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Policy Study No 141

Liberate the Tube!

Radical proposals to revitalise the London Underground

Stephen Glaister & Tony Travers

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The Greater London Group at the London School of Economics

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52 Rochester Row, London, SW1P 1JU
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Summary

London now faces a transport problem more intense than any city in Britain, and possibly harder to solve than in any city in the world.

It once enjoyed an excellent transport system. Because of inadequate and poorly directed investment, political interference and lack of managerial and commercial freedoms the decline of the Underground is inevitable unless radical changes are made. Otherwise Londoners can only look forward to more breakdowns and delays and an ever less competitive tube system.

Falling performance standards will coincide with rising expectations of Tube users. Because of changes in the composition of the workforce those who use the central core of the system have come to expect improvements in the quality of their daily lives. They will be more reluctant than formerly to put up with a worsening service. A continuing move from public to private transport may be expected as a result.

Government spending has been erratic and insufficient to prevent deterioration of stations, failures of equipment, service irregularities and obsolescence. Significantly greater spending over several years would overcome many problems faced by the user. But this is most unlikely to be on offer, whatever the political complexion of the government.

As the recession ends it will only be possible to make full use of the increased office space in central London if the rail system, including the London Underground, is given greater capacity. The Jubilee Line Extension has consumed much of the funding available for new lines.

Change must resolve the present funding shortfall, create proper competitive pressures on costs and establish stability and independence from undue political interference. Stability and independence are the most important issues since their attainment is crucial to the other two.

To meet the needs properly new sources of funding must be found. It is unrealistic of the Government to expect major new resources from the

private sector under present arrangements because there are few commercially profitable investment opportunities on the Underground. The Underground's own strategy for a "Decently Modern Metro" would have many attractions to the user. But it is inherently risky, relying on greatly increased Government funding for some years, which is also unrealistic.

A levy on the National Non-Domestic Rate administered by a new trust would be a fairer way of paying for improved Underground services and new lines by capturing the value of some benefits to the local economy.

It will be possible to make a contribution by reducing unit costs. The successful experience with London bus tendering suggests that similar techniques will yield cost savings for the Underground - if genuine competition is introduced in procurement. Safety is an important factor but it should not be used as the means to prevent more efficient work practices. There has been evidence of poor morale in the workforce reflected in the varying rates for absenteeism.

The best organisational change would be to split the London Underground into ten separate line businesses each with full commercial responsibility. London Transport (or the funding trust) should be responsible for public service considerations and the disbursement of the subsidy. Tracks should not be separated from the trains as in BR "privatisation" though some major stations could be separately owned and managed.

The Travelcard, though highly popular, obscures from passengers the costs their decisions impose on a system which is already short of money. It should be replaced by an equally flexible and user-friendly stored value ticketing system. This would preserve the convenience of the Travelcard while liberating the normal incentives for efficient use of the system and correctly motivated management.

The ten businesses should be competitively franchised or sold with a capital "dowry" to pay for their modernisation.

Competition between modes of transport should be encouraged subject to oversight by a new regulatory body which could also be the new funding organisation.

This report poses the choice between either implementing a plan for a smaller, high quality, effective public transport system or continuing with the present inconsistency and lack of direction.

Introduction[1]

London faces a problem more intense than any other city in Britain, and possibly harder to solve than any city in the world. The way London grew was determined by railways on the surface and underground. These still greatly influence patterns of movement. In a city that depends so heavily on its railways the consequences of poor performance are starkly obvious. Further, as the recession ends, it will only be possible to make full use of the considerably increased area of commercial floor-space in central London if the rail system is given adequate new capacity to transport the workforce.

If investment in the core Underground system is insufficient to renew the infrastructure then failures of escalators, signalling, track, public address systems and erratic services will continue. Put another way, the standards of service in 1995 are the best they can ever be expected to be. Londoners can look forward to more breakdowns, more delays and an ever less competitive tube system. In the long term, the image of the capital may be tarnished, particularly when cites in Europe (and their governments) are prepared to spend massive sums on the improvement and extension of their metro systems. British governments have never been so inclined, and there is virtually no chance that they will ever be.

The Government's present policy for London Underground is, in effect, the not-quite-orderly battle against decline. Although it has spent more on the Underground than any other since the Second World War investment remains inadequate and unpredictable. Fares are controlled politically. Moreover, there is no overall policy for transport in the capital. Insofar as it is possible to infer a policy, it appears to involve raising fares by percentages above the general rise in prices whilst under-funding the investment needs of the core system. Given the long-term decline in the quality of travel by Underground (certainly as compared with the rapid improvements in the standard of cars) it would be surprising if there were not further relative and absolute moves away from public to private transport in the capital.

It is against this background that this study has been undertaken. If (as seems certain) there is no extra public funding to secure the modernisation or extension of the Underground, what are the alternatives? Put simply, *if* the Government is only prepared to spend 60 per cent to 70 per cent of what is thought to be needed on investment in the core tube network, what kind of public-sector Underground system could be maintained, and how could it be funded?

It is necessary to think the unthinkable. Londoners have to realise that it is impossible to maintain a full 1930s-style Underground without expensive investment. Such investment could be funded by taxpayers or by fare rises. Neither option has proved palatable thus far. Decline will continue unless radical changes are made.

It would be possible to trim the Tube so that the remaining core could be properly maintained by current levels of annual public expenditure. Alternatively, Underground managers could be freed from the shackles that currently make it impossible for them to run the system on commercial principles. That is, they could be given the freedom to make radical management changes, or to raise fares (possibly by significant amounts), or to cut back the system up to the point where it could be operated profitably and thus attract private finance on a proper commercial basis. Some form of privatisation or franchising would allow the freedom to escape the inconsistent requirements of Whitehall and would provide the incentives which are presently lacking.

Radical alternative packages are considered in this paper. They should be seen against the background of the failure of successive governments to invest consistently in London Underground in such a way as to secure its future, or to place it on a sound commercial footing. Perhaps the shock of seeing the potential threats to fare levels, service quality and to the size of the network will provide a stimulus to politicians to acknowledge and rectify their long-term failure. The choice now is between a smaller, more expensive, effective and modern public transport system and a medium-priced, failing, and antiquated one.

THE POLITICAL SIGNIFICANCE OF THE UNDERGROUND

The importance of the London Underground can hardly be exaggerated. The system (if not the organisation of the same name) attracts widespread public support. This support derives in part from the importance of the system to Londoners as a means to travel and in part from a nostalgic attachment to "The Tube". The Underground has had a key role in dictating London's living and working locations.

For many people the Underground *defines* London as a place. They tend to think of the geography of London in terms of the Underground map which is in everybody's diary and on every tourist document. The Underground has a significance in civic affairs out of proportion to its size as a business.

The Underground plays a vital part in the journey to work for a highly articulate portion of the working population. Their quality of life is significantly affected by their experiences on the Underground. By the same token the cost and quality of the Underground service defines the effective cost and quality of labour available to employers.

The failure to match rising living standards

Average personal incomes are now, in real terms, more than two and a half times higher than they were in 1946. So expectations of quality in the material aspects of every day life are continually increasing. In addition to this the London economy has undergone a transformation with the consequence that the sensitivity to quality of those who now travel to work on the Underground has probably increased disproportionately.

For many workers in London an Underground station is the most dilapidated place they have to experience in their every day lives: and some of the bad stations are located in the hearts of the commercial, tourist and shopping centres in the City and the West End. There is little doubt that unless the quality of the Underground — in terms of the rolling stock, stations, frequency of service and reliability — can be improved in line with the standards people see in other aspects of their lives (particularly private transport), they will continue to abandon the system. There will be short-term booms and slumps but the underlying trend away from public transport and in favour of the car will continue.

OUTSIDE INTERFERENCE AND DIFFICULTIES FOR MANAGEMENT

Cheap, voluminous and efficient public transport has been assumed — without a great deal of careful analysis — to be an important part of the "solution" to such pressing problems as unemployment, poverty and, latterly, problems of the environment. This is one reason that London Transport in general, and its fares in particular, was adopted as a major plank in the political campaign by the Labour administration at the Greater London Council in the early 1980's. This issue featured in the conflict with the Conservative Government which culminated in the abolition of the Council in 1986. As a prelude to abolition control of London Transport was removed from the Council, in 1984, and restored to a nationalised industry (the situation from 1947 to 1969). Many people saw this as the theft of the Underground from local democratic control by a remote, unelected and unduly commercial body.

Managing the Underground has always been difficult. Looking back over 40 years with London's Transport, the great Lord Ashfield, founding father of today's organisation, said in 1947

> "The times are indeed difficult. Yet, this is something to which we ought by now to have become well accustomed. As I look back, I cannot recall any long period of time when we have been free from worries. Whenever in the past I have indulged in the luxury of sitting back and thinking that all was going well, something always turned up to disturb my complacency. If the traffics were buoyant, then it was the Government who intervened to chasten us with the petrol tax [a tax on the fuel used by buses at a time when there were very few cars]. And if it was not the petrol tax, then it was something else. And so it went on, year in and year out."[2]

Every succeeding chairman of London Transport would surely agree.

The need to preserve independence from government in order to allow the business to be managed was recognised in the 1920's and was a prime mover in the development of the Morrisonian concept of the nationalised industry with an independent board whose membership is appointed by a Secretary of State.

Chairmen of nationalised industries have frequently complained about interference from their sponsoring ministries or the Treasury. But there are several factors which make this a particularly acute problem in the case of London Underground.

First and foremost London Underground takes over half a billion pounds a year of public money and, as we shall see, it is asking for more for the next 10 years. This is a relatively new phenomenon: London Transport as a whole met a requirement to break even until 1969 and it only started to require large public subsidies in the mid 1970's as an unintended consequence of macroeconomic anti-inflation policies (this is recounted in detail in Glaister *et al* 1991, chapter 2). It is a natural consequence that Parliament will want to take a close interest.

The turbulent history of events during the 1980s sensitised the public and the press to the Underground and made something of totem of it. This was brought into the sharpest focus in 1987 by the fire at King's Cross Underground Station in which 31 people were killed. The Government of the day felt irresistible pressure to respond by committing themselves and London Transport to implementing all the recommendations of the Fennell investigation into the King's Cross disaster. These were, not surprisingly, interventionist in both their implications for investment programmes and in the way in which the business is run.

London's Underground has found itself locked in the hopeless position of being expected to behave in a "commercial" way, though politicians continue to intervene in virtually every aspect of its activities. Such interventions include the setting of fares levels, investment totals, new safety requirements and, most importantly, the requirement that the "public service" obligations of the network should remain virtually unchanged.

This last demand, taken with consistently inadequate investment and limitations on fare rises, demonstrates the fundamental weaknesses of the political framework within which the Underground is obliged to operate. Uneconomic stations, lines and services must be maintained because MPs and ministers fear the wrath of their electorates. Yet Underground managers do not receive sufficient government support to maintain the infrastructure. Nor do they have the commercial freedom to push up fares so as to fund investments. The electorate is not, apparently, thought to like fare rises either. The result of this pincer movement on the Underground has been inevitable: the quality of service has declined in relation to the aspirations — and real living standards — of its passengers. Only the virtual monopoly enjoyed by the tube in many parts of the capital has allowed it to get away with its long-term spiral of decline.

In addition to all of this there is a poor degree of trust between officials of London Transport and those in Whitehall. This further damages the autonomy of the LT management because there is a tendency for quite minor decisions to be "second guessed" by Whitehall officials — sometimes both by those from the Department of Transport and those from the Treasury.

GOVERNANCE AND COMPETITION WITH OTHER WORLD CITIES

The deregulation of financial services — now London's biggest industry — in the mid-1980s contributed to the perceived competition that London now faces. Although London was first to deregulate, it soon became clear that cities such as Frankfurt, Paris, Milan and Barcelona were not prepared to see the City expand at their expense. As a result, several continental centres staged their own "Big Bangs" to allow their markets to compete. The notion that European cities were engaged in a promotional struggle reached its zenith in the text of the London Planning Advisory Committee's 1991 publication *London World City*, which analysed several ways in which London was now having to compete.

The poor condition of London's transport infrastructure has been cited again and again as one of the capital's main weaknesses in its competitive struggle. As *London World City* put it:

> "...the image of the London [transport] system is poor. Limited resources and the consequences of safety requirements have led to a substantial decline in the appearance and general environment of the system. London's particular problem is not just having its inadequate public transport reliability, but also poor travelling environment".

Cities such as Tokyo and Paris were, by comparison, doing better than London. Even New York, with its notoriously under-invested system, has been given consistent grant aid and borrowing powers by the State of New York to fund a massive catch-up exercise. But further reform of London government will not, of itself, solve the problems facing the Underground. Under the present or any of the proposed arrangements London Underground does not appear likely ever to enjoy the freedom to act in a quasi-commercial way in the way the New York subway has been able to. Nor can it expect the massive state hand-outs given by governments in France and Germany towards the metro systems in their cites.

FUNDING: THE CORE UNDERGROUND *VERSUS* NEW LINES

The need for new Underground and rail lines has become tangled in the debate about the future of London as a world city. Pressure for CrossRail, the Jubilee Line Extension and other projects has relied heavily on lobbies that wish to promote London as a forward-looking business centre. Investment in existing lines, especially on 'invisible' items such as signalling, track and pumps, attracts very much less attention.

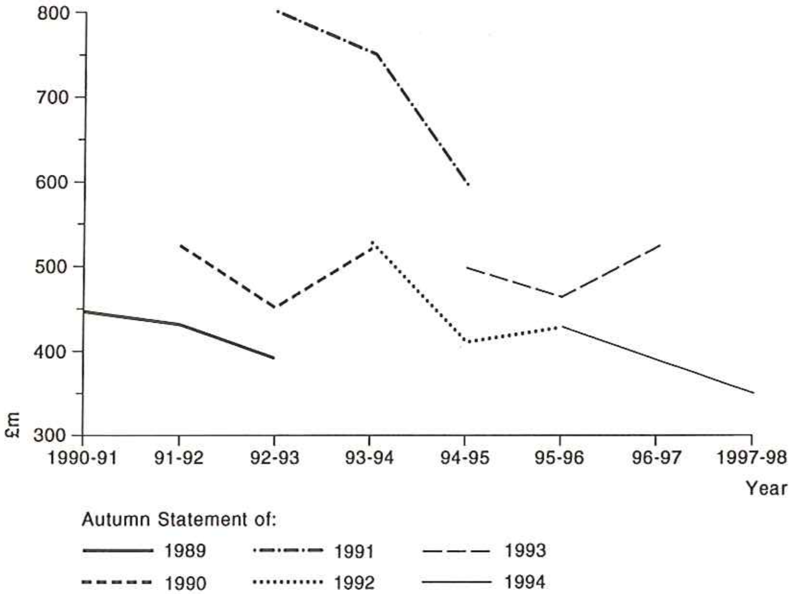
For virtually the entire period between the nationalisation of London Transport in 1948 and the late-1980s, successive governments starved the system of investment. The high standards of the Underground's original workmanship and design ensured that throughout the 1950s, 1960s and 1970s Londoners could live off the investments of a previous age.

The results of under-investment became increasingly clear — both on the Underground and the suburban railways — during the 1980s. Sudden and massive growth in use reulting from the boom in the London economy revealed the inadequacy of the railway infrastructure. Parts of the rolling-stock were 50 or more years old. Much signalling and track dated from the 1930s. Escalators were virtual antiques, while stations were often gloomy and squalid. The rise in passengers revealed the extent to which the system was incapable of coping with the demands made of it.

From 1987 onwards, the Government felt under sufficient pressure to concede significant increases in funding for Underground and suburban railway infrastructure. But it is evident that the political pressures that led the Government to step up investment were insufficiently strong either to guarantee longer-term consistency or to produce objectives for transport in the capital. A *laissez-faire* approach dominated government views about planning for much of the 1980s: the Central London Rail Study in 1989 was explicitly about *following* market developments, not facilitating them. This attitude appears to be changing during the 1990s with, for example, with the Environment Secretary's Policy Guidance (PPG13) discouraging out-of-town shopping developments and the impact of the report of the Royal Commission on Environmental Pollution on *Transport and the Environment* in focusing the debate on the future of the motor car.

The inconsistency of the Government's approach to funding the Underground is illustrated in Figure 1. This shows the external finance made

Figure 1: **LT External Finance Settlements**, Core Business at 1994 prices



Note: the first figure for the Autumn 1993 statement has been increased by £124m to account for the privatisation receipts from London Buses during 1994.

*Sources: London Transport **Memorandum to the Transport Committee**, 11 January 1993 and London Transport **Press Information**, 29 November 1994.*

available by the Government each November for the forthcoming financial year, together with their forecast for the following two years. Finance for the major new lines is excluded. Grant for London bus services is included, but this is fairly constant at £100m to £150m each year and most of the amount shown is available to the Underground.

Transport Secretary Malcolm Rifkind fully accepted the Monopolies & Mergers Commission's (1991) view that London Underground would require some £700m to be spent on the existing core system for each of ten years simply to produce the "Decently Modern Metro" that LT executives believed was a minimum necessary for their passengers. Yet the Government made £700m available for just one year (1992-93), with lower levels of finance in the following years.[3]

Figure 1 illustrates two features. First, the considerable variation from year to year and the unreliability of the forecasts on which managers have to base their investment programmes. This makes the management of a coherent and cost-effective investment programme quite impossible. Second, the average level of funds is well below what is required and it is declining.

The November 1994 settlement was particularly disappointing. It did nothing to alleviate the situation described in *Moving Forward* (London Underground, July 1994):

"...progress towards the Decently Modern Metro will be slow. With spending on projects at about £100m less than last year, it will be difficult to prevent further degradation in some areas...

"The plan for this year is: ... To minimise risks from declining asset health by more inspection and repair..."

"While performance has improved in recent years, much of the Underground system faces crisis. Many of the basic assets — track, drains, walls, embankments and bridges — are reaching the end of their useful life and failing in service or causing safety-related restrictions to be placed on their use..."

"What is needed is a few years of investment at a sustained high level, enabling London Underground to tackle the backlog.

"Investment for the next few years needs to be at roughly double present levels, with the proportion funded by Government gradually reducing as internally generated funds grow and the benefits of the new investments are realised.

"But current levels are insufficient even to prevent further degradation".

There has, in fact, been more investment in the Underground under the present government than under any other administration since the Second World War. Not only has expenditure on the core system been increased (much of it *internally* financed), but the Jubilee Line Extension is being built at a cost of £1.9bn. It is possible that further new investments will be sanctioned for the East London Line, the Docklands Light Railway and a leasing deal has been approved for the modernisation of the Northern Line rolling stock. Demands for new — or improved — rail infrastructure are immense.

Campaigns for new Underground lines and for extensions to existing ones are vigorous and usually supported by powerful coalitions of business, local authorities, transport operators and the population at large. The Central London Rail Study (Department of Transport *et al*, 1989) listed several possible new Underground and other rail developments. Developers and local authorities have put forward their own proposals for new and improved lines. During 1993 and 1994, there has been a continuous struggle between the Government (as paymaster) and a number of lobbies over projects such as Jubilee Line Extension, CrossRail, Thameslink, the East London Line and others.

The reality of funding new and improved rail infrastructure in London has never been fully exposed. Few railway lines make *commercial* sense, particularly in the costly and difficult conditions of a highly-developed city such as London. Yet the clamour for such developments continues unabated, largely because those lobbying for them believe that someone else (i.e. the taxpayer) can be made to pay. The pressure for major new rail lines has dominated the debate about transport in London to the extent that the Government has sanctioned a state-of-the art extension to the Underground while still under-funding the core infrastructure. Thus, the Jubilee Line Extension is going ahead despite its poor cost-benefit ratio. The fact that its ratio is lower than other projects is a reflection, amongst other things, of the fact the landscape it will go through mean that there will be relatively few road congestion benefits. The case for the Jubilee depends upon hoped-for stimulated developments in East London, which are not reflected in the standard cost benefit methods.

The Government appears incapable of creating a ring-fenced sum of money for investment in London's railways: if the Jubilee Line Extension had not gone ahead, the money released would not have automatically become available for reinvestment in the existing system. As a result of this lack of rational planning, by the end of the 1990s London will have the most modern new metro line in the world — the Jubilee Line Extension — grafted on to a declining and impoverished Underground system.

The key issue of the conflict between pressure for *grands projects* and the needs of the core system will be considered in detail.

OBJECTIVES AND CRITERIA FOR CHOOSING THE WAY FORWARD

Our object is to set out options and to indicate some of the associated benefits and risks. In order to choose between these options it is necessary to state some criteria. Our own would be as follows:

The structure chosen for the Underground should:

- offer a plausible resolution of the confusion which now exists concerning the long term funding needs of the Underground
- improve incentives for all levels of management to strive to contribute towards the corporate objectives agreed for the organisation as a whole. Inevitably this will centre on creating greater accountability for financial performance
- re-establish independence of the organisation from interference from government.

The third of these criteria is by far the most important. Without independence for management there is little chance of meeting the other two. We believe that this is one of the strong arguments for privatisation of industries in general, and we made the argument in our *New Directions For British Railways* (Glaister and Travers, 1993).

The market, regulation and competition

LONDON'S CHANGING INDUSTRIAL STRUCTURE

The nature of the product offered by the Underground has remained essentially unchanged since soon after the Second World War, with the exception of the addition of the Victoria Line, a short section of the Jubilee Line and Heathrow extension of the Piccadilly line. Meanwhile, the "market" has changed out of all recognition. The core of the Underground's activity concerns the journey to work so we need to consider how the structure of employment is changing.

TABLE 1: SECTORAL COMPOSITION OF SERVICE SECTOR GDP IN LONDON, 1991

Region	£ Billion	% of Total London GDP
Distribution, hotels& catering	9.9	14.4%
Transport and Communication	7.9	11.5%
Financial and Business services	20.1	29.3%
Public Administration and Defence	4.4	6.4%
Education, Social Work and Health	5.9	8.7%
Other Services	5.7	8.3%
Total Services	53.9	78.6%

Source:CSO, Regional Trends.

Table 1 shows the sectoral composition of service sector of the city's gross domestic product. Manufacturing industry is still surprisingly important to the London economy, contributing 14 per cent of GDP. The primary sectors, and to a lesser extent the construction industry, are relatively insignificant. London's output is therefore service sector dominated. The financial and business sector is the largest, contributing more than twice as much as any other. Distribution, hotels and catering, and transport and communication are also particularly important.

Table 2 examines the economic composition of output in London relative to the national economy, in terms of a location quotient. This is calculated by comparing the proportion of GDP in each sector in the region's economy to the equivalent proportions in the national economy. A quotient of less than 1.0 suggests under-representation of the respective industry in the London economy. The table shows a location quotient of 1.21 in total services.

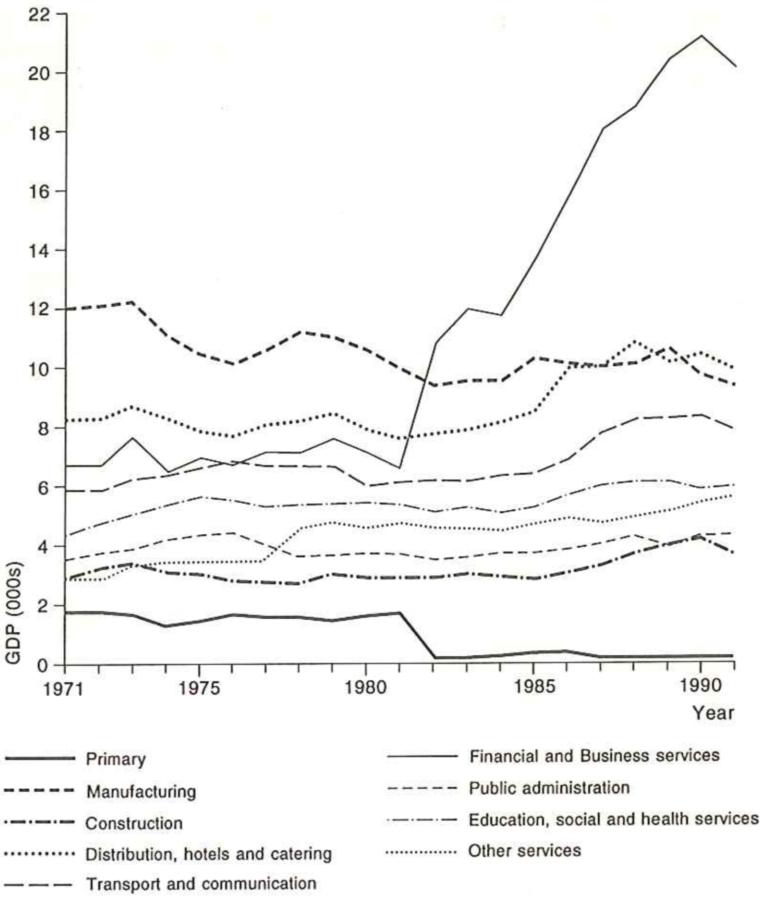
TABLE 2: THE COMPOSITION OF LONDON'S GDP RELATIVE TO THE UK, 1991

Industrial Sector	Location Quotient
Agriculture etc.	0.03
Mining etc	0.30
Electricity, Gas and Water	0.70
Total Primary	0.41
Manufacturing	0.59
Construction	0.81
Services	
Distribution, hotels & catering	0.98
Transport and Communication	1.40
Financial and business services	1.56
Public Administration and Defence	0.91
Education, Social Work and Health	0.88
Other Services	1.34
All Services	1.21

Source: CSO, Regional Trends.

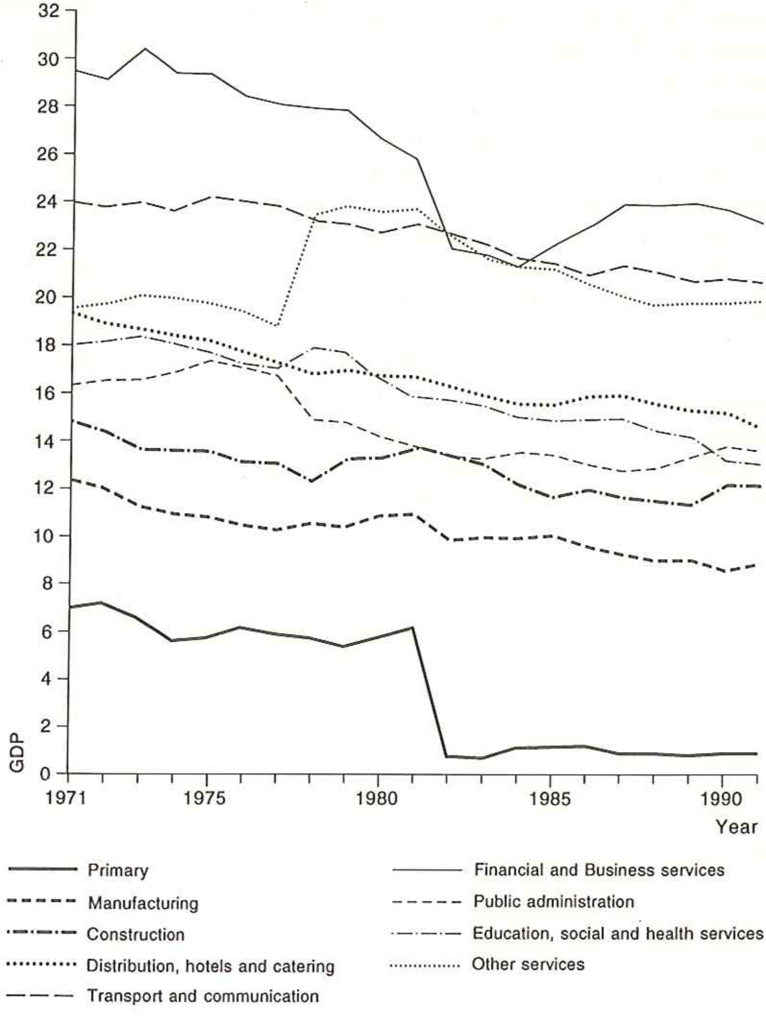
Significant changes have occurred in the London economy during the past 20 years. These are shown in Figure 2. In 1971 manufacturing industry was the most important producer, followed by distribution hotels and catering. Financial and business services were the third most important sector. By 1981 the structure was little altered. By 1991 financial and business services moved to being the clear leader, with an increase in the share of GDP from 12 per cent to over 29 per cent. Manufacturing continued its decline, but distribution, hotels and catering showed some growth.

Figure 2: Change in the Sectoral Composition of London's GDP, 1971 - 1991



Source: CSO (1968 - 1993): Regional Trends, London, H.M.S.O.

Figure 3: London's changing shares of national GDP by economic sector, 1971 - 1991



Source: CSO (1968 - 1993): Regional Trends, London, H.M.S.O.

Figure 3 shows changes in the London shares of national GDP by industrial sector. With the exception of the other services industries, London's share of national GDP has declined in all sectors of the economy. This is particularly surprising in the case of financial and business services. The implication is that London has experienced a *relative* decline in the UK economy. Part of the explanation for this is the outward shift in activity from London to the rest of the South East. Over the period 1971 to 1991, GDP in the rest of the South East grew by 60 per cent in real terms, significantly more than for the nation as a whole, with this differential being apparent in all economic sectors. For instance London's output in manufacturing declined whilst it increased by 12 per cent in the rest of the South East. Likewise, over the past 20 years there has been much decentralisation of service sector activities from the conurbation to the surrounding region, particularly 'back room' and clerical intensive functions. Financial and business services output in the rest of the South East increased by over 350 per cent.

Falling shares of national GDP in the London economy are likely to be a reflection of the increasing industrial and functional specialisation of the capital, and falling population levels, particularly in the 1970s. Over the last 20 years the London economy has emerged as a centre for the concentration of headquarters activities, finance and business services, information intensive industries and other specialist producer services. It has also become much more specialised within these sectors in more high order, executive intensive functions. With this process taking place, much of the less productive and low order economic activity in London has decentralised from the conurbation to the rest of the South East and beyond, leaving London with highly specialist functions while also causing output to increase substantially in the South East.

The implication of these trends is that the travel market in which the Underground must compete has been becoming — and will continue to become — populated by individuals who have unusually rapidly rising demands for fast and reliable service. They have good access to cars and they will attempt to use them if their advantage does not fall relative to public transport.

Regulation and the nature of competition

The Underground is a heavily regulated business. At present the Underground has neither the ability nor the incentive to behave commercially. Its fares are, formally speaking, set by its parent company, London Transport. In practice, the Underground's influence over the process of fares setting is greatly diluted by the need to agree fares with the British Railways Board, the influence of public opinion and interference from Government. Service levels are set by London Transport, though the Underground would be able to offer to negotiate a change in the annual total of miles run in return for a change in the financial support granted. Again, Government would have an influence through the External Financing Limit settlement. Line closures are very difficult: a full process of public consultation and an almost inevitable appeal to the Secretary of State is involved. Safety regulation is onerous: there is the Underground's internal safety unit which is overseen by London Transport's Safety Audit Committee and both are subordinate to the Health and Safety Executive. There is little opportunity to bring economic or commercial considerations to bear on the deliberations of these bodies.

Many of our proposals involve a change in ownership or a change in commercial incentives on the operators. It is therefore necessary to consider the regulatory regime best suited to such changes and to understand the competitive environment in which the Underground will operate in future.

The market environment

At first sight it seems obvious that the Underground's monopoly power is substantial. But the situation is not as simple as it might appear.

Tables 3 and 4 show proportions of trips per working day by mode, by origin and destination area, for home-based trips to work (HBW) and home-based other (HBO: mainly leisure, shopping and educational) trips. From our point of view the interesting feature of these figures is the wide variation in market share held by rail. Thus, for HBW rail has a 28 per cent market share overall and car has 45 per cent. But for HBO rail has only 7 per cent and car has 38 per cent.

For the journey to work from the outer area to the centre rail is dominant with a share of 82 per cent as against car of 17 per cent. But for outer-to-outer the rail only has 5 per cent and car has 57 per cent. For non-work trips the car encroaches on the rail core radial market for trips from outer to centre: the car share of HBO is 32 per cent.

This shows that rail is a dominant mode in relatively few situations.The Underground may have a high market share for some radial commuting trips, but it has a small market share for a large portion of its market, notably for non-radial movements in the suburbs. Here the competition

TABLE 3: HOME BASED WORK (%)

			DESTINATION				
			Centre	**Inner**	**Outer**	**External**	**Total**
ORIGIN	**Centre**	Car	7	17	16	13	15
		Bus	20	25	1	0	10
		Rail	3	50	82	87	67
		Other	70	7	1	0	8
			100	100	100	100	100
	Inner	Car	18	33	57	57	37
		Bus	25	21	10	0	18
		Rail	50	14	29	43	25
		Other	7	32	4	0	20
			100	100	100	100	100
	Outer	Car	17	58	57	89	54
		Bus	1	10	14	0	11
		Rail	82	29	5	11	18
		Other	1	4	24	0	17
			100	100	100	100	100
	External	Car	13	57	89	0	56
		Bus	0	0	0	0	0
		Rail	87	43	11	0	44
		Other	0	0	0	0	0
			100	100	100	0	100
	All areas	Car	16	38	55	57	45
		Bus	10	17	11	0	12
		Rail	67	25	16	43	28
		Other	7	19	17	0	15
		Total	100	100	100	100	100

TABLE 4: HOME BASED OTHER (%)

		DESTINATION				
		Centre	**Inner**	**Outer**	**External**	**Total**
ORIGIN **Centre**	Car	5	22	27	33	17
	Bus	10	26	2	0	13
	Rail	1	37	70	67	33
	Other	83	16	1	0	37
		100	100	100	100	100
Inner	Car	24	19	57	57	24
	Bus	25	14	14	0	15
	Rail	36	4	19	43	8
	Other	15	62	10	0	54
		100	100	100	100	100
Outer	Car	32	58	40	87	43
	Bus	2	14	14	0	13
	Rail	66	19	2	13	4
	Other	1	10	44	0	39
		100	100	100	100	100
External	Car	40	61	88	0	80
	Bus	0	0	0	0	0
	Rail	60	39	0	0	0
		100	100	100	0	100
All areas	Car	20	24	44	78	38
	Bus	13	15	13	0	13
	Rail	32	7	4	22	7
	Other	35	54	39	0	42
	Total	100	100	100	100	100

Source for Tables 3 and 4: APRIL model, Department of Transport and MVA.

from the private car is intense.

Unless there is a major change in policy to discourage growth in use of the car — as advocated by the Royal Commission on Environmental Pollution (1994) — its dominance will increase. Experience suggests that each 10 per cent increase in real earnings results in a 6 per cent increase in car ownership per head in the London area, but an increase in Underground trips of only 3 per cent (London Transport, 1993).

London Transport's own research has always indicated that, for the Underground market as a whole, rises in fares cause a less than proportionate fall in demand. The current official estimates are that a 10 per cent fares increase will cause a 4.3 per cent demand reduction and a 5.7 per cent increase in revenue (see London Transport, 1993). One would expect to find considerable geographical variation about this aggregate figure for the reasons just mentioned. Other analyses of the data, which make different allowances for dynamic adjustments tend to find substantially more price responsive markets (for example, see Gilbert and Jalilian, 1991).

The research confirms that there is a non-trivial substitutability between rail and London Bus markets at short to middle distances. The current estimates are that a one percent increase in bus fares on their own will reduce bus usage by 0.62 per cent, but if rail fares are increased by the same amount the fall in bus usage is only 0.35 per cent. Similarly the own-Underground fares elasticity of -0.43, just mentioned, falls to -0.17 if bus fares move in step.

The unrealised potential for competition

Over the last few years there has been a quiet revolution in the arrangements for providing public passenger transport in the London area. So far there has been little effect from the user's point of view. However, it would now be a small administrative step — though an enormous political one — to transform it from a system of strict moderation of competition through fares regulation and implicit collusion, into one of active competition. The glue which holds it all together at the moment is the Travelcard and the system of committees which administer it.

The 1984 Act London Transport created the buses and the Underground as separate subsidiary companies. In principle these could have been instructed to compete aggressively for business. But that would not have been in the spirit of planned "integration" that was, and, to a large extent still is, thought to be of great importance by transport professionals and the general public — though it is rare to see a statement of what is meant and what the benefits are thought to be. Had buses in London been deregulated then this spirit of co-operation would soon have broken down. As it was, the issue of whether or not buses were supposed to compete with the Underground was never clarified. In any case neither business had clear commercial objectives. And neither had discretion over its own fares so service would have been the only available dimension for competition. And even here discretion is severly limited by the administrative regime.

Recent changes in the London bus industry create new incentives for competition. About half of London's bus miles have been put out to competitive tender and about half of these contracts have been won by independent, private companies. London Transport determines the fares and defines the services. Until 1994 these were "gross cost" contracts under which the bus operators had no direct interest in revenues. There have now been three important changes. First, London Transport's bus companies have been sold into the private sector. Second, the contracts are now being let on a net cost basis: the operator keeps and has a direct interest in the revenues he takes. Finally, the part of the network which was not previously put out to tender — the block grant network — has been put onto a route-by-route, negotiated contract basis. It is easy to see how these changes could lead to competitive behaviour by the new bus companies

Privatisation of British Rail creates a new set of considerations. In the past the Underground and the various services of British Rail have colluded in the setting of fares through the system of state ownership, and, importantly the Travelcard. Assuming that franchising of the British Rail operating companies proceeds as planned, the new operators will have straightforward commercial objectives, subject to price regulation by the Franchising Director. Hence there is a real prospect of between-rail line competition, to a much greater extent than the railways outside London where duplication of routes was largely eliminated in the 1960's.

A glance at a railway map will show that there are many situations where Underground and British Rail offer competing alternatives for short to middle distance commuting. There is evidence on this from the effect of BR service quality improvements resulting from the Bedford-St Pancras and Great Northern electrifications.

If London Underground were a series of line-based operating companies with commercial objectives, and if the unifying incentives provided by the Travelcard were to be removed, then there would be price and service competition with the old British Rail routes.

One last factor concerns the costs of car use to motorists. If road pricing were implemented in London it would change the competitive position of the Underground relative to the car. The effect would be significant for the long distance commuting trips to the central area. The Royal Commission on Environmental Pollution (1994) has recommended a doubling of petrol prices over ten years as a contribution to its targets for shifting the share of journeys made from car to public transport. In the London area the target they have selected is "to reduce the proportion of … journeys from 50 per cent … to 45 per cent by 2000 and 35 per cent by 2020." They remark that "Achieving this target will require both a greater emphasis on retraining car traffic and the provision of attractive and appropriate alternatives" (Paragraph 14.85). Our proposals below are aimed at improving the competitive position of public transport and so they are in this spirit, though much more quantitative analysis would be necessary in order to say whether the targets set are reasonable or achievable.

In summary, whilst there will probably be a need to retain some ability to regulate fares on the Underground and to maintain through ticketing, the prospects of changes already in place suggest that there could be widespread competition for its services, so that the need for price regulation would be greatly reduced.

THE PRESENT FINANCIAL PERFORMANCE

Table 5 shows the financial situation for the bus and Underground businesses in 1993/94. These are large enterprises. London Transport as a

TABLE 5: FINANCIAL RESULTS FOR THE YEAR 1993/94

	Buses in London	London Underground
	£m	£m
Sales Revenue	456.7	688.3
Costs of operations	(538.3)	(620.5)
(Loss)/profit	(81.6)	67.8
Cost of reorganisation and restructuring	—	(67.6)

Source: LT Annual Report, 1993/94

whole is listed at about 160 in the Times 1000 largest UK companies. The Underground would be in a similar position in its own right if grant were treated as revenue.

For the Underground there was a small of sales revenue above operating costs, though this was just balanced by transitional reorganisation costs. These figures exclude capital charges: grant received from the Government was £692.6m, and most of this was to fund capital on the Underground.

SUMMARY STATEMENT OF THE PROBLEM

In summary, the problems facing the Underground are:

- The Underground must continually improve the standard of its product if it is to keep up with rising living standards and an increasingly competitive market. Otherwise it is doomed to a continually falling market share.

- Revenues cover operating costs but do not pay for consumption of capital. It is claimed that there is a long-standing backlog of neglected investment needs. Neither the fare payer nor the general taxpayer is willing adequately to fund catch-up investment and essential improvement in the core system.

- As the London economy recovers there will be a renewed and pressing need for extra rail capacity in the centre of London. If this is to be provided it, too, will have to be funded.

Adapting to match existing funding

For the reasons given earlier we assume that adequate funds will not be forthcoming from the normal, national public expenditure source either to bring the existing Underground up to a standard where it can hold its market share, or to build new lines.

In these circumstances there are three kinds of alternative strategies possible:

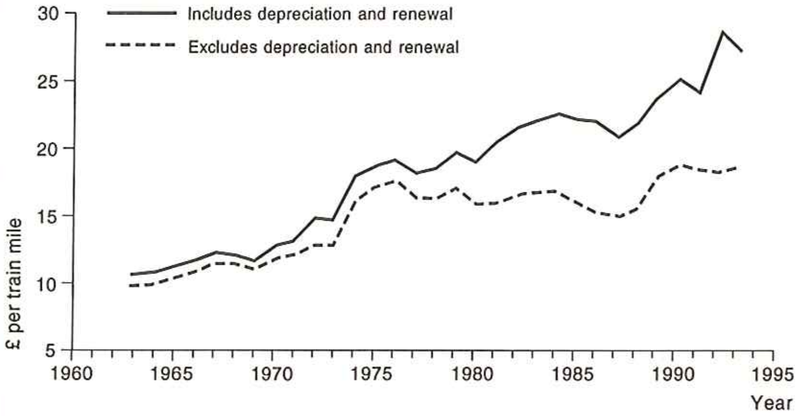
- reduce the costs of operating and maintaining the system;
- reduce the scale of the system;
- find alternative sources of finance.

COST REDUCTION

It is commonly asserted that as one of the remaining large nationalised industries London Underground is inefficient: that it could do what it does at less cost. If so, then one way of finding funds for investment would be through the elimination of the inefficiency.

Figure 4 shows the growth in unit costs for the Underground. The upper line shows operating costs including an allowance for depreciation and renewals expenditure in which the capital expended on an asset is distributed over the expected life of the asset. Since 1963 costs per train mile have risen faster than retail prices generally. Including depreciation and renewal they have increased by a factor of 2.6, or about 3 per cent per annum faster than prices generally. The growth has been relentless and at a remarkably steady rate. Among the many possible reasons for this are the steady increase in real labour costs in the absence of offsetting productivity gains, the rapid growth in the number of passengers in the 1980's which meant that infrastructure had to be expanded in

Figure 4: **Costs per train mile,** Underground: £ at 1994 prices



Source: LT Annual Reports.

order to contain passenger congestion and, since 1987, the requirements to increase staffing to meet the many pressures for increased safety following the King's Cross fire. On the other hand, there have been substantial cost-saving technical improvements in rolling stock which have enabled more maintenance to be undertaken in depots and less in the central workshop. Further, if the claim that investment has been inadequate to maintain the system is accepted, then the true costs of operating the system have been higher than the records indicate, because net capital has been consumed.

There has been a continuous stream of audits, internal and independent. In recent years these have included the 1987 Strategy; the 1991 Monopolies and Mergers Commission; investigations by the House of Commons Transport Committee; the internal efficiency audits — "value analysis" — leading to the 1991 Company Plan and the 1993 Strategy; commercial consultants in 1993 and 1994 in connection with the reviews of the case for CrossRail; and, every year, debates with the Department of Transport and the Treasury as part of the funding round.

The conclusions seem to be similar each time: it is difficult to get independently verifiable information and great reliance has to be put on the word of London Underground; the difficulties of the business are recognised; there is conflict of approach between the Government and the Underground; substantial opportunities for efficiencies are identified and acknowledged by London Underground who earnestly go about implementing recommendations. Yet, as we have indicated, the results are not yet visible in the out-turn costs per vehicle mile.

The Monopolies and Mergers Commission report is a particularly useful source because of its independence, its thoroughness and the fact it is in the public domain. The Commission came to the general conclusion that

> "1.51 … We are also particularly concerned that there are serious shortcomings in LUL's management information systems; that LUL lacks a clear pricing policy and the data necessary for its successful implementation; that LUL has not yet got to grips either with customs and practices which it says constrain productivity in certain areas, or with negotiated collective agreements containing terms which, in themselves, may inhibit improvements in productivity; that LUL's investment programme has been based on unrealistic assumptions about future levels of funding; and that the renewal and maintenance of the network has been neglected. All these matters point to a lack of rigorous management of LUL's activities over a long period."

Detailed comments in the report suggested that there was scope for greater efficiency. As an example, Table 6 shows the sickness absence record for two years by Underground line. Sickness absence may be regarded as a useful indicator of the morale of the workforce and the quality of the management — though there are, of course many other factors. There are clear indications that morale and management were better on some lines than others. The absence rate on the Northern Line, for example was consistently worse than that on the Piccadilly in every department and in both years.

That particular problem has now been recognised and dealt with. However, such wide variation in performance does suggest that there may have been scope for improvement in more general ways. The Monopolies and Mergers Report thought so too:

> "1.34 LUL has told us that customs and practices which constrain productivity are prevalent in certain areas and in some instances are condoned by local managers. Furthermore, negotiated collec-

TABLE 6: PERCENTAGE ABSENCE RATES BY LINE, 1989/90 (1988/89 RATES IN BRACKETS)

	LINE									
	Bakerloo	**Central**	**C&H**	**District**	**ELL**	**Jubilee**	**Met**	**Northern**	**Piccadilly**	**Victoria**
Train staff	7.87 (7.48)	8.05 (6.76)	8.14 (8.86)	5.87 (5.64)	12.42 (5.99)	8.95 (6.10)	12.32 (5.43)	14.61 (7.97)	5.76 (4.89)	N/A (7.97)
Station staff	8.61 (12.94)	8.77 (9.32)	6.39 (4.80)	7.82 7.15	8.96 (11.25)	12.38 (8.90)	9.24 (9.32)	8.97 (7.40)	8.06 (6.67)	N/A (9.21)
Booking office staff	8.93 (7.91)	5.35 (5.99)	6.63 (3.86)	7.00 (4.90)	7.75 (3.40)	8.42 (5.49)	4.63 (3.67)	6.67 (6.36)	6.11 (4.60)	N/A (4.56)
Fleet staff	12.80 (10.39)	8.72 (4.54)	13.80 (5.33)	N/A (13.77)	0.19 (3.08)	— (—)	13.74 (6.53)	13.83 (8.87)	8.65 (5.84)	N/A (7.89)
Overall line	8.58 (8.07)	7.02 (6.50)	7.92 (6.24)	N/A (6.57)	8.81 (6.14)	8.81 5.91	8.27 (5.46)	10.32 (7.34)	6.42 (5.01)	N/A (6.24)

Source: Monopolies and Mergers Commission and LUL Table 6.5

tive agreements contain terms which, in themselves may inhibit improvements in productivity. Planned preventative maintenance work on rolling stock is out of phase with the availability of that stock. Planned maintenance intervals do not reflect real need and could lead to over-frequent maintenance and excess costs; nor are they effectively linked to managing or containing failures. Maintenance turnround times are excessive and may lead to higher costs. Performance in the incorporation of approved modifications, particularly those related to safety, has been unsatisfactory…"

The Company Plan

London Underground have acknowledged many of the points made by the Monopolies and Mergers Commission and would claim to have put things right. In fact, at the time of the investigation the Underground already had its own efficiency audit under way. The outcome was the Company Plan which essentially proposed ways of achieving the same level of output with 5,000 (about 20 per cent) fewer staff. This after relentless pressure from Government through the targets and funding set for London Transport for cost reductions between 1984 and 1987.

The Company Plan has now largely been implemented: the 1993 Statement of Strategy says that "Company Plan cost savings will be achieved by 1995…" (para 8.10).

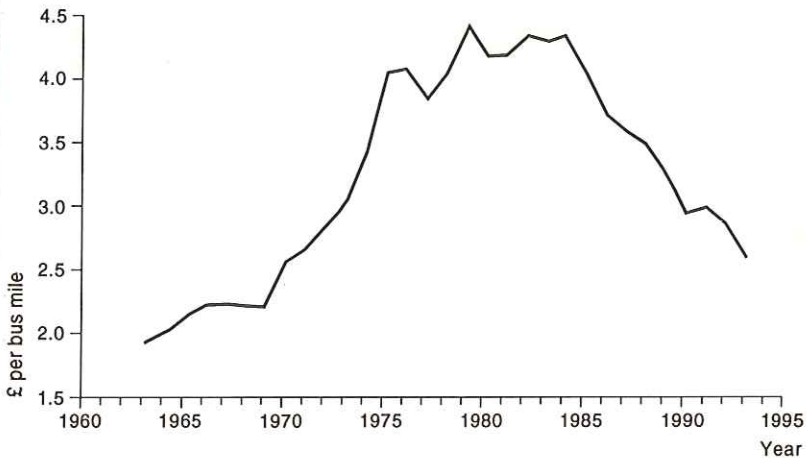
Competitive tendering

The picture in Figure 4 is in stark contrast to that for buses in London shown in Figure 5 which shows a fall of 42 per cent since 1979 The differences between this remarkable Figure and the corresponding one for the Underground require exploration.

There have been many changes in the bus business. Since 1984 bus engineering has been revolutionised with the closure of the bus engineering factories at Aldenham and Chiswick. The greater part of the network has been converted from two to one person operation. In recent years the depression in the London economy has eased road conditions. It has also eased the labour market and made recruitment easier (this would apply equally to the Underground).

The other critical feature has been the introduction, from 1984, of competitive tendering for bus routes. When London Transport was set up in its present form in 1984 it was under an obligation to create London Buses Ltd and London Underground Ltd as wholly owned, Compa-

Figure 5: **Costs per bus-mile,** Buses in London: £ at 1994 prices



Source: LT Annual Reports.

nies Act companies. It was also under an obligation "in the case of such activities carried on by them as they may determine to be appropriate invite other persons to submit tenders to carry on those activities for such period and on such basis as may be specified in the invitation to tender" (LRT Act (1984), section 6(1)). In the case of the bus business London Transport actively followed a strategy of putting individual bus routes out to tender. By 1994 about half the vehicle miles were being operated under contracts won by competitive tendering, about half of which were operated by independently owned companies, the remainder by London Buses themselves.

Research conducted at the London School of Economics (see Kennedy, 1994) suggests that London Transport typically saves about 18 per cent of the costs when it puts a route to competitive tender. This is consistent with LT's own estimate of 20 per cent. They estimate that additional administration costs about 4 per cent leaving 16 per cent as the net gain. In addition service quality generally improves, leading to increased revenues. This is in line with other experience which suggests that the introduction of competitive tendering in place of direct, public sector provision can be expected to save something of the order of 20 per cent.[4]

One important reason for the success of the bus tendering programme in reducing unit costs was that London Transport made no stipulations about the terms and conditions of employment of companies bidding for the work in open competition with London Buses. Though there were some industrial relations difficulties over the closure of some London Buses garages and over deteriorating terms and conditions, these were only seriously disruptive for a relatively short period. The genuine competition in the labour market and the inherent flexibility of the bus industry meant that London Transport could always procure from the private sector if London Buses proved uncompetitive.

London Transport had an equal duty under the 1984 Act to introduce competitive tendering, where it thought appropriate, for both London Buses and London Underground. In the case of the buses London Transport itself took action by setting up an additional organisation under its own direct control to put bus services out to competitive tender. In principle, and to a large degree in practice, London Transport treated the private sector on a par with its "own" subsidiary in procuring bus services.

However, in the case of the Underground it may have taken the view that the business could not be divided up into manageable units for tendering. Whatever the reason, London Transport did little itself on this matter, but delegated action to the London Underground Board. It is hard to know the extent of the commitment of London Underground to introducing proper competition to the procurement of its inputs. It is perhaps to be expected that London Underground would be unenthusiastic in taking a course of action which would risk losing work to direct competitors, and would risk precipitating job losses, worsening terms and conditions of service and which would undoubtedly make industrial relations difficult.

Some action was taken. However the Monopolies and Mergers Commission found little enthusiasm within London Underground in the late 1980's:

> "1.35 As to contracting out, we have noted that the bulk of maintenance and renewals work is carried out in-house. The trade unions and some local managers are opposed to the principle of competitive tendering and the position is particularly delicate because of the safety implications of contracting out in a railway environment..."

"7.53. Every attempt to place work externally becomes an industrial relations issue strongly resisted by the trade unions. They are very much opposed to the contracting out principle... The unions maintain that the conflict between economic and safety issues is very real."

"7.55 the LUL Board in late 1989 set up a sub-committee to carry out a sourcing review..."

"7.56 From the evidence collected they concluded that at the blue collar level in Engineering Operations Directorate LUL appeared to be overmanned; that in other railways restrictive labour practices generally forced management to contract out whenever they could in order to respond to pressures on costs and that wherever work was contracted out costs were significantly lower than those of the in-house labour force. At the time the visits were made levels of productivity in the other, invariably more recent, railway systems seemed in many cases to be much higher than LUL..."

	Internal		**External**		**£ m**
Area of work	**Maintenance**	**Renewal**	**Maintenance**	**Renewal**	**Total**
Underground					
Ticketing system	2.5	—	1.7	—	4.2
Lifts/escalators	17.4	—	3.4	3.0	23.8
Cleaning	8.5	—	7.5	—	16.0
Permanent way	28.0	13.0	—	—	41.0
High Voltage power supplies	5.3	0.2	0.3	3.0	8.8
Signals and electrical	23.6	9.1	0.6	12.0	45.3
Total	85.3	22.3	13.5	18.0	139.1

Source: LUL and Monopolies and Mergers Commission table 7.15

"7.57. Subsequently LUL management told us that they have been pressing ahead to bring forward further proposals for increasing competition in all areas of engineering maintenance and renewals work. Table 7.15 details the distribution of contracts for main areas of work in 1989/90.

This table indicates that less than a quarter by value of the work referred to was to be undertaken externally and half of that was in the area of signals and electrical. Further, the Monopolies and Mergers Report does not make it clear how much of this work was subject to genuine, open competition. Granting work to outsiders on the basis of an administered process is unlikely to be as effective in putting pressure on LUL's own costs as is open competition.

The Commission recommended "that LUL should pursue a policy of increasing competition in all areas where external contractors are competent to tender for work and can operate within LUL-defined and controlled safety standards."

London Underground responded in the 1993 Statement of Strategy with

"Existing programmes which apply commercial discipline to all areas of the Company's operations will be extended. These include exposing further areas of expenditure to competitive tendering, including both professional and technical discipline, and maintenance and renewal works, wherever doing so will promote the enhancement of efficiency at the lowest practicable cost, without in any way compromising safety."

"Train and station operations are not regarded as suitable candidates for external tendering against these criteria..." (paragraphs 5.16, 5.17)

The 1992-93 Annual Report says

"London Underground is increasingly contracting-out tasks, such as cleaning, in order to achieve the best result for the lowest cost. During the year the operation of a train maintenance depot was put out to competitive tender for the first time. The contract was won by [an existing London Underground] team."

A year later the Annual Report contains the statement that

"Strategies used for market testing by London Underground include contracting out, competitive tendering, development of internal cost standards based on market testing and the establishment of internal profit centres which compete with the external market. No activities are exempt from this process. To date, around 32 per cent of operating costs have been market tested by LUL and, during the year, 1 per cent (1993/93 3 per cent) was contracted out or competitively tendered. In addition, around 84 per cent of investment in the core businesses in the current year (1992/93 86 per cent) was market tested".

We have been unable to establish precisely what this means. We note the implication that 68 per cent of operating costs have not been market tested (though a much lower proportion of costs *excluding* the costs of operating the trains themselves remaining to be market tested), and the statement that 1 per cent was contracted out or competitively tendered, which is less than the previous year. Nor have we been able to obtain any estimate of how much financial benefit has, *ex post*, been obtained through competitive tendering.

As the Monopolies and Mergers Commission noted, other railways have gone further than London Underground had at the time of their report. British Rail have also gone further and the process will be taken to its limit with the privatisation of the British Rail Infrastructure Services over the next few years. The Government is hoping to improve Railtrack's operating costs by 3 per cent a year for several years through the introduction of competition, though there are those who think that this improvement could easily be surpassed.

During 1994 London Underground has been formulating a "Make or Buy Policy". Presentations to the Trade Unions indicate a willingness on the part of management to subject a very wide range of activities to review and a programme has been presented for 1994/5 and 1995/96. If this programme is enthusiastically implemented then it will reveal whether there is substantially more that could be achieved by means of a more aggressive competitive tendering regime.

We accept that real problems are posed by the safety issue to which solutions must be found. The challenge is to deal with this properly, without it becoming an artificial shield behind which the incumbent direct work force hides in order to protect inefficiency or uncompetitive working practices, terms and conditions.

We do not think that further *external* review of London Underground's efficiency will yield useful new information. The only way to establish whether substantial new savings could be achieved is to expose the greater part of its production activity to open and genuine competition. The burden of proof should be on the Underground to show why competitive tendering would not show kind of saving typically expected on the basis of wide experience in many similar situations.

This conclusion applies to all proposals and it is certainly something that a private owner would seek to achieve.

If it should happen that significant quantities of work were won by the private sector, then this process would, of itself, have privatised a part of the Underground.

REDUCING THE SCALE OF THE UNDERGROUND SYSTEM

Most people think of the Underground as a single, unified system and their mental picture is the famous Journey Planner, shown in Figure 6. But Harry Beck's brilliant cartography is a magnificent distortion of the truth. It is highly successful as a device to present information on how to get around London. It is much less widely appreciated that it is also successful in making the extremities seem much closer to the centre than is in fact the case, making a trip up to town look easy. Conversely, it exaggerates the size of the centre. This is shown by comparing the Journey Planner to Figure 7 which is drawn to scale, with the same distance on the page between the east and west extremities (Chesham and Ongar).

Note particularly that the geographical area within the Circle and District Lines, commonly thought of as the economic centre of London, is greatly magnified on the Journey Planner. There are long tentacles into the suburbs whose length the Journey Planner understates.

It is immediately apparent from the scale map that the Underground cannot be the homogenous market that we tend to assume that it is. (It isn't even underground! About 60 per cent of the route mileage is on the surface.) In view of this it is worth considering whether there are any activities which are of less value — commercially and in terms of the Underground's wider objectives — which might be withdrawn in order to do core activities better within the available funds.

This kind of question is not one which has been widely debated. It is politically sensitive and the rules under which politicians have operated the Underground have been deliberately designed so as to allow society in general to avoid facing them. Consequently, there is not a great deal of hard evidence in the public domain. But there is some.

What there is suggests that the density of passengers on the network must vary a great deal whilst the costs of operation and maintenance will vary differently. Consequently, as with any network, especially where there is an element of universal service obligation, there are likely to be some parts which are commercially unattractive.

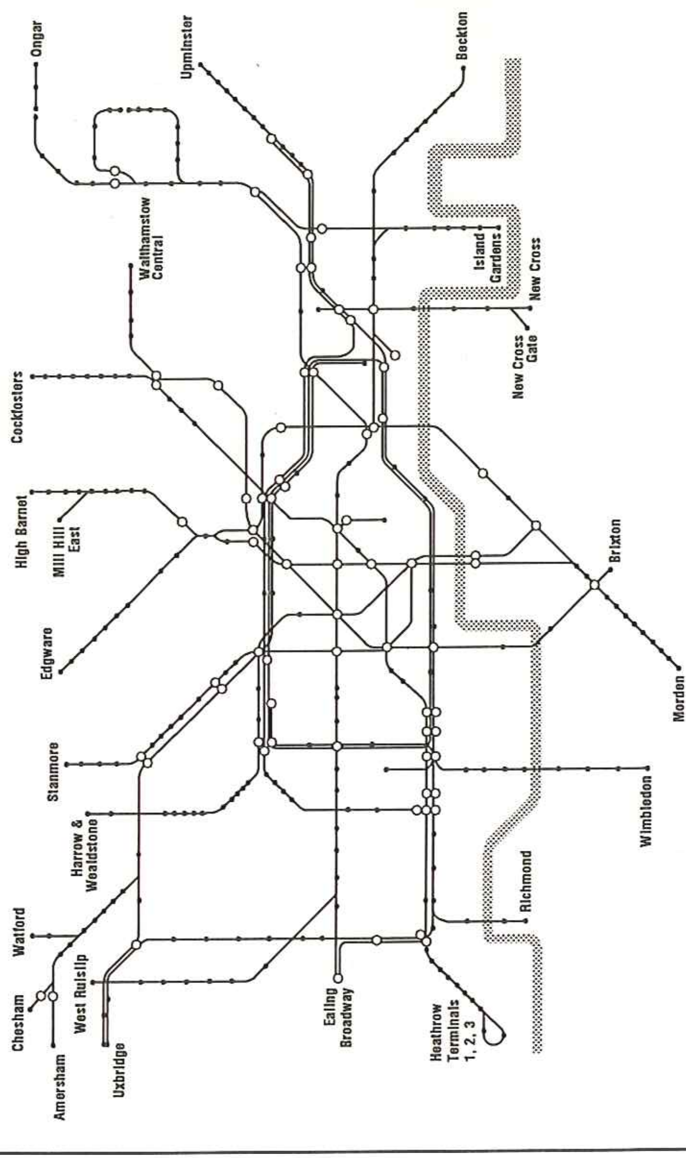
The Monopolies and Mergers Commission Report carried out case studies comparing supply and demand by section of route on the Central and the Metropolitan Lines. Summaries are shown in Tables 7 and 8. The extraordinarily wide range of hourly and daily passenger flows on different parts of the route are apparent. Note that no figures are given for the early morning or late evening, even though services typically start at 05.30 and end after midnight. As far as we know no serious review has been published of the costs and benefits of a later start-time in the morning. Yet we have noted that there have been many changes in the London economy which would lead us to expect that the very early morning market may be smaller than it once was. These include the decline of manufacturing with its associated shift working, and the much wider availability of cars to those who have to travel at unsocial hours. Similarly, we note that the service early on a Saturday morning is similar to that on a weekday. As Figure 8 shows there are many fewer trips to work on a Saturday than on a week day. The early Saturday service may be a hang-over from the days when Saturday morning was part of the normal working week .

The financial benefits of a later start could be substantial. Most obviously it would give track maintenance teams more productive time.

The Monopolies and Mergers Commission recommendation on this was

> "1.28 … At [non peak] times, and outside the central area, there may well be further scope for modifying services to match demand more closely but the absence of the necessary cost information make evaluation difficult. We have found that there is a particular need to determine the costs and benefits involved with services at the margins of the operating day and at weekends. We have recommended that such analyses should be conducted every two years and that the first should be completed within one year."

There are many opportunities here for improving the commercial per-



London Regional Transport User Number 94/E/656

Figure 6: London Underground Journey Planner

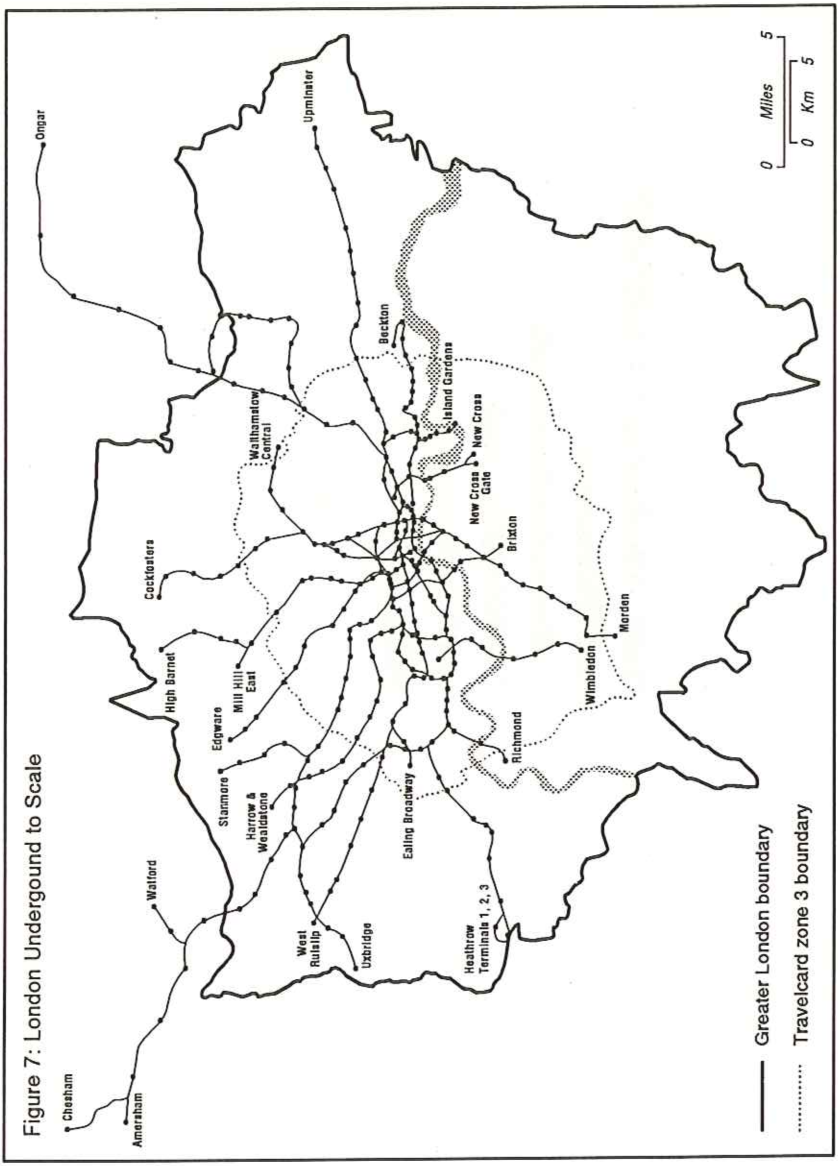
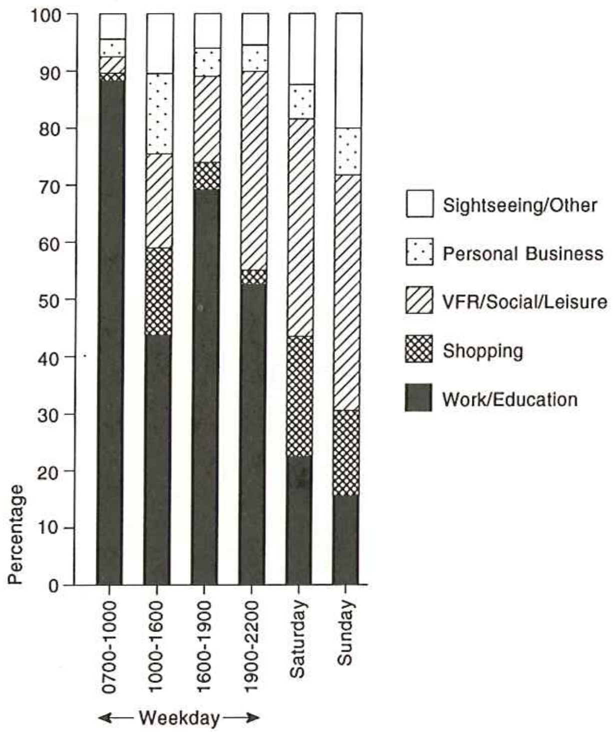


Figure 7: London Undergound to Scale

Figure 8: Underground journeys by time of day and purpose



Source: LT Digest of Statistics, January 1994

formance of the Underground whilst hurting the interests of relatively few users.

London Underground have not been entirely unaware of this and they have been attempting to close the Epping-Ongar branch of the Central Line and the Aldwych spur of the Piccadilly Line for many years. This was finally achieved with the announcement of the approval of the Secretary of State on 1 September 1994. The history of these closure proposals is instructive. London Underground pointed out in their case for closure that the Epping-Ongar branch carried about 100 passengers a day and that to keep it open would cost £1,800 per user per year, or £7

TABLE 7: CENTRAL LINE: COMPARISON OF SUPPLY AND DEMAND BY SECTION OF ROUTE, 1987 ESTIMATES*

		Passengers per hour		
	Passengers per day	**Peak** 7–10am & 4–7pm	**Between peak** 10am –4pm	**Evening** 7–10pm
Section: West Ruislip — North Acton				
Least used: West Ruislip — Ruislip Gardens	2,571	274	123	62
Most Used: Hanger Lane — North Acton	24,880	2,852	990	610
Frequency of service (minutes)		5-12	10	15
Section: Ealing Broadway — North Acton				
Least Used: Ealing Broadway — West Acton	29,403	2,267	840	588
Most Used: West Acton — North Acton	22,609	2,528	931	619
Frequency of service (minutes)		428	10	15
Section: North Acton — White City				
Least used: North Acton — East Acton	57,726	5,528	1,959	1,357
Most used: East Acton — White City	210,814	5,822	2,158	1,522
Frequency of service (minutes)		2-5	3-6	5-10
Section: White City — Leytonstone				
Least used: White-City — Shepherd's Bush	57,726	6,307	2,427	1,776
Most used: Holborn — Chancery Lane	210,814	21,057	11,487	5,182
Frequency of service (minutes)		2-3	2-5	5
Section: Leytonstone — Hainault				
Least used: Fairlop — Hainault	5,920	693	192	203
Most used: Leytonstone — Wanstead	38,736	4,695	1,319	885
Frequency of service (minutes)		4	10	15
Section: Leytonstone — Loughton				
Least used: Buckhurst Hill — Loughton	13,240	1,568	445	392
Most used: Leytonstone — Snaresbrook	41,696	5,048	1,342	1,118
Frequency of service (minutes)		4	10	15
Section: Loughton — Epping				
Least used: Theydon Bois — Epping	4,166	443	152	132
Most Used: Loughton — Debden	7,659	882	270	249
Frequency of service (minutes)		8†	20	15

*The peak figures are averages and understate the level of demand during the busiest peak hour. †4.8 minutes Loughton-Debden. *Source:* MMC based on LUL data.

TABLE 8: METROPOLITAN LINE: COMPARISON OF SUPPLY AND DEMAND BY SECTION OF ROUTE NORTH OF BAKER STREET (1987 ESTIMATES)*

	Psgs. per hour			**Psgs. per hour**	
	Morning Peak (7am — 10 am)			Between Peak (10am — 4pm)	
Section of Route	South-bound	North-bound	Total	South-bound	North-bound
Chalfont/Latimer — Chorleywood	924	52	976	103	146
Rickmansworth — Moor Park	1,461	71	1,532	209	179
Croxley — Moor Park	347	55	402	78	50
Moor Park — Northwood	1,970	132	2,103	281	237
North Harrow — Harrow-on-the-Hill	4,188	228	4,416	553	506
Uxbridge — Hillingdon	510	359	869	339	353
West Harrow — Harrow-on-the-Hill	3,072	268	3,340	588	635
Harrow-on-the-Hill — Northwick Park	8,123	723	8,847	1,327	1,276
Wembley Park — Finchley Road	10,867	787	11,654	1,796	1,811
Finchley Road — Baker Street	10,003	707	10,710	1,501	1,667

Source: MMC based on LUL data.

*The morning and evening peak figures are averages and understate the level of demand during the busiest peak hour.

	Psgs. per hour			Psgs. per hour			Psgs.per day
	Evening Peak (4pm — 7pm)			Evening (7pm — 10pm)			
Total	South-bound	North-bound	Total	South-bound	North-bound	Total	
248	170	1,068	1,238	31	175	206	8,749
388	249	1,800	2,049	39	311	350	14,123
128	99	400	499	13	41	54	3,637
519	379	2,348	2,727	61	375	436	18,909
1,059	592	4,173	4,765	123	795	919	36,652
692	558	611	1,169	94	94	188	10,824
1,223	642	2,911	3,553	157	470	627	29,899
2,603	1,114	8,028	9,142	383	1,480	1,863	75,171
3,607	1,453	10,439	11,891	468	1,955	2,423	99,543
3,167	1,257	9,390	10,647	489	1,706	2,194	89,656

per return trip. Aldwych had about 450 users and the costs of work to keep it open would work out at £6,000 per user. In both cases there are reasonable alternative means of travel — Aldwych is a few minutes walk from Holborn or Temple Underground stations.

In accordance with statutory procedure the case for closure was put to the London Regional Passengers' Committee. However, having invited and received objections, they did not approve closure, on the grounds that hardship would be caused. The matter was referred to the Secretary of State and it was not until several months later that the final decision was announced.

Securing agreement to these particular closures is a major step forward. However, on our assumption that there will be insufficient funding to keep the system going at its present scale it will be necessary to develop a much better informed public understanding of the issues. The procedures are presently unpredictable and cumbersome and they do not give proper consideration to the argument that money saved by closing a lightly used facility may be much more productively used.

Of course, progress in this matter requires that London Underground identifies opportunities and proposes them.

Some indication that these two cases may not be isolated examples is contained in London Transport's *Digest of Statistics* (London Transport,1994, p16). Relatively few trips originate in the outer zones. 78 per cent of all Underground trips and about 67 per cent of revenues[5] only involve zones 1, 2 and 3. These zones contain about 64 per cent of the stations but only about 56 per cent of the route miles. Therefore, hypothetically, if one were to close the Underground outside zone 3 one would lose about 33 per cent of the revenues but avoid the costs associated with 44 per cent of the route miles.[6]

We are not suggesting closures on this scale, but simply pointing out that continuing under-funding of the system makes it essential to consider options, including commercially advantageous closures in the outer areas.

New sources of finance

The prospect of a consistent flow of additional funding, either for reinvestment in the Underground, or for prestige new projects remains slim. Successive governments since the Second World War have failed to provide it. The present arrangements, with annual (inadequate) public expenditure settlements and random changes in investment levels are likely to continue to be the norm in the years ahead. If more finance is needed and the Exchequer cannot be persuaded to find it then it must be found elsewhere.

PRIVATE FINANCE

The Government's present policy, represented by its Private Finance Initiative, is that greater reliance should be placed upon the provision of funds by the private sector in search of a commercial return. London First (the private sector-led promotional body) enthusiastically promotes this policy in the context of transport infrastructure in London.

The hope is that the Private Finance Panel will produce bright suggestions for the Government to enact changes to their own rules for determining what is properly considered "private finance". It is also helping to design an entirely new relationship between the public and the private sector, within the public sector and helping to overcome the inertia and disincentives on all sides (see Kent, 1994). The result ought to be innovative ways of allowing the private sector to share risks with, say, London Transport, in infrastructure investments and thus to release private capital into the Underground and other public bodies.

Financing or funding?

It is useful to draw a sharp distinction between financing and funding a project. This is at the heart of some of the confusion which currently surrounds debate on the topic. We take *financing* to refer to the activity undertaken by an institution or group of institutions where they assume responsibility for lending the financial capital to purchase an asset or undertake a construction project, in return for a future flow of cash payments. *Funding* is the provision of the real resources, now or in the future, which correspond to the resources devoted to the manufacture of an asset or construction of a project.

Thus, a building society provides *finance* for the purchase of a house. But the purchaser is responsible for *funding* the purchase because he provides the real resources which pay for the house over the term of the mortgage, by dedicating a portion of the value of his future output to the repayments. Equally, a building might be funded by the tax payer — the public sector — but financed by the private sector. Funding is about giving up something in order to create a benefit in an alternative use of the resources. Financing is making the market to allow this to happen.

Some members of the Government are clear about the nature of the PFI:

> "Mr Dorrell, Financial Secretary of the Treasury, has ... characterised the PFI as shifting the public sector from being a service provider to a service purchaser — but with economies flowing from private sector management and disciplines which offset the higher cost of capital" (Kent, 1994)

Many politicians from the leading parties would like to see the private sector taking the burden of *funding* infrastructure from the state. But many of the actual proposals are really about changing *financing* arrangements, or about changing the method of procurement of assets or services. Beneficial incentives for efficient management can be created, but this is not the same thing as private sector funding.

Procurement through private sector finance

The deal announced in late 1994 by which London Underground will procure new trains for the Northern Line is a good illustration of the benefits of competition in procurement. It is exactly parallel with the pre-1994 system of London bus tendering, except that in this case the public sector will provide the drivers. The private sector borrows money, builds and maintains the vehicles and it services the debt, together with operating costs, through contactual payments received from the public sector. There are penalties for poor quality of service, so the private sector bears the cost risks and performance failure risks. One is trading the efficiency gains from private sector management and proper matching of risks with incentives, against higher economic cost of capital. There can be no reason in principle that many other items could follow this precedent.

But the Northern Line deal is about new ways of *financing* and *procuring* public infrastructure. It is not about new sources of *funding*. It could have been financed in the traditional way by grant, i.e. public debt, which would have been serviced in full in the form of reduced public support in the future. The replacement of the Northern Line trains was self-financing because the cost savings from one-person operation and lower maintenance costs justified the capital expenditure. In old fashioned nationalised industry terms the scheme passed the 8 per cent real rate of return test. So executing the deal would have *reduced* the call on public funds over the long term. What the PFI-assisted deal contributed was the management efficiency and the gains of making risks congruent with incentives, net of the increased cost of borrowing by the private sector rather than the public sector. But the involvement of the private sector did not, of itself, add the capital and maintenance costs of the trains to the resources available to London Underground over the long term.

There is little evidence to suggest that any genuine ways will be found to share the revenue risks of investments in the Underground. First, in the absence of sophisticated ticketing systems there is the complexity of such a highly-integrated transport system and the consequent difficulties in defining revenue risks and rewards. Second, it would be impossible to exaggerate the difficulties for the private sector of signing contracts involving revenues with an organisation such as London Underground which is subject to detailed political intervention: at any time the Government could change fares policy, or investment levels, or some other crucial factor.

Private funding of loss-making activities?

In the case of a fundamentally non-commercial (i.e. loss-making) proposition, by definition, the decision to execute such projects must *increase* the public sector commitment in the long run, no matter how it is financed. It is a simple point: the private sector will not provide resources for something they perceive to be loss making — though they will help with *financing* for an appropriate return.

A problem with some Underground infrastructure projects is that they fail to offer sufficient *encashable* value to offer a commercial return, even though their economic benefits may exceed their costs.The institutionally acceptable charging mechanisms are too crude to extract sufficient benefit in cash form.

CrossRail provides a good illustration. There is little chance that the revenues attributable to the opening of the new line would be sufficient to cover much more than the new operating costs. This would leave the capital costs to be found. Proposals to secure private finance against future revenues associated with the line are ill-conceived because most of the margin above operating costs would be revenues abstracted from other Underground lines. These other lines would be unable to make offsetting cost savings so the abstracted revenue would ultimately be replaced by tax-payer subsidy: this is public sector funding in disguise.

Of course there is the interesting prospect of the intermediate case where the efficiency cost savings attributable to private sector management are sufficient to convert a loss-making public sector project into a profitable private sector one. But such conditions are unlikely to apply to Crossrail.

The limitations of private sector funding

There is considerable confusion surrounding the question of what can realistically be achieved from the introduction of private finance into public infrastructure projects. This is related to the general question of what can be achieved through private funding without HM Treasury giving up a greater degree of control than it is prepared to do.

In his November 1994 Budget speech when the Chancellor announced the cuts in future Government funding for the Underground shown in Figure 1, he appeared to be stating that future reductions in state *funding* of the Underground would be made good by private finance. But proposals to produce large quantities of new net and long term *funding* from the private sector into inherently loss-making activities are over-optimistic. We do not think that the Private Finance Initiative can be relied upon to make a major contribution to providing new funds for the Underground.

As we have argued elsewhere in this paper, the introduction of genuine competition in procurement and the greater involvement of private sector management may offer considerable benefits to the Underground, allowing the existing funding to go further. The PFI can assist in this. However, unwillingness to accept the basic economics of most urban public transport systems has allowed people to delay facing up to an uncomfortable fact: if new funds on a large scale are to be found then it will have to be done in some way other than by reliance on conventional private sector funding.

ROAD PRICING AND LAND BETTERMENT TAX

Road pricing

The Government is in the process of completing a study of road pricing ("congestion charging") for London. Estimates of the revenues from such a system range from £200m to over £700m per annum, depending on the size of the charge. It has generally been accepted that if road pricing were introduced, the only politically-acceptable use for revenue would be for transport improvements in the capital. Rail investment could be increased in this way, though it appears unlikely that charging could be introduced until the early 2000s.

A trust funded by a non-domestic rate levy

If private finance offers little hope for London Underground, what other proposals are there for increased investment in the system? As an alternative to capturing benefits through the "fare box", one might seek to tax the windfall gains in land values resulting from the creation of new rail links. To a degree these are a direct consequence of time savings to users not being abstracted as cash. In principle this is an attractive idea but the experience with development value taxes is not encouraging and we think that there is a much simpler and more easily administered alternative.

This, more promising, proposal would be a new tax source to finance infrastructure in the capital. The idea, which was first published in Glaister, Travers *et al* (1991) has been put forward on several occasions in recent years by, amongst others, London First. A supplementary levy on the National Non-Domestic Rate — subject to a vote — could be used to increase funding of existing and new railway lines. While the Government has not formally ruled this idea out, neither has there been great enthusiasm for it within Whitehall.

A levy on the National Non-Domestic Rate (NNDR) could raise a considerable sum to fund transport infrastructure. A 10 per cent additional NNDR yield in London would raise between £300 and £400m per annum, which would be more than enough to fill the gap between current levels of central government funding and the needs of the core Underground.

The NNDR is already collected by the London boroughs — and other district authorities — as part of their revenue collection activities. The whole existing yield is, in effect, passed over to Whitehall and then redistributed to local government.

In order to secure private sector assent for a new levy of this kind it would be necessary to allow businesses to vote on whether or not they paid it[7]. The institution which administered the levy would have to put forward a package of investment proposals with the costs of both individual proposals and the whole set of proposals.

If the private sector agreed to fund an NNDR levy of this kind then the boroughs could collect it along with the existing non-domestic rate and then pass it to the institution given the responsibility to administer the scheme.

The institution itself would have to be within the private sector if it were to escape public expenditure control. The Treasury would doubtless attempt to argue that an NNDR levy was part of General Government Expenditure. If the institution that disbursed the resources were wholly or largely in the public sector the Treasury would surely win their argument. As one of the key purposes of considering the proposals outlined in this paper is to remove the Underground from government interference, it would be eccentric to consider any solution that was likely to maintain such interference.

One possible way of securing accountability both to the organisations that paid the levy and to the wider public would be to create a trust to administer the proceeds of an NNDR levy. The trust members could be appointed by and drawn from the private sector, local government, transport operators and other groups. But crucially, by having the status of a trust it would be well within the private sector, though its duty to serve its objects and its status would achieve accountability. The London Passenger Transport Board of 1933 — London Transport's predecessor — was appointed by a trust whose members were appointed by the London County Council, the London and Home Counties Advisory Committee, the London Clearing Banks, the Institute of Chartered Accountants and the Law Society.

A trust would be a suitable vehicle for the handling of funds from all sources, including central and local government and the private sector and it would be able to create financial instruments to enable borrowing and lending in order to finance its activities.

London Transport's proposal and variants

PROPOSAL 1: FOLLOW THE PLAN SET OUT BY LONDON UNDERGROUND IN MAKING VISION INTO REALITY

In 1993 London Underground developed a long term strategy for the business and published a summary in *Making Vision into Reality* (London Transport, 1993). This is of considerable importance because it is the first such document to be published since the formation of the present LT Board in 1984. Its essence is captured in the Chairman's Introduction to *Making Vision into Reality:*

> "London Underground has set itself a goal: to become both financially self sufficient and to be a 'Decently Modern Metro' in just ten years.
>
> "A network more than 100 years old in parts cannot aspire to all the standards of a new system, but it must be safe, quick and reliable and offer value for money to meet the needs of its customers and of society, in whose interests it is run.
>
> "And it should upgrade its trains, stations and infrastructure to meet those needs.
>
> "A Decently Modern Metro means:
>
> - New or refurbished trains on all lines
> - More frequent services, faster journeys and less crowding
> - High quality stations providing greater capacity and better stand ards of service
> - Reliable lifts and escalators

- New opportunities
- Rebuilt track and restored embankments, tunnels, drainage etc.
- Better information for customers
- A safe, secure environment for customers and employees

"This is a vision that can be achieved in a decade if London Underground, its customers and society as a whole, through Government, all play their part.

"The Underground, almost uniquely amongst urban metros, is meeting its running costs and making increasing surpluses which are ploughed back.

"Within the decade, assuming the right amount of 'pump-priming' investment, it could be in a position to renew and replace its assets free of Government support..."

The basic idea is that over a ten year period there would be an improvement in efficiency, an increase in fares level and a substantially increased level of state funding for investment. Thereafter, the Underground would be in a position to generate sufficient income to sustain itself on a fully commercial basis.

The total cost of recovering the backlog of investment in the existing network, and bringing the assets up to the standard envisaged is estimated in the Strategy to be about £8.5bn over 10 years. Some of this expenditure would be internally financed from operating profit and the present value of the external grant required is about £3.3bn (see below). The costs of the three major investment schemes which are envisaged in the plan — the Jubilee Line Extension, CrossRail and the Chelsea-Hackney Line — is an additional £6.5bn. Fares are assumed to rise in line with average incomes in the London economy, as are real wages. Therefore both would grow about 2 per cent p.a. faster than retail prices.

The Strategy identifies three possible sub-options, *excluding* funding for the new lines:

- The level of investment sufficient to deliver the Decently Modern Metro in 10 years, which is a £900m per year investment programme at 1993-94 prices

- The level of investment which would have been implied by the guidelines given in the November 1991 autumn statement, a £800m p.a. investment programme, achieving the Decently Modern Metro two years later
- The level of investment implied by the guidelines given in the November 1992 autumn statement, a £600m p.a. investment programme, achieving the Decently Modern Metro in 20 years.

The proposition in *Making Vision into Reality* (which concentrates on the first of these options) is certainly an attractive one.

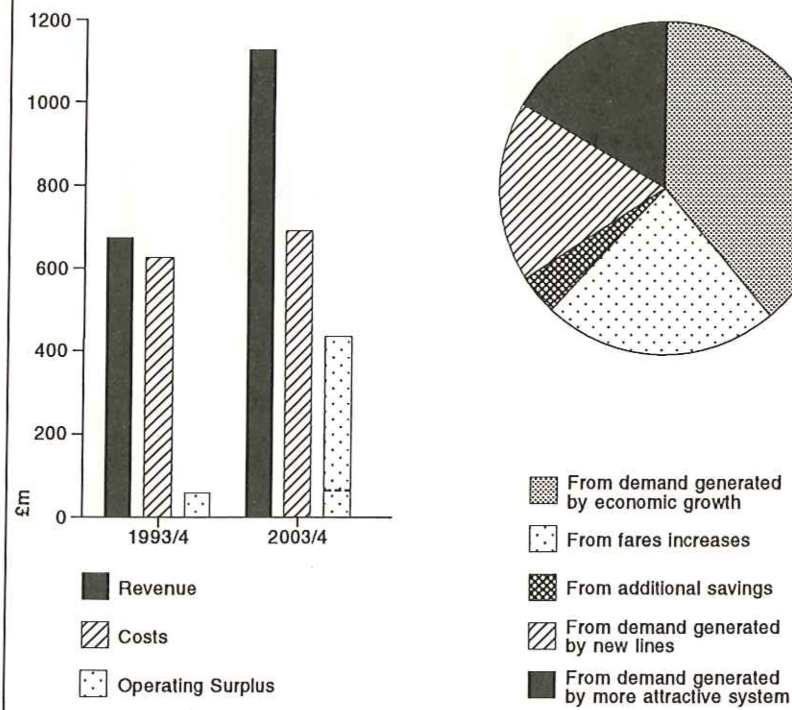
The weaknesses of proposal 1

Unfortunately, their strategy entails considerable inherent risks. Some of these are apparent from Figure 9 which is reproduced from *Making Vision into Reality*[8].

For example the plan depends upon a substantial increase in operating surplus in order to finance long-term investment needs. The largest component in the increased operating surplus comes from demand generated by economic growth. The experience of the London economy over the *last* ten years shows how dramatically it can change, and how hard it is to predict. Actually the risk on this particular item is two-sided: London is emerging from a serious recession and if a sustained boom were to ensue, the recent expansion of office space in Central London might generate even more demand than the 1 per cent p.a. on average that the Strategy assumes. Tourism and leisure could also grow more than expected as easily as less than expected.

The second-largest item is income from fare increases above inflation. We strongly support the policy of increasing fares in this way in order to alleviate the burden of funding which will fall on the general taxpayer, though only so far as this does not supplant other funding. Failure to raise fares in the past has contributed to the overcrowding and shortage of funds for investment. But one has to ask why fares have not been raised in real terms in the past when London Transport has been wanting to achieve a modest increase for some years. Although it has the technical responsibility for fares setting it has, in practice, met with insuperable interference from governments who have shown acute political sensitivity on this issue. Real increases have been achieved in the most recent settlements. But it must be counted as a risk that government will intervene again to hold fares down, for practical reasons.

Figure 9: Increase in operating surplus and how it is made up



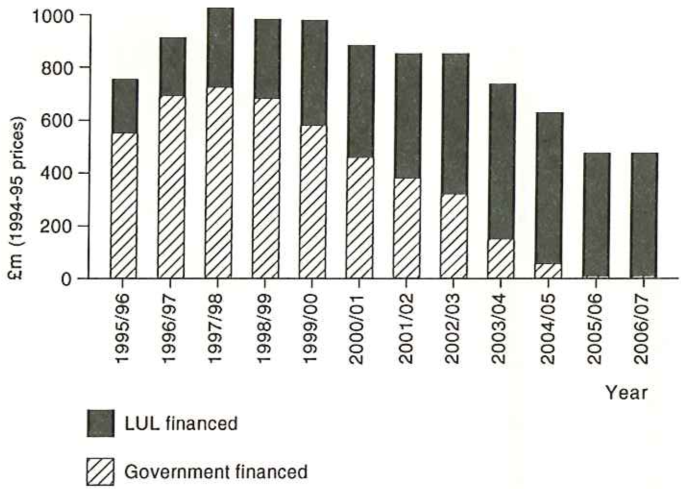
Making money: how the operating suplus will increase

Source: Making Vision into Reality, (London Underground)

There is a large item identified in Figure 9 corresponding to demand generated by a more attractive system. A better system will certainly generate more traffic and we have no reason to doubt that this is a reasonable estimate. Forecasting the effect on demand of more frequent and reliable services is tricky but tested techniques do exist. Forecasting the effects of a more pleasant environment is much harder and less certain.

Income generated by new lines is also a difficult item to predict. This difficulty is compounded by the fact that the timing of CrossRail and

Figure 10: **The Decently Modern Metro:** the investment required



Investment: requirement and sourcing of funds for the existing system. Presently unforeseen long-term quality improvements would need financing separately

Source: Moving Forward, (London Underground)

Chelsea-Hackney Line has become very uncertain since the Strategy was drawn up. There seems no hope that either of them would be carrying passengers within the 10 year horizon, if ever. By the same token the capital to be financed for the new lines will be reduced.

Finally, there is an item for cash funded by additional cost savings. It is small, but, as we have argued, this may be an item where things are more optimistic than the Strategy assumes. It may also be a gain that is more readily 'bankable' than the preceding ones.

To restate: we are not suggesting that the Underground's strategy is inherently unreasonable, just that there are considerable risks attached to it. As a result there are several possible outcomes, any one of which could prevent the highly attractive objective of financial self-sufficiency from being realised.

Figure 10 points up another difficulty and, it seems to us to represent a fatal flaw in the strategy as presented. It depends upon a substantial investment of extra, Exchequer finance for the next decade or more. The strategy estimated that the portion of the £900m a year, *excluding* investment in new lines, which would have to be funded from public sources would fall from £734m in 1994-95 to £524m in 2002-03 and zero thereafter (a net present value of about £3.3bn[9]). This compares with *total* investment in the existing Underground of £485m in 1993-94 and £632m in £1992-93.

We doubt that it is realistic to expect that any Government will be willing or able to provide funding increased to this degree under the present funding arrangements. It is now evident that the levels of investment achieved during 1992-93 in the core infrastructure of London Underground were an aberration. (See Glaister *et al*, 1991 and Glaister and Travers, 1993). The high settlement for 1992-93 was welcomed by London Underground because it was consistent with the view of the state of the assets which was presented to the Monopolies and Mergers Commission for their 1991 independent review and which was broadly endorsed by the Commission. It seemed that the Government had become convinced by the arguments put and had responded. It was assumed that there would be a period of stable investment funding which would allow the business to put its house in order in a properly planned and systematic fashion. It was therefore "a matter of acute disappointment that in the 1992 Autumn Financial Statement the provision of funds for LT was reduced by more than 30 per cent. This means that much of the momentum of improvement, which was built up by committed, planned and controlled effort throughout the Group, will be slowed to a pace below the minimum that the Board sees as necessary to achieve the objectives it has set for the organisation" (the Chairman in the 1992-93 Annual Report).

In some quarters there is scepticism about whether the Underground really does need the level of investment which it seeks. One view is that the figures London Underground mention represent an inflated bid as a part of a negotiation. Some suggest that London Underground is an inefficient and badly organised company and that it could be done much more cheaply. Yet it is hard to see how any external body with severely limited resources could verify this claim. We can only observe that the Monopolies and Mergers Commission did not find sufficient fault in their thorough independent investigation to conclude that London Underground Limited was pursuing a course of conduct which operated against the public interest. Both the Department of Transport and the

Treasury were sufficiently convinced to accept the high settlement figure for 1992-93. If the organisation is thought to be inefficient then the solution can only be to test the assertion by some suitable change to the organisation — a subject to which we return in a later section.

Meanwhile, to suggest a delay in funding the backlog investment because of a fear of strategic over-bidding has the effect — intended or not — of taking pressure off the Government to face up to an indisputable underlying problem.

PROPOSAL 2: PRIVATISATION OF THE EXISTING UNDERGROUND AS AN INTEGRATED BUSINESS

If proposal 1 were generally to be found attractive it would be possible to adapt it into a privatisation proposal by offering London Underground as a single company, subject to similar fares regulation and service level commitments as at present, with the benefit of a lump-sum "dowry" — in other words at a negative cash price.

If the markets took the estimates in *Making Vision into Reality* at face value then the required "dowry" would be of the order of £9 bn in order to achieve the Decently Modern Metro (i.e. a present value of £3.3bn core investment + the net costs of the three major new lines). From this one might subtract a winning bidder's estimate of the remaining value to be realised from non-operational property, the bidder's estimate of the present value of efficiency gains not already envisaged by London Underground, his estimate of the revenue benefit of any additional fares increase taking into account the extent to which the figures put forward by London Underground are deliberately pessimistic as part of a negotiating position.

If the valuation of £–9 bn appears surprisingly large, it should be noted that it is the present value of the London Transport plan for dealing with the outstanding investment needs which is currently on the table.

An alternative, cheaper proposal would be:

PROPOSAL 3: AS PROPOSAL 2, BUT ABANDONING CROSSRAIL AND CHELSEA-HACKNEY SCHEMES AND CONCENTRATING ON THE CORE SYSTEM.

A final difficulty with the London Transport Strategy concerns the investments in the new lines. At the time the Strategy was written negotiations were well advanced for the full funding of the Jubilee Line Extension and the Bill to secure powers for the CrossRail scheme was at the Committee stage in Parliament. There was also a formal commitment on the Government's part to safeguard the route of the Chelsea-Hackney line and to build it at a later date. Since then the Jubilee has been confirmed and work has started. But the CrossRail Bill fell. We believe that the underlying reason for the failure of the Bill was a lack of enthusiasm on the part of the Government because of an unwillingness to find the necessary funds. In our view the aspiration to find half the funds from private sources was always unrealistic and had the effect, whether or not intended, of delaying the need for a decision of whether to fulfil the promise made in 1989 to fund the scheme through the Exchequer.

Technically, the CrossRail scheme lives on and a new Bill will be introduced under the new Public Works Act procedures. However, these will inevitably be slow and they may fail again, either because continued lack of funds or because of the considerably greater power that is given to objections from opposing interests. Either way, the scheme will not carry passengers much before the end of the ten-year horizon.

This experience suggests to us that, given the considerable cost of the Jubilee Line Extension, it would be wise to develop future strategies for the Underground on the assumption that there will be no other major new lines under current financing arrangements. The experience has shown that they are too expensive, and the needs of the existing system should take precedence. There is no point in building a brand new wing on the mansion if you cannot afford to stop the roof of the old building from falling!

Abandoning CrossRail and Chelsea-Hackney schemes and concentrating on the core would reduce the size of the dowry from £9 bn to £5 bn.

Proposal 3 would meet all three of our criteria for a good solution. Of course, it is unlikely to find favour with Government because it exposes the magnitude of the future cash liabilities which the Underground represents in an embarrassingly visible way. In effect it is a measure of the inadequate state of the system. It has exactly the opposite cash flow characteristics of some other privatisations which have offered *negative* public expenditure in the year of sale in exchange for loss of future positive cash flows.

But we think the proposal has many attractions: and there is a precedent in Buenos Aires. From Jan 1 1994 for 20 years the Buenos Aires underground is being run by METROVIAS the successful bidder of an international bidding process[10]. The company is a partnership of an Argentine construction and civil engineering company, and Argentine urban bus consortium, a private US-based freight railway company, a US-based rolling stock and railway machinery repair and rehabilitating company, an Argentine consulting firm and a Belgian consulting company acting as technical adviser.

METROVIAS will assume full responsibility for the management, operation, renewal and maintenance of the entire subway network, after receiving from the State a sum equivalent to the present value, discounted at 12 per cent of a capital programme previously defined in the tender documents net of income from users. The objectives of the policy include a substantial reduction of state support, raising operational standards, commercial development of the potential of below-surface transport by integrating it with surface modes and improvement of quality of service.

The contract will be enforced by a public regulatory commission. It provides for financial penalties for under performance. Fares will be regulated according to a formula whereby fares will increase if a global quality of service index exceeds a threshold and *vice versa.*

Alternative proposals

FRANCHISING[11]

Many of the alternatives outlined in this paper involve creating one or more free-standing, commercially motivated enterprises to operate, and possibly own, trains and fixed infrastructure. One option would be outright sale. However, the liability for future investment expenditure means that in most cases they would have to be sold for a negative sum. This is not an obstacle in principle, being simply a reflection of the present value of future liabilities. However, the prospect of having to grant a cash dowry is likely to cause insuperable political problems.

In these circumstances some alternative must be found which will involve finding a way of providing a cash flow subsidy whilst preserving commercial freedoms and incentives to generate revenues and to reduce costs. So the issue is how best to manage the provision of this subsidy. We now give a brief survey of the techniques which have been used in the public transport industries in Europe. The word "franchising" has come into common usage in this context — for instance in the context of British Rail privatisation, where "competitive tendering" might be considered more appropriate. We follow the common usage.

Table 9 summarises the several franchising models and who does what under them. The columns identify the several characteristics of the franchising process which can vary.

Tendering

First, there is the kind of contracting that London Transport is familiar with in the context of procurement of bus services. On this model London Transport specifies services in detail, fixes fares and takes revenue risks. It invites competitive bids for the cost of operating the contract. The system has the advantage of creating genuine pressure for cost efficiency — and it has proved to be effective in that task. It leaves opera-

TABLE 9

	Fare setting	Service level	Revenue risk taken by	Fixed infra-structure owner	Rolling stock owner and maintainer	Employer of operating staff	Constraints on terms and conditions?	Planner	Award method	Typical contract length (years)
Buses in London (old)	A	A	A		P	P/A	No	A	C/N	3
Buses in London (new)	A	A	P		P	P	No	A	C	3
Railways in UK (new)	A/P	P	P shared with A	P but initially A	P	P	No	A/P	C	7-15
Railways in Sweden	A/P	A/P	A	A	P	P	No	A	C	3
Buses in Scandinavia	A	A	P	A	P	P	Yes	A	C	3-5
Buses in France	A/P	A/P	A	A	A	P	Yes	A	C/N	5-10
Management contracts	A	A	A	A	A	A	Yes	A	C	?

Key:
A: public Authority
P: Private sector
C: Competitive tender
N: Negotiation

tors with clear commercial objectives, with the procuring authority clear about the social service it is purchasing and what it costs. Contract specification and enforcement mean that there is clarity about what is expected and delivered.

In the recently modified arrangements all revenue risk is put on the operators. Over a period of time all contracts will be subject to competitive tendering. Since the London Buses Limited businesses are now privatised, all operating employees will be employed by the private sector. A further step would be to abandon the standardisation of pricing under the current system and allow some freedom, subject to some form of price regulation.

This is essentially the system set up for British Rail franchises. Although the fixed railway infrastructure is owned by Railtrack which is initially in the public sector, the intention is that it would be privatised at the earliest opportunity. In the meantime, it is important to note that Railtrack is directed to equate charges with costs, including the full costs of its capital. Thus, subsidy to the industry is channelled from the Franchising Director via the franchised train operators.

This is an important difference from the rail situation in Sweden, where the fixed infrastructure is held by, and directly subsidised by the State, with no intention to privatise it.

Operating franchises

In many bus systems in France there is an operating franchise where a public transport authority is responsible for planning and financing of public transport and owns the rolling stock and other infrastructure, and leases this out to the operating companies. Some of these are publicly owned but the dominant ones are private.

There are also management franchises where a public body is responsible financially for both operation and for rolling stock/infrastructure, but when an outside franchisee provides the necessary management competence for the operation of the system.

The benefits of competition in the market are central to our proposals. An important difference with the French system, and, to an extent, in Denmark and Norway is that there are restrictions on the minimum terms and conditions that operators must offer to their employees and the requirements that the prevailing wage contracts within the public transport sector shall be used.

Choice of franchise structure

An important aim is to achieve the maximum pressure on cost efficiency. This requires the establishment of competition in labour markets. This rules out the continental systems in the last three rows of table 9.

For what are essentially political reasons we believe that it is most unlikely that complete freedom in fares setting would be granted. Fares would either remain rigorously determined by a central authority or, as in the case of franchised, ex-British Rail services in the London area, they would be heavily regulated. Some discretion over service levels and service times might be allowed to operators however and this would be highly desirable. There would undoubtedly be a need for the public authority to set minimum service levels.

In the case of British Rail privatisation and the new London bus system the revenue risks are to be taken largely, or wholly, by the franchise operators. In the old London bus system the public authority took this risk. It would be possible to give the Underground operators the revenue risk, although this would be much more satisfactory if contactless, stored value ticketing replaced the current travel card.

THE DEGREE OF INTEGRATION

The degree to which the components of the new system were to be integrated was a controversial issue in developing the policy for privatisation of British Rail. In that case it was decided to separate operation of the trains from the ownership and maintenance of the track and signals. One of the main motivations for this was the desire to facilitate competition on the tracks between different operators on equal terms. The merits of this separation must be set against two disadvantages. First, the writing of the contracts between the train operators and the track owner is extremely complex. The progress with BR privatisation demonstrates that it can be done, but the way the contracts will work in practice has yet to be tested. A particularly difficult element is the drafting of "performance regimes": the specification of the penalties payable if one party fails to deliver to the other the quality of performance contracted for.

A second problem is related: potential buyers of the franchises claim to be discouraged because they would not have direct control over aspects of the business which are vital to their commercial success. The strength of this argument has yet to be tested.

In the case of the Underground the argument in favour of separating track from trains is not so strong, because the gains from on-track competition are likely to be less. Services are more homogeneous in both the technical sense and the market sense. There is less opportunity to differentiate the product. Generally trains cannot overtake and frequencies are so high that speeds and stopping patterns must be standardised in order to provide sufficient capacity in the track.

Also, there is no freight which, in the case of BR was a further reason for a need to arrange for one operator to run over tracks owned by another.

Finally, we note that the Rail Regulator's duty to promote competition has created a conflict with the Treasury's wish to contain the overall level of external funding for the railway. Competition attacks local monopoly profits with the consequence that external funding has to increase to replace the internally generated cross subsidy. This may have been a factor in the Government's 1993 decision to withdraw their long-standing proposal to deregulate buses in London.

In the current circumstances of the funding of the Underground we think that it would be unwise to increase the demands on the Treasury to replace lost cross subsidy. In the cases of British Rail "privatisation" and the previously-planned London bus deregulation the reality of the situation forced the Government to accept severe moderation of competition, at least in the early stages, in order to limit the public subsidy budgets. So, in the case of the Underground, whilst competition would be desirable in principle, it seems that to sacrifice it would simplify things without losing a great deal. In any case, as we have noted, the Underground already operates in competitive markets for many of its services and there are good prospects for between-track competition in the London area.

We conclude that it would be sensible to leave train operation and track ownership as integrated businesses. However, this does not necessarily imply that stations should be included. Many Underground stations are important pieces of real estate, at which far more goes on than simple access to train service. London Transport has done a great deal to realise the commercial opportunities at its stations whilst respecting what it sees as the constraints set by the fact that they are part of an operational passenger railway — which has been seen as the first priority.

A way to test the claim that there remain many commercial opportunities to be exploited would be to put the major stations on long leases to non-railway enterprises that would treat them as mixed-use sites rather than railway stations.

There are less intimate technical relationships between train and station operation than between trains and track. Further, the considerable pioneering work carried out in the context of BR privatisation on station access agreements would make this separation easier in the case of Underground stations. A number of the major Underground stations will already be physically a part of ex-British Rail stations, being operated as independent businesses on leases from Railtrack.

PROPOSAL 4: SEPARATE THE UNDERGROUND LINES INTO SEPARATE BUSINESSES EACH WITH FULL COMMERCIAL RESPONSIBILITIES.

The 11 Underground lines differ in their economic and physical characteristics. They were originally constructed as free-standing for-profit businesses (with the exceptions of the post-war Victoria and Jubilee lines). It is tempting simply to recommend a reversion to this situation.

The Underground is a very large and complex business. Size, in itself creates problems of efficient management. It is also highly centralised. As a consequence the organisation is highly bureaucratic. There is a complex web of committees and it is often hard to identify any individual as having been responsible for any decision.

The Monopolies and Mergers Commission commented at length on these features of the organisation

> "1.11 ... LUL has ... been seeking to change its culture from a largely reactive style to one of pro-active planning and management. In November 1988 it decided to establish ten[12] line businesses with all other activities becoming supportive to those businesses. Good progress has been made but as implementation is not complete, it is too early to reach any conclusion on whether the new structure will deliver improvements in efficiency. At this interim stage, management recognises that LUL is doing unnecessary business with itself in the form of internal contracts, resulting in duplication of effort and of staff.

"1.19 … we found that [management structure] was designed to facilitate a more commercial approach, to reduce the number management tiers and to meet criticisms in the aftermath of the King's Cross fire the Underground was under-managed. We also found that the resulting spans of control, at near double to accepted practice, were too wide for effective control; that the introduction of the client and internal contactor concept had resulted in fragmentation of responsibility and duplication of effort; and that the present level of devolution to line businesses needed to be developed further, as LUL planned to do. We have recommended that LUL should review its Headquarters structure with the aim of reducing spans of control below double figures and that it should take steps to clarify responsibility and eliminate duplication by October 1991."

The Underground is also bedevilled by multiplicity and ambiguity of objectives:

"1.45. … we have concluded that LUL is faced with conflicting objectives to an unusual degree and have recommended that LUL should put forward proposals to establish a clear framework of objectives…"

"1.46. The business plans prepared by the lines for 1990/91 show a wide variation in both style and content. This may indicate a lack of clarity about the purpose. We have concluded that there is a need for a more standardised structure for line business plans…"

In response the 1993 Statement of Strategy notes that

"London Underground has adopted the principle set out in the 1991 Company Plan, of *maximising net social benefit within available funds and subject to a defined gross margin target.* In the medium term, the policy on the gross margin target is *to secure an excess of revenue over operating costs sufficient to fund, on a long-term basis, the renewal and replacement of the network, as management judge necessary.*"

In our opinion this is not a sufficiently unambiguous arrangement. The line businesses are not really businesses in that they are only, at best, responsible for costs. They do not have any commercial interest in revenues and it is not clear that there are any severe consequences if cost budgets are breached. The objectives are ambiguous, being a mixture of commercial objectives and wider social benefit objectives.

We think it would be better to strive for genuine bottom line commercial responsibilities, pure and simple, for each of the line businesses as separate entities. Social responsibilities should be held by London Underground or London Transport centrally and non-commercial requirements should be paid for explicitly. To a degree this is the model which has worked successfully on the bus side, except that, until very recently London Transport has taken revenues itself and procured the bus services it has chosen to supply on a minimum cost, rather than a minimum subsidy basis.

PROPOSAL 5: AS PROPOSAL 4 BUT AFTER INSTALLATION OF FULL CONTACTLESS STORED VALUE TICKETING.

Giving lines their revenues causes technical problems. A leading one is the fact that large volumes of passengers make interchanges between lines in physical spaces which are far too small to allow control and checking of tickets by conventional means. This problem can be solved to a degree by means of surveys which are used to estimate patterns and thereby impute revenues. This has been done for many years in order to split income between London Buses, London Underground and British Rail. It has also been extensively used outside London to split revenues from the sale of travel cards between different commercial bus operators. It is planned to use the method to remunerate the newly privatised, ex-London Buses Limited companies who will be operating on behalf of London Transport on minimum-subsidy contracts. Sufficient accuracy for the operators to have confidence in the process can be obtained by spending sufficient on the survey work.

The Travelcard

The use of surveys is only a partial solution to the economic difficulties caused by the Travelcard. The holder still travels at no cost for his or her extra trip, and is therefore not presented with any indication of what it may cost the operator to meet the demands. In practice the rules used to distribute the revenues do not relate well to the underlying economic circumstances. For instance, it is common to divide the pool revenues in proportion to the estimated passenger miles travelled on the respective services. The revenues received may therefore bear little relationship to the costs involved.

We believe that an essential part of any strategy to bring commercial incentives to the Underground will be a fundamental change in the way the Travelcard system works. The Travelcard has two features which make it popular with the general public. First, it gives the traveller the convenience of being able to make any trip within the card's validity without having to make a cash transaction and without having to incur financial penalties for changes of vehicle or mode. In this sense it gives the owner the "freedom of the system".

The second feature is quite simply that it gives cheap travel to the heavy user. Once purchased, any number of trips can be made at no additional cost. This is particularly beneficial to the person who makes a large number of journeys, and these people are much more likely to use the card rather than pay the cash fare.

In the past, rather than charging a premium for these advantages, the Travelcard has been priced at a discount — though this discount has been eroded in the last few fares increases as a matter of policy. The consequent dilution of revenue per passenger mile is shown in the estimate that the change in bus revenue resulting from the Travelcard was 4 per cent but the change in passenger miles was 20 per cent. The corresponding estimates for the Underground are 16 per cent and 33 per cent (London Transport, 1993).

From the point of view of the operators the Travelcard has the further disadvantage that it ceases to serve as a direct and reliable guide to what is and what is not commercially successful.

A technical solution to all these problems will soon be available. This is the contactless, stored value ticket. These credit card-sized tickets are charged with value from time to time by the user making a payment. Then radio communication is used to deduct appropriate value from the card as the user passes each charging point, without the need for the user to tender the card to an official or a machine. Effectively the user pays cash for each trip, just as before the days of the Travelcard, without the inconvenience or disruptive delay of a conventional transaction. The electronics give almost limitless flexibility in setting charges by geography, time of day and — because the card can "remember" its recent history — by whether the user has just made a change as part of a longer journey. Thus, many of the user-benefits of the Travelcard are preserved but proper commercial incentives can be restored to passengers and operators alike.

This is why we would like to see the replacement of the Travelcard by contactless stored value ticketing. It would become feasible to relate income to usage on a line-by-line basis. This would render meaningful "bottom line" management possible. But it would also continue to allow through-ticketing, discounts and any public policy proposals.

PROPOSAL 6: AS PROPOSAL 5 BUT PRIVATISE OR FRANCHISE THE TEN BUSINESSES

Once one has reached this point there are advantages in going further. There is a severe difficulty in giving real meaning to the notion of commercial enterprises whilst they are subsidiaries of nationalised industries: the ultimate sanction of bankruptcy is not available as a credible discipline It was just this kind of consideration which argued for the privatisation of the London Buses companies. The privatisation of British Rail offers another precedent (though we have concluded earlier that it would not be necessary to separate track infrastructure from train operations). As we are proposing here, operators of rail services are to be privately owned and are paid (by the Franchising Director) for the provision of non-commercial services, after a process of bidding for minimum subsidies.

Having created separate, commercially distinct businesses the natural next step would be to offer them for sale to the private sector. This would be directly analogous to the privatisation of the London Bus companies. This would achieve the creation of clear and unambiguous profit seeking incentives. It would also — to a degree — distance the operation of the companies from government.

The evidence on whether this kind of reform can be expected to improve efficiency is mixed. Ridley and Meyer (1983) and Ridley and Fawkner have surveyed productivity comparisons between metropolitan railways. Whilst useful data have been collected the causes of variations in productivity have not been systematically identified. The most recent and convincing evidence is contained in Oum and Yu's (1994) comparative study of the OECD Countries' Railways in which they conclude that (i) railway systems with high dependence on public subsidies are significantly less efficient than similar railways with less dependence on subsidies; and that (ii) railways with an high degree of managerial autonomy from regulatory authority tend to achieve higher efficiency. Taken together these findings imply that productive efficiency of railway systems may be significantly enhanced by a regulatory framework which provides a greater freedom for managerial decision-making.

If it were thought desirable to conduct an experiment along these lines then the East London Line suggests itself as a good candidate. It is a simple line, largely self-contained. There are well developed schemes for investing in and extending the line to new markets at both ends. There are clear interests from private sector owners of land and from the Borough of Hackney, who are keen to improve access to their locations, and from whom financial support could be secured.

The overall picture

It is plain that there would be a need for a new regulatory regime under most of the scenarios we have discussed. There will remain a role for London Regional Transport, or something like it, to set criteria, disburse subsidy and manage contracts for the bus business. The question is what role, if any, it should have on the rail side.

We have argued that there is now considerably more scope for releasing latent competition between the various public transport modes. However, it is plain that the public would always demand a degree of regulation of fares. In the case of British Rail services this responsibility lies with the Franchising Director.

It will be necessary to decide on subsidy levels and to administer subsidy, in return for the observance of minimum service specifications. The other main task is to raise sufficient finance.

It is certainly an option to leave these functions, for both bus and rail, with London Transport, continuing as an agent of central government. But we do not think that this would succeed in meeting our primary criterion of re-establishing independence of the Underground from interference from government. Nor do we think that it is likely that the structure chosen for the privatisation of British Railways will achieve independence because of the direct accountability of the Franchising Director to the government.

Of the sources for adequate funding we have discussed, we believe that experience has shown that the best prospect would be by shifting a substantial burden from the Exchequer and onto local tax payers. We have proposed one workable way of achieving this: the levy on the non-domestic rate. We have noted the attraction of the 1933 arrangement of a board appointed by an independent trust. It follows that such a board would be the natural authority to regulate the Underground.

THE BEST PROPOSAL

Probably the most effective structural proposal would be proposal 6: to replace the Travelcard with contactless, stored-value ticketing (providing the cost of installing and maintaining the necessary equipment is justified by the superiority of the method over random surveys), to divide the line businesses into the original lines with full responsibility for their profits and losses. They would own and operate both fixed infrastructure and trains. Some of the major Underground stations might be independently operated, with regulated train access agreements. The lines would be sold or leased, for the minimum subsidy, which would be determined by competitive tendering.

The new authority would be answerable to a trust which would set policy according to its Objects and raise finance partly from central government and partly from local taxation. It would promote competition in passenger transport in London, it would undertake fares regulation, but the burden would be to demonstrate that any element of fares regulation is necessary. It would set minimum service levels. In principle, it could become responsible for bus services as well as the Underground. There would be an anomaly in that ex-BR services in one part of London would be part of one regulated system and similar Underground services in other parts of London would be regulated by the new authority. This would be no more anomalous than the situation in the past with BR and LT. However, in due course, one could rationalise by bringing all the local rail services into the same regulatory fold.

This would come close to realising the vision of the 1982 Transport Select Committee which recommended the creation of a Metropolitan Transport Authority: members nominated (not elected) by several central and local government bodies. It would have responsibility for all transport, including roads, and it would have powers to precept ratepayers. Our proposal differs in that the operators of public transport would be private, for profit enterprises, who would make their own operational and investment decisions, and there would be a much greater role for competition, as against administration, in matching services to the needs of the travelling public.

This structure would meet each of the criteria we set out in our introduction.

CONCLUSION

This paper has laid bare the impossibility of the position that faces the London Underground. Year after year ministers, civil servants and business interests like London First proclaim the importance of public transport to the economic and environmental life of the capital. Yet each year funding falls below the level necessary to sustain the system at an acceptable modern standard. Investment is unpredictable. All aspects of the operation of the Underground — fares, service levels and infrastructure investments — are prone to political interference. Governments have for many years subjected the Tube to impossible and conflicting demands. The results of this policy are clear for all to see: millions of Londoners have to use a system that falls hugely short of their reasonable expectations.

Senior management at London Underground has an impossible task. They have to keep the railway running on a day-to-day basis. They must cope with sudden surges of investment followed by equally sudden cutbacks. One-off political demands for spending on, say, safety are followed by new and different ministerial enthusiasms. This approach to the Tube is little better than a public transport version of snakes and ladders.

The Government has chosen to be London's strategic planner. It is, by any standards, the city-wide government for the capital. But there is no plan for even short-term transport objectives in London. The Government is keen to set performance indicators for many parts of the public sector, yet it sets none for itself (as opposed to LUL's operational indicators) with regard to London's transport. Is the Department of Transport aiming to shift people off public transport and into cars? It certainly looks as if this is the existing implicit objective. Or is the goal to create the world's first medium-cost/low quality metro system? Again, this result is implicit in existing government policy.

Under the existing funding and political control regimes, London Transport can look forward to a continuation of the relative and absolute decline of recent years. No amount of management ingenuity can disguise the fact that the Government is using the existing political and financial system to obscure this inevitability.

Some of the proposals considered in this paper are radical. They range from the present "do nothing" option through to proposals for exposing the failures inherent in the present system. Franchising and forms of privatisation may be seen as too radical or impractical by many people. Certainly it would be naive to argue that privatisation would solve everything.

But simply repeating, year-in year-out, that the Government should come up with more cash will simply not do. No British government, of any party, has — since 1948 — seen fit to provide London with an effective and modern railway system. The suburban railways suffer from precisely the same difficulties. The existing lobby for improved transport in London will have to come to terms with this bitter reality.

London once had the best public transport system in the world. This is no romantic vision of a better yesterday. In the pre-1939 period when the system was properly invested and relatively independent it was one of the wonders of the world. Management and financial control of the Underground must be liberated from meddlesome governments if the system is to revive. History has shown that incremental change has produced a spiral of decline. Only radical reform can save the Tube

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Notes

1. We are most grateful for comments we have received from several correspondents on earlier drafts. We are also grateful to Mina Moshkeri of the LSE Drawing Office for the Figures.

2. Quoted in Alison Sharp, *Albert Henry Stanley, Lord Ashfield.*

3. As we note below (see Figure 10) London Underground now believe that, in later years, a substantial portion of this investment could be financed internally, from operating profits.

4. For instance see Domberger *et al*, 1986, 1987 for UK experience, and Andersen, 1993 for Scandinavian experience. Oum and Yu, 1994, give evidence on more general aspects of competition and railway efficiency.

5. This is a rough estimate obtained by using Travelcard fares to weight the distribution of zone to zone journeys in 1993.

6. This is to over simplify because the outer stations are smaller and cheaper to operate than the inner ones, and outer track is on the surface whereas some of the inner track is under ground and more expensive to maintain. On the other hand substantial capacity would be released in the remaining system because of the absence of the passengers travelling to the remote zones.

7. Various possible voting arrangements are explored in Travers and Glaister (1994).

8. There is a danger of confusion arising from the terse nature of *Making Vision into Reality*. The £900m p.a. for 10 years would fund the Decently Modern Metro, *excluding* the cost of the new lines. However, the figure reproduced here as Figure 9 includes revenues from demand generated by new lines. A further possible source of con-

fusion is the publication by London Underground of a later document, *Moving Forward* (undated, but approximately June 1994). This has revised estimates, which are the basis of our Figure 10. It refers to the core network.

9. This is the present value of the future cash flows discounted at a real rate of discount of 8 per cent. Figure 10 is taken from a 1994 publication, *Moving Forward,* which shows revised estimates but not in any detail.

10. We are indebted to Javier Cardozo of Subterraneos de Buenos Aires S. E. for this information.

11. Our sources on this topic include Andersen (1993) and Gwilliam and van de Velde (1990).

12. Eleven becomes ten because the Circle is combined with the Hammmersmith and City Line.

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