (paragraph 3.14 above);

ii. participation by BT in joint ventures where the requirement is for entirely new dedicated networks. CWP and EFT seem promising candidates, and their potential nationwide coverage and expense probably rules out any attempt by BT to finance and develop them on its own. We accept that reconfiguration will pose genuine problems to any joint venture, (paragraph 3.13 above) but are not satisfied - certainly at this early stage - that no solution exists.

Impact of service subsidiaries on BT's investment programme

3.17 BT believes that 10 per cent of existing private network operators might want to switch to front-loaded leasing arrangements, and would expect to receive £30-40m in 1982-3. In later years it foresees no net revenue gain because the loss of future rental from those who have availed themselves of these arrangements will cancel out the gain from new participants in them.

3.18 By way of comparison, BT derived around £100m in 1979-80 from the rental of private circuits, a figure which will rise since BT wants to put leases on a cost-related basis (which might be an inducement to switch to front-loaded leases). With reservations, BT has also predicted an investment requirement in its 1981-6 programme of around £300m for the 150,000 additional private circuits that it foresees. If as we expect competition increases demand for private circuits this figure could prove an underestimate. It can only be a guess, but BT's estimate of revenue from front-loading may prove too cautious. Much depends on the financial arrangements that competing suppliers offer.

3.19 As there is no provision in the investment programme for CWP or EFT service networks, it is safe to say that these will put further pressure on BT's finances unless developed by joint ventures.

Wider impact on BT's revenue

3.20 There would be a loss of revenue to BT from diversion of trunk traffic onto new private networks, and to a lesser extent from diversion onto existing private networks permitted to resell voice capacity. But that would happen whatever the nature of the lease arrangements between BT and the private operators concerned. Moreover, as Professor Beesley has shown, the planned increases in BT's charges for local calls to reflect costs more accurately would eliminate much of the 'cream' from resale. BT's real problem is that competition for trunk traffic may drive tariffs down faster than BT would wish, with consequences for the SFR and therefore for the investment programme as long as external financing remains constrained. Again, however, this will happen anyway whether private operators procure their networks from BT or from some other transmission company.

Conclusions

3.21 If Professor Beesley's recommendations are accepted, resale of capacity permitted and alternative networks licensed, then two significant new demensions will be added to the telecommunications services markets. We believe there may be scope for adjustments in BT's market strategy to meet this new environment, in particular for the creation of joint ventures to finance private circuit networks offering both voice and non-voice services, and for the sale by BT of private circuits. BT has some understandable doubts, and at the moment there seem to be two ways forward, i. the offer by BT of the choice of front-

loaded leases of private circuits and, in the longer term, ii. joint ventures for complex and expensive ventures such as CWP and EFT requiring the construction of new dedicated networks. As the future competitive environment is so unclear, we would not want either BT or the government to lose sight of more far-reaching proposals.

ANNEX 4: CONTROL, REGULATION AND EFFICIENCY

Introduction

4.1 Before 1969 telecommunications and the postal services were run as a Department, under the government's direct control. Since then they have been a state monopoly. Later this year BT will become a corporation separate from Posts, with the power to raise money under conditions that remain to be agreed and to establish subsidiaries, and subject to competition. In common with other nationalised industries, its activities are tightly controlled by the government, for a variety of reasons. First, where its decisions such as on pay and prices have undesirable economic and social consequences, then they may need to be changed. Second, it needs external financing; so its planned use of government money needs to be carefully scrutinised, which involves regular and careful examination of its investment and expenditure plans. Third is the need to counter the natural tendency of any monopoly to become inefficient, to fritter away investment funds in pay increases and to dissipate the benefits of new technology in wasteful work practices.

4.2 There is no doubt that many business customers, especially in the City, remain dissatisfied with the service that BT provides and with the speed of installation of new equipment. We received evidence on this point from the British Bankers' Association and Telecommunications Users' Association, among others. It is acknowledged that service has improved, and waiting lists cut, in the past year; but there is still a long way to go. The causes are various; some would stress working practices, BT would say it needed more investment capital, but we suspect that the heart of the problem - and one where neither side can entirely escape criticism - has been a failure to engage in adequate forward planning of new facilities, coupled with a need for BT to put more management resources into project appraisal and control.

Control and Efficiency

4.3 When the system of cash limits and EFLs was introduced, it was hoped that it would provide sufficient leverage to gain improvements in efficiency. But it does not follow that, because increased efficiency generates internal savings and reduces the external financing requirements (EFR) that the converse is true and that squeezing the EFL automatically yields greater efficiency.

The reasons for this are worth examining. First, the EFR is hard to predict, being the difference of two large numbers: the inflow of revenues and outflow of costs. Second, BT management in attempting to meet a given EFL target has a greater range of options than improving efficiency. Cutting long-term investment is the easiest, in that it postpones the crunch.

4.4 Third, the EFL is a short-term financial target whereas internal efficiency is a long-term goal requiring sustained commitment and effort. It is probably not realistic for BT to achieve much more than 3-5 per cent per annum improvement in real labour productivity (excluding capital intensification) over the long-term. BT would argue that this is a far stricter (though in our view fairer) yardstick than that used by many companies in the private sector. For a view of its overall "productivity", including the effect of capital intensification, it is probably sufficient to quote some figures from the 1976 NEDO (McIntosh) report on the nationalised industries. Average annual growth in the telecommunications business from 1960 to 1975 was 9.9 per cent; employment rose by 2.1 per cent (mostly in the sixties); output per head grew by 7.7 per cent; comparable figures for the average in manufacturing industry were 2.7 per cent, -0.7 per cent and 3.4 per cent. But there are difficulties in comparing a public sector monopoly with manufacturing industry as a whole. If instead one compares BT's performance with those of other PTTs in Europe, as the DOI and BT have done, BT - with all the normal reservations about the problems of comparing different countries' practices on a common basis - tends to be no higher than the middle of the pack.

4.5 Similar observations apply to the performance bond devised by BT and Warburgs. The original aim behind the proposal for a performance bond was to provide BT with access to sources of venture capital, the return on which would be linked to the overall success of the Telecommunications Business. But as discussions progressed, and the performance criteria were defined, it became clear that Treasury officials had a different view of performance; one defined largely in terms of improvement in real unit costs. The discussions have so far foundered on this point. It is clear that, to attract investors, the return on capital needs to be linked to the overall use made of the capital rather than to some indicator designed for a narrower and different purpose such as measuring improvements in labour productivity.

So far, neither the aim of raising capital nor that of improving efficiency has been achieved. More work needs to be done on performance bonds and on other ways of attracting private capital outside PSBR constraints.

4.6 The conclusion we draw from this anlaysis is that control of efficiency by squeezing finance and by attaching strings to it is not very effective. In a competitive world, the chances of it being so will be still less. BT will have market pressures to add to its portfolio of arguments for greater financial freedom. Clearly the government must have regard to BT's use of funds in fixing the extent of its future access to funds. But:

i. the instruments whereby BT promotes operational efficiency (and effectiveness) should not be confused with those designed for wider macroeconomic purposes;

ii. short-term gains in efficiency always fall short of government hopes, and the government needs to get away from a search for short-term savings, dominated by the annual IFR and EFL-setting rounds, and to work on the basis of realistic longer term targets, drawn up by BT with appropriate advice from outside consultants, to which BT and the government can commit themselves and against which the government can monitor BT's use of funds.

The next two sections develop these points.

Choice of instruments

4.7 To provide an overall framework for their discussions of efficiency BT and the government at present rely largely on a real unit cost index. In 1978 BT told the government that it expected "a general reduction in the real unit costs of the telecommunications services of some 5 per cent over the five years to 1982-3".

4.8 After initial successes BT has fallen short of this target. A working party of government and BT officials is now studying the reasons. BT would like the real unit cost index redefined. While we do not want to go into undue detail in this annex, some general points are worth making. The target is essentially a ratio of current account costs, excluding interest, at constant prices divided by income at constant tariffs; in other words, the ratio cannot

be manipulated in BT's favour by adding higher revenue based on tariff increases to the bottom line. This is as it should be because otherwise there would be no pressure to take action on costs and because tariff increases have in the past been influenced by wider government aims such as the need to meet EFLs and reduce the PSBR. But it should be recognised that higher real tariffs result in lower volumes. Thus income expressed at constant tariffs is below what it would otherwise have been. There is a case in logic for removing both the primary and secondary effects of higher tariffs.

4.9 The other main reasons for the shortfall, according to BT, are a lower GDP outturn, which has also reduced revenue; higher depreciation caused by modernisation shortening asset lives; and pay costs including both pay rates and staff numbers. In the context of efficiency the government should put pressure only on costs that lie within BT's power to contain. That applies particularly to pay, where wages have tended to rise faster than the RPI in most years, but not to depreciation or the effects of changes in GDP.

4.10 Even so, real unit costs calculations suffer from being averaged over the business as a whole. BT has a multitude of separate performance indicators for all sections of the business, for example internal and external maintenance. Only at these lower levels can concrete steps be taken to improve efficiency. We do not pretend to have covered this ground in detail and make only two general points. First, it must be for BT to take the necessary action, although the use of outside consultants might well provide BT with useful insights into how the business' efficiency could be improved. Secondly, the DOI will in our view need to acquire greater expertise in understanding how BT's manpower planning works and the significance to be attached to the data which BT provides.

4.11 The proposed creation of separately accountable BT regions, discussed more fully in Annex 1, should make local management more aware of their regions' allocable costs since it will identify differences in regional performance and may eventually lead to local pay and productivity agreements based on best regional practice. This would be a valuable reinforcement to other indicators and targets based on nationwide performance by different sectors of the work force.

Long-term and Short-term aims

4.12 Improved efficiency is a long-term goal. If the government wishes to force the pace, then it should do by means of an appropriate policy instrument which will operate over the long term. Competition over the whole range of services and products offered by BT is one such instrument. We referred briefly in our report to restrictive labour practices, delays in the provision of service, especially exchange lines, and delays in correcting faults and providing maintenance. An alternative network of the sort proposed by Cable & Wireless will provide a competitive reference point for all three, though a start would be made by earlier moves towards liberalisation and competition for attachments. But there are limits to what can be achieved in the short term, and the internal savings made possible through improved efficiency will fall far short of the funds necessary to finance the investment bulge of the next few years.

4.13 Over the next fifteen years, the effects of competition are hard to predict. Certainly it will reduce the government's freedom to press for higher tariffs and therefore constrain the available finance. The commercial implications of tariff policy will have to be considered as well as the economic ones.

4.14 BT's costs should decline dramatically in the late 1980s and 1990s. There are two reasons for this, both to do with technological change and the modernisation programme. First, the procurement profile reaches an expenditure peak in the mid-80s for trunk transmission and switching, and around 1988 for local switching. Thereafter installation staff numbers and costs will fall. There could still be savings in the shorter term if BT's suppliers were to carry out more of the work of assembling exchanges.

4.15 Secondly, overall maintenance manpower, in terms of man hours, is expected to fall from 81,000 now to 70,000 in 1991-2, with the peak, as with procurement, coming in the mid-80s. Maintenance divides into field and exchange maintenance. Field maintenance includes repair and renewal of cables; BT would argue that numbers will only decline with lower system growth. While exchange maintenance will only account for a third of total maintenance costs at peak manpower levels in the mid-80s, it nevertheless offers considerable scope for staff savings in the longer term. For a given size of exchange a

digital exchange will require in 1990-1 about a quarter of the maintenance effort of the Strowger electro-mechanical exchanges that are now being phased out; less than half that of Crossbar; and around half that of TXE 4. These comparisons are all in terms of maintenance staff hours per exchange connection per year.

4.16 We have compared the graph of manpower requirements with the graph for estimated natural wastage, normally 4-6 per cent per annum. The gap between the two lines must be filled either by recruitment or redeployment of staff from other duties. Premature redundancy (which the unions would bitterly contest given the present employment security agreements) is not therefore necessary. If BT could reduce its manpower requirement line down to that for natural wastage, some 3,000 jobs could be trimmed. BT will naturally wish to continue to recruit staff in order to maintain a sensible mix of ages and skills; but this is a good example of the sort of issue we have in mind that needs a long-term look.

4.17 We have not had the resources to examine BT's staffing structure with any care. But in any large organisation there is normally some scope for short-term savings. It has now been agreed that the consultants whom BT has recently appointed will examine the scope for early savings in addition to their other tasks, in connection with the government's agreement to a £200m increase in BT's 1981-2 EFL.

4.18 Before leaving this subject we have one general comment which links back to previous comments on the use and abuse of ratios as performance criteria and the distinction between labour and capital productivity. BT often cites the correlation between telephone penetration (telephone per 100 head of population) and productivity measured in telephones per member of staff. Once UK penetration reaches US or Swedish levels BT's productivity will look very impressive. But productivity can also be improved by reducing staff. A 1970 BT discussion paper on manpower productivity in telecommunications makes the point concisely in words which may still apply:

> "In simple terms, our objective in manpower productivity terms could perhaps be said to achieve the highest level of telephone penetration without increasing the number of staff employed in the business" (our underlining).

4.19 Despite the potential for further volume growth in telecommunications, we think that absolute staff numbers could and should decline as modernisation proceeds, though we would not press for a rate of decline exceeding that of natural wastage. The formation of BT subsidiaries, and later joint ventures, provides a further opportunity to reduce staff numbers since we would not expect private capital to be forthcoming with current BT conditions of employment.

Procurement and Efficiency

4.20 Assuming that the bulk of BT's requirements will continue to be met by UK suppliers, the question arises whether the present rules for giving BT access to government funds work against the efficient long term procurement of capital goods. An example will illustrate the point. The development costs of an electronic exchange are high. They must be recovered over the production life of the exchange; a long production run means lower real unit costs. Certainty is important, and BT as buyer would be in a strong position to negotiate lower prices for exchange equipment and attachments if it could enter into long term procurement contracts. But BT has no guarantee of access to long-term funds. Its investment programme is fully approved, after some negotiation, only for the current year, and partly approved for the succeeding four years. The Telecommunications Equipment Manufacturing Association (TEMA) has told us that the selling price of a small modern PABX could be reduced by 40 per cent if a long production run was certain; similar economics could well apply to System X exchanges. By forcing BT to plan a ten-year project on a year-to-year basis, the overall costs may well be increased by several hundred million pounds. This is not the fault of BT management. Nor could these savings be realised by applying pressure on the EFL. Rather, they are a consequence of the investment approval process; the cost of keeping options open for future years' public expenditure. Permitting BT to commit funds up to, say, ten years ahead could yield substantially more efficient use of investment funds both in the short-term, and overall.

4.21. A recent example may be the supply of telephones. Two years ago, BT came under heavy criticism for its long waiting lists, and decided to increase stocks; the suppliers geared up production only to find - according to TEMA - that because of last year's cash limits BT had to destock and orders to suppliers fell by 30 per cent. One of the many advantages of competition is

that, with more market outlets, suppliers will have a better chance of levelling out fluctuations in demand. Nevertheless, BT will remain by far the largest market (about £500 million a year at present to TEMA members alone) and we welcome the recent agreement by BT and government departments, in response to our raising of this issue, to examine the scope for economies in procurement costs if all or most of BT's modernisation programme could be put on an assured long term basis.

Property

4.22 It has been put to us that BT lacks professional expertise in managing an existing property portfolio of £1 billion and an additional portfolio of about £1 billion likely to be acquired over the next 5 years. The management of BT's property resources comprises two distinct issues, net area utilisation which is a question of competent professional planning, and the possible advantages for BT of sale and leaseback arrangements. The last has PSBR implications which we understand are being pursued separately.

Regulation

4.23 As a competitor, BT will be in a strong position in the new marketplace for telecommunications supply. First, it is the dominant supplier, with all the associated advantages of market presence, economies of scale, price leadership, countrywide organisation and technical clout. Second, it has regulatory powers; to allocate frequencies in those parts of the frequency spectrum which it controls, and to license services. Third, it has the monopoly right to commission and maintain attachments and most PABXs. By implication, it therefore has the right unilaterally to prevent the attachment of equipment which it dislikes on grounds that it is unmaintainable, or to attach excessive maintenance charges or unreasonable conditions to the use of such equipment. There is already some evidence of this happening arising from within the government service, and the private sector has expressed its fears that BT will adopt predatory practices against its competitors.

4.24 BT also represents the UK in international standards-making activities. Clear, well-written standards are vital to telecommunications and information technology; without agreed international standards, international telephone calls would be impossible. And the emergence of a competitive market for

attachments, services and alternative networks depends on appropriate standards and certification procedures.

4.25 In all these areas, BT will have two conflicting interests. First, as a regulator, to ensure an orderly market. Second, as a competitor, to strengthen its own dominant position and maximise its share of the market. The private sector has expressed the opinion to us that BT will not be able to separate the roles of player and referee in a way that is fair to the other players. This problem lies beyond our remit. But we have assumed the emergence of a liberal and open marketplace and many of our recommendations depend on it. It is therefore important that the regulatory stance adopted should consciously favour competition, and, where necessary, prevent BT from abusing its dominant market position.

Conclusions and Recommendations

4.26 There are two developments already in progress which will affect consideration of efficiency. The chairman of BT has appointed management consultants to advise on the creation of separately accountable regions, and it has been agreed that they will also examine the scope for early cost savings. We support both these initiatives.

4.27 Other issues relevant to 1981–6 are:

i. given that absolute staff numbers are likely to decline in the long term, can BT prevent them rising (by 4,000) in the period 1981–6?

ii. would contracting out more exchange assembly work improve efficiency?

iii. £192m is to be spent on improved diagnostic equipment in 1981–6. By how much will this expenditure improve productivity in maintenance and repair work?

iii. could investment in property be more efficiently managed, given, for example, the large amount of unused space at Baynard House?

4.28 In the longer term, when equipment procurement and exchange maintenance manpower have passed their peaks the task must be to minimise net new

recruitment into BT and to allow natural wastage to have its impact on staff levels. There should be a firm lon-term plan to that effect.

4.29 We recommend that BT study the questions raised in the above two paragraphs, with the assistance where necessary of consultants, and report its findings to the Department of Industry.

4.30 We also recommend that any new real unit cost index should be directed towards reducing those costs that lie within BT's power to contain, especially pay; that the work of selecting appropriate performance criteria, both regional and by workforce sector, be speeded up; and that the Department of Industry take steps to monitor BT's manpower planning more thoroughly. Recourse to an external audit mechanism could be another way of proceeding.

4.31 In general, BT and the government need to work on the basis of realistic long-term performance and productivity targets, drawn up by BT with outside advice where appropriate, to which they can both commit themselves and against which the government can monitor BT's use of funds.

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TABLE 1

BT's Financial Performance: Forecasts from 1981 onwards

(1980 MTP forecasts in brackets)

Current prices, as forecast, unless otherwise stated; in £m.

	1981	1982	1983	1984	1985	1986
Income	4518(4518)	5420(5225)	6363(5827)	7241(6466)	8214(7295)	9219(-)
Expenditure	4308(4086)	5098(4624)	5934(5148)	6746(5687)	7631(6377)	8536(-)
Profit	210 (432)	322 (601)	429 (679)	495 (779)	583 (918)	683(-)
As % of income	4.6 (9.6)	5.9(11.5)	6.7(11.7)	6.8(12.0)	7.1(12.6)	7.4(-)
Tariffs, adjusted for inflation (1970 = 100)	75.4	78.3	75.3	71.2	67.8	64
Capital requirements (fixed assets)	1587*(1502)	1940(1976)	2577(2080)	2990(2350)	3278(2607)	3525
(including changes in working capital)	1623*(1355)	2238(2075)	2717(2162)	3048(2417)	3400(2713)	3691(-)
Movement in net liquid funds						
Financed from: internal resources	1385(1520)	1738(1840)	2131(2059)	2409(2302)	2741(2626)	3103(-)
net external borrowing	238*(-165)	500 (235)	586 (103)	643 (115)	659 (87)	588(-)
Self-financing ratio (%)**	85 (112)	78 (89)	79 (95)	79 (95)	81 (97)	84(-)
Financial target (as % of net assets)	6 (6)	6†(6.5)	6.5†(6.5)	6.5†(6.5)	6.5†(6.5)	
Financial achievement	4.6	4.7¯	5¯	5¯	5¯	5¯
EFL (target)	223 (78)	180 (111)				
EFR (actual/forecast)	238 (179)	500 (235)	586	643	659	588

*Distorted by billing backlog

†Targets set in Cmnd 7841 with the reservations set out in Cmnd 8175

¯BT figures, based for 1982 onwards on achieving a 5% RRA

**Recalculated from BT figures (which are before loan repayments) on basis comparable to those for 1971-80

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TABLE 21

BT's Financial Performance 1971–80

Current prices unless otherwise stated.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Income	785.7	884.1	1002.3	1160.5*	1388.1*	2166.8	2658.0	2924.0	3243.9	3558.9
Expenditure	692.2	826.1	1012.0	1221.9	1582.6	2012.1	2292.6	2597.4	2907.5	3429.8
Profit	93.5	58.0	(9.7)	(61.4)*	(194.5)*	154.7	365.4$	326.6	336.4	129.1
As % of income	11.9	6.6	(1.0)	(5.3)*	(14.0)*	7.1	13.7	11.2	10.4	3.6
Tariffs, adjusted for inflation (1970 = 100)	102.1	94.0	88.6	84.2	80.4	103.9	103.5	89.8	82.6	74.0
Capital requirements (fixed assets)	426.2	537.3	625.5	696.4	787.2	915.9	834.6	844.6	996.5	1240.8
(incl changes in working capital)	492.2	460.2	623.8	807.7	927.0	695.0	771.2	912.3	1045.8	1352.1
Movement in net liquid funds	(49.0)	35.2	(7.5)	(216.3)	(22.4)	216.9	278.9	79.1	(108.7)	(348.4)
Financed from:										
internal resources	250.8	247.2	240.8	298.0	368.7	641.9	841.9	1039.5	1110.0	1070.3
net external borrowing	192.4	248.2	375.5	293.4	535.9	270.0	208.2	(48.1)	(172.9)	(66.6)
Self-financing ratio (%)	51.0	53.7	38.6	36.9	39.8	92.4	109.2	113.9	106.1	79.2
Financial target (as % of net assets)	9.6	10.0	10.0	–	–	–	6.0**	6.0**	6.0**	5.0**
Financial achievement	9.8	8.6	6.9	6.4	5.2	14.1	7.6**	6.1**	6.9**	4.6**
EFL (target)										
EFR (actual)										

*The figures for 1974 and 1975 are before compensation for price restraint.

$The figures for 1977 are before provision for elimination of profit above the Price Code reference level.

**The return on capital for the years from 1977 to 1980 has been calculated in real terms ie with return (before charging interest payable on medium and long-term loans but after charging historic and supplementary depreciation) expressed as a percentage of net assets revalued at replacement cost.

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TABLE 3

BRITISH TELECOM'S 1981 - 6 MEDIUM TERM PLAN

Appendices 1 and 2 of BT's latest MTP are attached. These give much relevant information.

2. BT plans to spend £10,324m in 1980-1 prices between 1981-6 on fixed asset acquisitions (£14,310m in forecast outturn prices). The main categories are:-

	£m
Growth of the conventional inland telephone service	3472
(of which prime telephones and wiring	763
(local cable network	744
(exchanges and inter-exchange	1965
Quality of service	487
Network modernisation	2927
Information traffic	156
International circuits	470
Accommodation, computers etc	1661
Investment in the competitive sector as defined by BT	1091

3. Compared to the 1980 MTP, BT's investment requirement for the years 1980-5, as set out in its latest MTP, has increased by £400m in 1980-1 prices (£1857m in forecast outturn prices).

4. Total BT staff stood at 247,000 in 1980-1 and is forecast to stand at 252,000 in 1985-6.

TABLE 4. INTERNATIONAL COMPARISONS

£m Approx Total Investment at 1980/81 out turn prices

	R/E	1980(/1)	1981(/2)	1982(/3)	1983(/4)	1984(/5)	TOTAL
UK		1,587	1,801	2,021	2,121	2,174	9,704
Germany	4.56	2,133	2,607	2,457	2,263	2,114	11,574
France	10.56	2,135	NA	NA	NA	NA	