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# POLICIES TOWARDS SUBURBAN RAIL SERVICES IN BRITAIN AND WEST GERMANY - A COMPARISON

by

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## 1. Introduction

In 1981, the eight S-Bahn systems of the Federal Republic of Germany carried around 7,000m passenger kilometres of traffic. By contrast, the local rail services operated by British Rail on behalf of the British Passenger Transport Executives were expected to carry around 2,000m passenger kilometres. (Table 1). The aim of this paper is to explore some of the reasons for this enormous difference is the role played by suburban rail systems between the two countries. As illustration, the particular cases of Munich and Greater Manchester will be discussed in somewhat more detail.

In the first section, some issues of background information and history will be discussed. Following this, the organisational and financial arrangements regarding the provision of urban rail services in the two countries are explained. Public transport policies and the procedures for the evaluation of rail investments are then considered, and the interaction of all the various elements illustrated in case studies of Munich and Manchester. Finally, some comments on likely future developments are put forward.

## 2. Background

In the early 1960s, there was widespread fear of the effect rising car ownership was likely to have on the city environment. In Britain, the first response to this was the commissioning from a group of experts of the study 'Traffic in Towns' (Ministry of Transport, 1963). This saw a need for enormous investment in new roads, in order to segregate road traffic from environmental areas. Public transport was mentioned in the report largely as a residual mode, to be used when no feasible rebuilding of whatever cost could accommodate the forecast level of road traffic. The aftermath was a spate of land-use/transportation studies in all major British cities, in the recommendations of which road-building played a major role, although in several cases substantial rail investment was advocated as well. As opposition to major urban road-building expanded, the climate initially became more favourable for major urban rail investment. In 1968, Passenger Transport Executives were established to co-ordinate public transport operations in Glasgow, Manchester, Merseyside, West Midlands and Tyne and Wear (a further two - West and South Yorkshire - followed in 1974). Under the same Transport Act, infrastructure grants from Central Government of up to 50% were introduced to finance new public transport investment. Major investments proceeded in Merseyside - the £47m 'link and loop' city centre tunnels - (Merseyside PTE, 1981) and in Glasgow - £30m on re-opening a cross city line (Gentlemen, 1983) as well as the much greater investment (£160m in 1975 prices) on the construction of the Tyne and Wear Metro (Howard, 1980). Although in terms of ownership and rolling stock the latter system - as a separate metropolitan-owned metro system - lies outside the scope of this paper, in terms of its length and transport function it does actually perform a role more similar to that of a

conventional suburban railway or S-Bahn than that of a metro or U-Bahn. However, in the wake of recurring financial crises and a growing belief that the forecast transport task had been grossly overstated, many projects were never brought to fruition. Most notable amongst these were the cross city tunnel and associated proposals in Manchester which will be discussed later.

By contrast, the Federal Commission on improvement of traffic conditions in German cities which reported in 1964 saw from the first a need for a major programme of investment in rail rapid transit, and provided earmarked funds with which it was to be financed. The S-Bahn system had already been born in Hamburg some years earlier, and in 1966 the Federal railway and the city of Hamburg formed the first joint public transport organisation (or Verkehrsverbund) which was to become the pattern for public transport organisation in German cities. Unlike the British case, formation of such organisations was entirely voluntary, but they followed in Hannover (1970), Munich (1972), Frankfurt (1974), Stuttgart (1977) and the Rhine-Ruhr (1978). Major investments in S-Bahns (conventional suburban railways operated by DB) and U-Bahns (metros owned by the city) or upgraded light rail systems followed in most of these cities. Already by 1977 DM7,700m had been spent on S-Bahn's (the largest proportion of this on the provision of extra tracks) and - unlike in Britain - the pace has only recently shown signs of slowing down (Thoma, 1977).

## 3. Organisation and Finance

It seems likely that the differences in the pace of development between Britain and West Germany owe a considerable amount to the particular arrangements regarding organisation and finance of suburban rail services. We shall therefore consider these issues in some detail.

In Britain, the situation since 1974 has been as follows. The Metropolitan County Council, which is the tier of local government responsible for transport and strategic planning in the conurbations, is responsible for public transport policy. The main operator, however, is the Passenger Transport Executive (PTE), which itself runs a large proportion of the bus services (having taken over the old municipal bus undertakings) as well as the Metro in the case of Tyne and Wear and the Underground (a single circular route of 11km) in Glasgow (no other British city outside London has a metro system, and London will not be discussed in this paper since there is no comparable city in West Germany). The P.T.E. in turn contracts with British Rail for the provision of local rail services, and with the National Bus Company or the Scottish Bus Group (both public corporations) for other bus services.

The German Verkehrsverbund (VV) is a very different organisation. It is owned jointly by the Federal Railway and the city or cities in question, although the Board includes representatives of the State and Federal governments. The VV itself owns and operates

nothing: its staff (usually about 80 strong) is solely concerned with planning services and fares. Nor does it directly contract with other organisations for the provision of services. In the case of city and Federal railway services, the operating and finance of the services remains the responsibility of the owner. In the rural areas surrounding the city, the VV acts as an intermediary, negotiating both with a variety of public and private bus operators and with the counties who provide the money. As a consequence of this arrangement, the VV has had none of the management problems of bringing together ownership of a number of diverse organisations that so bedogged the British PTE's in the early years of their existence. But what is remarkable through British eyes is that the VV's could succeed in coordinating fares and services without having financial responsibility for them.

Clearly, one would expect an organisation in which rail is a full partner to be more rail-oriented than one in which public transport planning and operation is undertaken by the leading bus operator, whilst the national rail operator has no finncial responsibility for the performance of the services. But more important than this are the financial arrangements concerning suburban rail services in the two countries. In Britain, funds for suburban rail services (both operating subsidy and investment) are provided by the County Council to the PTE. In turn, a substantial proportion of these (currently 55%) are obtained from Central government via Transport Supplementary Grant. This is however subject to Central Government acceptance of the expenditure, which in recent years has generally been forthcoming for operating subsidies but not for major investments. The costs charged to the PTE by the national rail operator include the allocated costs of providing train services and terminals and all the costs of track and signalling required by these services and not required by other British Rail passenger services. The logic behind this costing system is that in British conditions it is usually the passenger services on a route that dictate the quality and capacity of the infrastructure required, but a consequence of this policy is to give the PTE's a strong financial incentive to limit their operations to routes required by other BR passenger services. So far, this effect has not tended to lead to closures, only a couple of which have occurred since the formation of the PTE's, but it has prevented any serious consideration of reopening to passenger traffic lines used solely by freight trains.

As already indicated, under the West German system, responsibility for the losses on West German S-Bahn systems remain primarily the responsibility of the Federal railway, and ultimately therefore the Federal taxpayer. Moreover, the application of fully integrated multi-model ticketing means that S-Bahn systems have few specific receipts for their own, and the revenue-sharing agreements with other operators have tended to result in S-Bahn's covering a smaller proportion of operating costs than have U-Bahns, trams or buses. It is obvious why such a system will lead to local authorities favouring widespread

provision of high-quality rail services, but less clear why the railway or the Federal government should do so. More recently, the Federal government has been pressing the States to shoulder more of the burden of S-Bahn subsidies; in those cases, such as Munich, where it has not done so, further Federal grants for capital investment in the system are unlikely.

By far the biggest single factor favouring rail systems in Western Germany, however, has been the system of capital grants. In 1966, an additional fuel tax of 3 Pf/Litre was imposed, to be devoted in equal proportions to new road and rail infrastructure (stations and car parks were included, but not rolling stock). The Federal government would use this to pay up to 60% of the cost of such works, the remainder being found by the State (out of vehicle license duty, which it receives rather than the Federal government) the City and (usually the rolling stock) the Federal railway. The total amount paid out in grants is, of course, limited by the amount of tax collected, but the rate has been increased on several occasions. By 1972, grants approaching DM1,000m p.a were being paid out nationally for public transport infrastructure, and a similar amount for roads. In 1973, a second programme of similar dimenions was launched. The fact that such public transport grants were limited to infrastructure, and excluded infrastructure to be shared with other traffic (such as that for on-street trams) naturally meant that the bulk of it was spent on new S-Bahn and U-Bahn routes.

## 4. Public Transport Policies

Whether because of these organisatinal differences or for other reasons, the policies followed towards public transport pricing and service patterns have differed radically between Britain and West Germany. In Britain, the first manifestation of the formation of a PTE in the eyes of the general public was usually when the buses began appearing in a different livery. Gradually, some rationalisation of route structure, particularly in areas formerly served by more than one operator, began to take place and a common fare structure was implemented for all bus services in the PTE area. A few specific bus-rail interchanges have been built, and all PTE's have joint bus-rail travelcards (in some cases, at a premium above bus-only cards) but through ticketing between bus and rail has remained the exception rather than the rule. Only Tyne and Wear PTE has implemented a full zonal ticketting system for bus and rail services and corresponding service revisions in order to encourage maximum use of its metro for the trunk part of journeys.

By contrast, tariff reform has been the first objective of the German VV. In every case a zonal fares structure for both single journeys and travelcards has been implemented, offering the possibility for any passenger to interchange between modes without incurring a fares penalty. Moreover, bus and train networks have been extensively revised in order to serve primarily as a feeder to rail services except for those corridors without rail services. Obviously, this involves disadvantages,

particularly for shorter-distance passengers or those (such as the elderly) who are less mobile, compared with the British situation where most areas still have through buses to the city centre. On the other hand, the VVs seem to have expended great efforts on making interchange as simple as possible through station design, first-rate provision of signposting and maps and on-vehicle announcements.

## 5. Investment Appraisal

In both Britain and West Germany the chief technique utilised in the appraisal of suburban rail investment has long been that of cost-benefit analysis. Yet here again there are important differences in approach between the two countries. In Britain, a fairly narrow view has generally been taken in rail cost-benefit analyses, concentrating on time savings and operating costs. A wider framework for the appraisal of all relevant effects has been developed for trunk roads (Leitch, 1977), and there has been pressure from some of the PTEs (notably Greater Manchester) to develop a framework for public transport investment appraisal which similarly recognises a wider range of benefits not encompassed by traditional cost-benefit analysis. In 1982, the British Department of Transport introduced a new computer model to appraise public transport subsidies (DTp, 1982), but it again only considered operating costs, revenues and time savings. Work is proceeding to incorporate accidents into the evaluation, but there is no set procedure for examining environmental and other community impacts.

Applicants for grants under the German scheme face a formal appraisal procedure which was recently revised (Bundesminister fur Verkehr, 1981) and covers a far broader range of effects. Procedures are embodied for quantifying the effects of the investments on the probability of getting a seat, on public transport accessibility to the city centre, on vehicle emissions, noise, energy consumption, land-take, accidents and whether they affect development, conservation and water-catchment areas. Whilst some of these factors (including air pollution) are valued in money terms in the benefit-cost ratio, all are weighted and incorporated into a supplementary indicator of the value of the project. There is even then a further formal procedure to take into account remaining intangible effects on the regional economy and environment.

In practice, it appears that the benefit-cost ratio is still dominated by the traditional time savings and operating costs. How much weight is given by decision-takers to the more broadly based indicator is not known, but is seems that in practice environmental considerations play a major role in decisions. Certainly, this is true of the case study of Munich discussed in the next section.

## 6. Munich and Manchester - A Specific Comparison

The differences in approach between West Germany and Britain may

be illustrated graphically by comparing the position of rail services in Munich and in Manchester (Table 2). The Munchener Verkehrsverbund and Greater Manchester PTE serve similar populations, although MVV serves a far wider area of rural hinterland. In the mid-1960s, the rail systems of both areas faced somewhat similar problems. Both had a mixture of electric and diesel suburban systems converging on two separate stations (Main and East in Munich; Victoria and what became Picadilly in Manchester). The DB suburban system in Munich transported around 160,000 passengers on a typical working day; that of Greater Manchester perhaps a little over 100,000. Since then, the major developments in Munich have led to rail traffic almost quadrupling even when the U-Bahn's (which have largely replaced the old tramways) are ignored; rail traffic in Greater Manchester has experienced a modest decline.

Rail developmens in Munich owed a great deal to the environmental and congestion problems in the historic city centre brought about by population growth and congestion (Lippert, 1980). Both the tramway system and private road traffic converged on the central square (Marienplatz) and the main street Neuhauser-Kaufingerstrasse) of the old city centre. The location of the river, with a limited number of crossing points, worsened these problems. Pedestrianisation of the central areas, and removal of major flow of traffic underground, was seen as highly desirable. For many years, there had been plans to link the Main and Easat stations by a city centre tunnel, both to improve accessibility to the city centre from suburban rail lines and to permit through running between the suburbs, with its attendant benefits to passengers and operator. In 1965, construction of this 4 km tunnel began, together with electrification of the remaining diesel operated suburban lines. At the same time, construction began of a North-South underground railway to be operated by the City and to provide interchange with the East-West tunnel at the Marienplatz. These were the beginnings of the S-Bahn and U-Bahn networks respectively. Naturally, the siting of the 1972 Olympics in Munich led to a need to complete the new system by that date, and in fact by then a 400 km S-Bahn network (based largely on existing suburban services) and a 13.5 km U-Bahn line were open, both serving the Olympic stadium.

It was an important part of the plan that interchange between public transport modes be as attractive as possible. Within the city, the S-Bahn should play a similar local role in the East-West direction as the U-Bahn North-South, in addition to its longer distance function. Both should relieve the city centre of surface public transport traffic by the maximum degree of interchange at points further out. To facilitate the necessary integration between the two operators, there was formed in 1972 the Munich Traffic and Tariff Union (MVV).

Since 1972, a high level of investment in rapid transit in Munich has continued. A further 26 km of U-Bahn and 82 km of S-Bahn are now open, and further extensions of both are under construction or planned. Free car parking has been provided at

many stations, and since 1976 no new car parking spaces have been permitted in the city centre. U-Bahn construction is planned to continue until all the main radial tram routes have been replaced. Thus, by the end of the 1990's, the tram system should have completely disappeared, but a study is now being made to decide whether earlier replacement with buses is desirable. Apart from an extension to the new airport, the major need for the S-Bahn system is more segregated tracks, to increase capacity and reliability on those sections shared with heavy main line rail traffic, more rollingstock junction improvements and expansion of the electricity supply system. Perhaps the biggest problem is overloading in the peak. Further investment in rolling stock and track capacity is being prevented by the reluctance of both the Federal and State governments to bear the resulting increased operating deficit. Of the total investment in the S-Bahn network of some DM 1,100m, DM 615m was covered by Federal government grant, the remainder being shared between the Bavarian State, the City of Munich and the Federal Railway. Whilst the financial arrangements do not permit the ready identification of the amount of operating subsidy provided to the S-Bahn system, it should be noted that for the undertaking as a whole, the proportion of operating costs covered by revenue has risen from 42.9% in 1973 to 51.5% in 1982, despite very few increases in fares; in absolute terms the subsidy has of course increased.

Argument continues as to whether the investment has proved worth the enormous sums of money involved, and it has been suggested that the distribution of benefit - with the greatest benefit going to long distance commuters - has been inequitable. Nevertheless, the achievements are impressive. According to the VV, public transport has increased its share of motorised trips in Munich from 37% to 50%, the number of persons killed in road accidents has declined by 25% and the environment of the city centre has been greatly enhanced. (Lippert, 1982)

In Manchester, there has been a similarly long history of proposals to link the two halves of the suburban network by a city centre tunnel, but the modern history of the project really begins with the SELNEC Transportation Study. In 1973, the PTE published proposals for a city centre tunnel and the electrification and upgrading of the remaining diesel operated suburban lines which would feed into it. (SELNEC PTE, 1973). However, whilst the proposals were developed to the stage of being virtually ready to go to contract, Central government refused to provide grant-aid. As a result, the whole project was dropped in 1977. Various alternatives have since been developed, the latest being a light rail system utilising the existing suburban rail routes and crossing the city centre on street, (BR/GMC/GMPTE, 1984) but no major investment in the Manchester rail network has yet taken place. Consequently, many services are still operated by diesel multiple units of late 1950's design, whilst the Bury rail service is provided by obsolescent non-standard electric equipment from even earlier days. Much of the infrastructure (including the stations)

retains an air of Victorian soot-beladen steam days, and sometimes of total dereliction.

At the same time, a modest loss of patronage and rising costs have led to renewed pressure on the very limited resources available to the PTE as a result of central government restraints. (GMPTE, 1983). Although Greater Manchester rail services only fall a little short of the overall rate of cost coverage achieved by the MVV, and the PTE bus services cover a much greater proportion of costs, leading to an overall revenue/cost ratio of around 70%, it appears that in the absence of major investment the Manchester local rail network may gradually close down, leaving public transport provision solely to the bus, which is already the major partner (table 3).

Perhaps it is unfair to base the comparison on the sorry story of Manchester. Other PTE's have fared somewhat better regarding rail investment. In particular, Tyne and Wear, Merseyside and Greater Glasgow have all enjoyed considerable investments, with consequent growth in traffic, although nowhere on the scale experienced by Munich. Even the West Midlands provides something more of a success story, with a low cost new diesel service across the city and a general growth in traffic on all lines that have seen improved services and interchange facilities. In any case, the depressed state of the British economy has perhaps provided neither the resources nor the need for investment in suburban rail services on the German scale. But as a comparison of two extremes in rail policy, Munich and Manchester provide an interesting contrast.

## 7. The Future

Although the recession is now affecting West Germany, and as in Britain one of the responses of the government has been some tightening up on resources for public transport subsidy and investment, so much has already been invested that the important future role of suburban rail services seems assured. The Verkehrsverbund organisation appears to be widely regarded as a success, and there seems little likelihood of any reversal of the trend towards integrated public transport fares and services.

Not so in Britain. Current government policy threatens the future of the Passenger Transport Executives from two directions. Firstly, the government proposes to abolish the Metropolitan County Councils with effect from 1986. Responsibility for local public transport in the conurbations will pass downwards to the next level of local government - the Metropolitan district. These will nominate members to form a joint board which will determine the policy of the PTE, but it appears that any district that chooses will be free to opt out and make its own arrangements. Superficially, this may sound similar to the arrangement in West Germany, particularly where a VV serves a group of cities. But there is an important difference. In the German case, the bulk of the subsidy for suburban rail services has still come direct to the Federal railway from the Federal

government, whilst generous investment grants have also been available. There was therefore little financial incentive for individual authorities to opt out. In any event, the importance of good public transport in urban areas, and the best way to secure it seem to be far less of a political issue than in Britain.

For a British local authority faced with severe restraints on expenditure and major differences in views on the appropriate levels of fares and services, the incentive to opt out will be far stronger, particularly for those authorities which are poorly served by rail yet will be expected to share the bill for rail subsidies. This would mean an end to what progress has been made towards integrated fares and service plannig between modes, and would directly threaten the future of those rail services (the majority) whose rationale depends on inter-district movements (Table 3). As a line-haul mode, mainly carrying longer trips, rail would naturally suffer most from such developments.

Simultaneously, there is a further threat. The current government has already revised the legislation regarding competition in the bus industry to place the onus of proof as to why any operator should not be granted a licence to run whatever service he wishes on the objector. So far, this change has had little practical effect; only a handful of private operators have taken the opportunity to enter the local bus business. The government is now considering further relaxation of a licensing system to encourage competition in the urban bus industry. Given that rail tends to operate on the longer more densely used corridors, it may well be here that new entry proves most attractive. Private operators may be able to attract some patronage away from rail, for instance by offering through services to areas served by feeder buses. A minor example of this has already occurred in Tyne and Wear, where bus services which used to cross the river to central Newcastle from the South were rearranged to feed into the Metro at Gateshead. Not only does this exploit the low marginal costs of the Metro: it also relieves the bridges and streets of Central Newcastle of a large number of buses. But an interchange so close ( only some 3 kms) to the City Centre is far from universally popular, and a private operator has already gained a licence to resume through bus services to the City Centre on one route.

The immediate future for suburban rail services in Britain, then, does not look good. Already, financial constraints are obliging the PTEs to look carefully at the benefits they receive from their less well used rail services to see if they give value for money. But a combination of rising subsidy requirements, urgent investment needs and the replacement of integration with bus by competition could see an end to many of the better used lines as well.

## 8. Conclusions

International comparisons are often more valuable for the questions they raise than for the answers they provide. Certainly, it has not been part of this paper to seek to prove that suburban rail investment in West Germany has been excessive or in Britain too low. But it is questionable how far the evidence assembled goes to fulfil even the less ambitious aim of understanding why the two countries should have taken such different approaches to the issue. Clearly, the forms of organisation and finance adopted for metropolitan public transport in West Germany were far more favourable to the developmewnt of rail transport than in Britain. But to say that is only to raise again the question as to why this was the case. The answer must lie deep in the politics, institutions and history of the two countries. For whatever reason, there appears to be a large degree of concensus in West Germany that the environmental advantages of public transport for trips to and in the city centre require that it gain, or retain, a large share of this market, and that a modern rail system placed underground in the centre is an essential part of this strategy. No such concensus has ever emerged in Britain, and at the moment the tide is running against it.

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Table 1

Suburban Rail Patronage, Population and Land Area of British PTEs and West German S-Bahns

| | Rail Passenger km (m) | Population (m) | Area (sq. km) |
|---|---|---|---|
| (a) Britain | (1981) | | |
| Strathclyde | 706.9 | 1.9 | 1175[1] |
| Greater Manchester | 352.0 | 2.6 | 1287 |
| Merseyside | 345.3 | 1.5 | 652 |
| West Midlands | 336.6 | 2.6 | 899 |
| West Yorkshire | 146.6 | 2.0 | 2039 |
| South Yorkshire | 55.2 | 1.3 | 1561 |
| Tyne and Wear | 38.4 (107.1[2]) | 1.1 | 540 |
| (b) West Germany | | | |
| Munich | 1975.2 | 2.3[3] | 3078[3] |
| Rhine-Ruhr | 1545.6 | n.a. | n.a. |
| Hamburg | 1367.8 | 2.5 | 3000 |
| Frankfurt | 828.7 | 1.2 | n.a. |
| Stuthgart | 734.2 | 0.6 | n.a. |
| Hannover | 399.8 | 1.1 | 2289 |
| Bremen | 104.7 | 0.6 | n.a. |
| Cologne | 35.5 | 1.2 | 472 |

Notes

1: Source UITP (1979)
2: Including Tyne and Wear Metro (for 1982, the corresponding figure would be 227.2, as more of the metro was open).
3: Source MVV Annual Report (1982).

Source

Britain - passenger km: BR 1981 Section 20 Claims
- population and area: 1981 Census
West Germany - passenger km: DB Annual Report 1981
- population and area: UITP (1979)

Table) 2

Comparative Statistics for MVV and GMPTE

| | Munich (1982) | Greater Manchester (1981/2) |
|---|---|---|
| Population | 2.3 | 2.6 |
| Area (sq. km.) | 5270 | 1287 |
| Passenger cars (m) | 1.05 | 0.62 |
| Passenger journeys (m) | | |
| Bus | 166 | 353 |
| Tram | 113 | 0 |
| Metro | 158 | 0 |
| Suburban Rail | 185 | 25 |
| Total | 622 | 378 |

Source

Munich: MVV Report 1982
Greater Manchester: Population and area, 1981 Census
Passenger cars, Transport Statistics Great Britain 1971-81
Passenger journeys, GMC (1983)

Note

Multi-stage trips are double-counted in these figures. In Munich, the time number of journeys is estimated at 464.

Table 3

| | % of rail services crossing district boundaries | % of journeys to work by rail crossing disrict boundaries |
|---|---|---|
| Greater Manchester | 100 | 81 |
| Merseyside | 64 | 71 |
| South Yorkshire | 100 | 66 |
| Tyne and Wear | 100 | 70 |
| West Midlands | 71 | 52 |
| West Yorkshire | 60 | 44 |

Source

Gwilliam, May and Bonsall (1984) Vol. 2 p. 23, 25.