



**DESIGN OF NEW FINANCING SCHEMES
FOR URBAN PUBLIC TRANSPORT
- the role of private finance**

**Chris Nash, Bryan Matthews, Pura Granero and Nick Marler
Institute for Transport Studies, University of Leeds***

Paper presented at THREDBO7 2001: Molde, Norway

* This paper draws heavily on work we undertook for the EC Fourth Framework project Fiscus and we wish to acknowledge our indebtedness to our partners in that project for discussion of the ideas it contains.

1. Background and Introduction

Current pricing instruments for urban transport often result in on-going financial deficits and/or generate insufficient capital funds to finance, what are sometimes major, investment needs. The traditional, and in many places the prevailing, means of financing these on-going deficits and investment needs is through public budgets. However, this is increasingly subject to criticism as other sectors of public concern place competing demands on public budgets. These criticisms have created a pressure to identify alternative means of generating project finance, both to cover capital investment needs and to cover current costs, including the costs of servicing the capital. Whilst capital may be provided by either the public or the private sector, private finance is not in general an option for covering current costs. For this the options are user charges, public budgets, value capture and cross subsidy. This immediately illustrates the importance of looking at funding packages rather than individual instruments, as private finance always needs to be associated with other sources of funding to service the capital.

Private finance is often advocated as a way of relieving pressure on public budgets and increasing available funding, as well as introducing private sector enterprise and incentives for efficiency. But there is a conflict between private profitability and allocative efficiency, not only because unprofitable projects may be socially worthwhile or vice versa but also because members of private consortia may stand to gain for instance for overspecifying (or 'gold-plating') the project. Key factors are the extent of competition and the sharing of risk.

Two broad approaches to the introduction of private capital into urban public transport may be identified, each with its problems. Outright privatisation will lead to key decisions being taken on a commercial rather than a social basis. Therefore some form of public-private partnership, in which the public authority specifies the outputs and invites bids from the private sector to provide it, for instance under a franchising arrangement, looks the most promising approach. Within this approach a complicated range of options is available. A third approach which has been successful in a limited number of cases is that of value capture. This may be viewed as a form of public private partnership whereby the public sector seeks contributions to the costs of transport financing from the private sector in recognition of the benefits that the private sector receive from transport. These contributions may be voluntary, where a developer wishes to

ensure or accelerate the implementation of a particular project, or compulsory.

A key factor in the introduction of private capital into public transport is the sharing of risks. Commercial profit is dependent on the investment time, interest rates and risk management. Because of the long time periods involved, these risks may be very high. In fact, Banister (1995) believes that, generally, investment in transport infrastructure is seen as having a higher risk than investment in other types of projects and, therefore, risk and the way it is shared, is a major issue in involving private financing for transport infrastructure investments (Banister, 1995). The following main classes of risk may be distinguished (McKay, 1989, in Rienstra and Nijkamp, 1997):

- political risks - for example, changes in transport policy by the government;
- financial risks - for example, fluctuations in interest rates or in exchange rates etc;
- construction risks; for example, delays, unexpected and higher costs etc.;
- operational risks; for example, damage by accidents, vandalism etc.;
- commercial risks; for example, wrong cost estimates, wrong estimates of the traffic volume, unexpected competition, etc.

In an outright privatisation most of these risks will be borne by the private sector. However, it is generally accepted that one of the strengths of public private partnerships is that each risk can be borne by the party most able to control it. That means that political risks, and some commercial risks (for instance the influence on traffic levels of government policies) are best retained by the government, whilst other risks (e.g. construction costs or operational risks) are best borne by the private sector.

In what follows we review briefly the alternatives of outright privatisation and of public private partnerships. We then discuss four examples of public private partnerships from the rapidly growing British experience in this field before drawing our conclusions.

2. Outright Privatisation

Where transport infrastructure or operations are totally privatised then it is generally expected that the private sector will fund new investment (Marler et al, 1998). The private sector may directly finance a new infrastructure investment, as happens with many rail projects, with the user of the infrastructure repaying the loan over its life. Alternatively, the private sector may be responsible for both infrastructure and operation, as is the case in the UK aviation industry, with the private sector operator obtaining its revenue directly from the user – this might be termed ‘pure privatisation’,.

In both cases, the emphasis will be placed on obtaining a financial return through revenues from user charges. This will mean that financially viable projects, which do not take wider social policies into account, will take priority over economically viable projects which do, and that, where projects are not otherwise financially viable, prices will be set above the optimum. This could distort, perhaps significantly, the performance of any overall strategy. For example, higher fares designed to produce a return on investment in a new urban rail system may reduce patronage and hence the contribution to congestion relief and environmental protection.

The attraction of this approach lies in its apportionment of all risks and financing obligations to the private sector. However, before it becomes involved in such an approach the private sector would require a considerable degree of freedom from government and regulatory constraints, something which few governments are prepared to consent to in anything but a limited number of cases. Consequently, this approach is, particularly in urban areas, the least common.

The results of the strategic modelling of urban transport policy packages in nine European cities in the project FATIMA (FATIMA, 1999), clearly indicated that the greatest benefits occurred under funding regimes (public or private) in which government retained control over policy on pricing and service levels. This may be associated with continuing public sector subsidies, which may be financed from general taxation or via ear-marked taxes (such as road pricing), value capture or cross-subsidy.

3. Public-private partnerships

Much more common than pure privatisation is for public-private partnerships (PPPs) to be formed between governments and private sector organisations. This places government in the role of 'facilitator', provides a mechanism for it to make financial contributions in recognition of non-financial benefits and enables a sharing of risks and responsibilities between public and private sectors. According to Miles (1996), public/private partnerships in general have the potential for creating synergy between the public service culture and the entrepreneurial approach. He specifies five desirable features for a successful public/private partnership. These features are:

- a joint interest in delivering an effective service;
- a co-operative effort, with clear division of responsibility;
- shared cost and revenue relationships, with more flexibility than if the public sector operates alone;
- private sector interest in the well-being of the customer and quality of service;
- public sector concern for the wider public interest, especially the well-being of non-users.

Two broad categories of PPP may be defined, as follows:

- Start-up agreements - whereby public funds are made available to assist with 'start-up' costs over, for example, the first three years of a project, after which time the private operator must sustain the project into the future;
- Franchising - whereby, in general, government awards private companies or consortia rights, on the basis of a competitive bidding process, to operate services in a predefined area or corridor, usually without fear of competition and for a sufficiently long period for investment to be recuperated and a profit made.

Under a conventional franchise contract, the franchisee pays the franchisor for use of his property rights, generally through the means of a competitive tendering process. In the case of transport where infrastructure is often operated at a deficit, this situation may be reversed: the transport

authority (franchisor) compensates the private company (franchisee). Broadly, there are two different kinds of contracts: a given transport system is transferred to the company which offers to operate it at the lowest costs or the contract is transferred to the company which offers the best transport system for a given budget. Clearly, such systems need detailed agreement on service levels and operating conditions, in order to meet both efficiency and equity criteria and other transport objectives (Rienstra and Nijkamp, 1997).

Midgley (1994) identifies the following different forms of franchise contract:

- BOT: Build-Operate-Transfer (the usual approach: facility paid for by the investor but is owned by the concessionaire; the investor maintains and operates the facility during the concession period) with the following variants
- BOO: Build-Own-Operate: Investor retains ownership, operates in perpetuity via an open-ended franchise
- DBOT: Design-Build-Operate-Transfer: as BOT, with design
- BOOS: Build-Own-Operate-Sell: at the end of the franchise period the state pays a residual value
- BOOT: Build-Own-Operate-Transfer: as BOOS, without terminal payment
- BOTT: Build-Operate-Training-Transfer: investor is required to provide training before the facility is transferred (mainly for developing countries)
- DBFO (design, build, finance and operate) may be viewed as a special case of DBOT.

In addition, there are also cases of 'non-build' franchises, e.g. in the case of bus services in London, of rail services throughout Great Britain and of public transport operations in many French cities whereby the franchisee is required to operate and maintain only.

British Experience

Background

Since the early 1980s, all major British urban public transport investments have been required to have a substantial private sector component. There is therefore extensive British experience to draw on. In what follows we discuss four projects that are either completed or underway.

Manchester Metrolink

Metrolink is the name of the light rail system in Manchester. It was opened in 1992 and is widely recognised as being a successful project, not only in terms of its patronage and performance but also as an example in public private partnership. The private sector has borne a share of the risk and has met part of the financial cost of the project. Manchester Metrolink was the first major case in Britain of an urban public transport project with private sector participation.

Metrolink was initially devised by the local public transport authority in the early 1980s on the assumption that it would be built, financed and operated by the public sector. However, in the course of the local public transport authority putting together their case for matched central government funding, central government raised the issue of private sector involvement. The result was that the application for matched central government funding was approved on the basis

that private sector involvement in the project would be sought.

A number of options for involving the private sector were considered. However, this was not straight forward as urban rail services, including light rail services, tend to be loss-making in financial terms. Initially, the local public transport authority's favoured approach was that of separating the infrastructure from the operations, keeping the track, stations and signalling within the public sector and charging a private sector operator, who would own the rolling stock, for the right to operate services. The loss-making nature of the system, however, meant that this arrangement would have meant a commitment to on-going annual subsidy which was a great concern to central government. The prevailing mechanism was that of Design, Build, Operate and Maintain (DBOM), the principal features of which are threefold. Firstly, a single contract to design and build the system and then to operate and maintain it for a fixed number of years (15 in the case of Metrolink) is let. Secondly, the contractor pays the public transport authority for the right to operate services for that fixed period through entering into a concession agreement. Thirdly, following these two financial transactions the private sector contractor bears the commercial risks of operation over the life of the concession agreement. Together, these three features mean that:

- longer term operating and maintenance issues are properly considered at the 'design/build stage
- the private sector, through the concession agreement, makes a payment which goes to partly offset the construction costs
- the public sector's financial outlays are all at the outset of the project, meaning that there is no on-going commitment to subsidy and commercial risk is transferred to the private sector. This is often thought to promote efficiency.

A key factor in the success or otherwise of Metrolink (and many other public-private partnerships) was the terms of the operating concession. This document is the means by which the public transport authority exerts its legally enforceable influence over the operation of Metrolink by a private sector operator. As such, it is also a key determinant of the level of private sector interest and hence competition for the franchise. The Metrolink operating concession seeks to balance public sector policy objectives with private sector commercial objectives by:

- specifying minimum levels of service, in terms of frequency, periods of operation and vehicle capacity
- including penalty clauses for failure to run 98% of scheduled vehicle km or for early termination of the agreement
- allowing the operator to apply to run more or less than the minimum levels of service
- giving the operator freedom to set fare levels (subject to commercial pressures resulting from bus competition along the route).

Tyson (1997) reports that "there was considerable interest at the pre-qualification stage and effective competition in the two stages of the bidding". The winning consortium comprised GEC-Alsthom, Mowlem, AMEC and GM buses. However, the payment for the operating concession, ie the private sector financing contribution, was only £5m, a small proportion of the £140m total

system cost.

Very soon after the opening of the first phase of Metrolink in 1992, further phases were being proposed. The first of these to be developed was a proposal to extend the system to Eccles and Salford Quays. This project gave the public transport authority the opportunity to open a new round of bidding for a similar DBOM style contract to design and build the extension and then to operate the whole Metrolink system. Though the incumbent operating consortium bid, a new consortium, Altram - comprising John Laing, Serco and Ansaldo Trasporti - won the contract. Many of the characteristics of the resulting operating concession were similar to that for phase 1. However, the striking difference is that the payment for the operating concession was, this time, £90m compared with a new construction cost of just over £100m (though project management and other costs amount to a further £40m). In addition to this, £13m private sector developer contributions were secured in the form of cash or land transfers. This second round of bidding has, therefore, proven extremely useful in terms of leveraging in further private sector financing. Bidding is now underway for a third franchise involving substantial further extensions of the system.

Whilst Manchester Metrolink has proven that it is possible to involve the private sector in financing and risk-management of urban public transport schemes, care should be taken when drawing conclusions for other potential schemes. "The key factor in determining the extent of private sector interest and funding is the commercial performance of the system" (Tyson, 1997). Manchester metrolink performs well in this respect and the second round of bidding was able to benefit from the track record (however brief) established by the first phase of the system. Many urban public transport operations do not perform so well.

East Leeds Quality Bus corridor

Leeds City Council have, since the early 1990s, had proposals for a quality bus corridor along the A64, a radial corridor to the east of the City. Following the publication in 1998 by First Group Plc, one of the largest private sector bus operators in the UK, of their 'Twin-track approach', the scheme has been the subject of considerable attention.

First Group's Twin-Track approach is a statement of their willingness to provide funding for infrastructure improvement projects in partnership with funding from other, public sector, sources. In the light of this, Leeds City Council and First Group, along with another major private sector bus operator, Arriva, entered into negotiations over the East Leeds quality bus corridor. The emerging scheme involves a guided busway, major upgrading of bus stops along the route and a host of general quality improvements along the corridor, at an approximate total cost of £10m. In addition, new guided buses will operate along the route. FirstGroup and Arriva together have made a commitment to providing up to half of the total infrastructure costs, in addition to providing the new vehicles which will operate the route. On the basis of this commitment, central government has committed £5m over two years to the project.

Whilst the agreement would be with First Group and Arriva, it is not possible to restrict use of the upgraded facilities to these two operators. There will be 'open access' from other potential

entrants to the corridor as the local highway authority do not have the powers to restrict access to the public highway. The only limitation will be that use of the guideway may only be made by vehicles which conform to the Construction and Use Regulations defining a guided bus. This 'free rider' issue has been a concern to all those involved in the negotiations. There is a possibility that there may be potential to require a payment of some description from additional operators who use the corridor but this is, as yet, unclear.

Construction is now underway and the East Leeds Quality bus corridor will represent the first significant example, certainly in the UK at least, of private sector bus operators providing financing for a bus infrastructure project.

Leeds Supertram - Contributions from new developments

The Leeds Supertram is a light rail scheme connecting the centre of Leeds to a number of business and residential locations along three corridors to the south, north west and east of the city of Leeds and with a substantial park and ride facility adjacent to the strategic motorway network. The first route (that to the south) gained planning approval in the early 1990s but was unsuccessful in securing the approximately £130m funding required. Central government made it clear that the project was more likely to receive central government funding if there is also a significant (though unspecified) contribution from the private sector. Partly in response to this, Leeds City council, in collaboration with Metro, the local public transport authority, has pursued a number of methods of securing this private sector involvement. One of those methods is through the planning approval process.

When developers seek planning approval for new developments on or adjacent to the Leeds Supertram corridor negotiations are entered into for their financial assistance towards the Supertram, or a substitute public transport, scheme. The results of these negotiations are incorporated in a Section 106 agreement; this is a contract detailing the conditions of the planning approval. If a planning application is accepted in outline, subject to a number of conditions, these conditions are then formally stated within the section 106 agreement. The planning authority is then able to grant its approval to the application. The Section 106 agreement is a legally binding document, in general, taking effect as of the completion or opening of the new development.

At the time of preparing the case study approximately £2m had been promised in this way, about £0.3m of which had materialised. The hope of Leeds City council was that this could be approximately doubled over the next year or so. In terms of the overall scheme cost of south Leeds Supertram (£130m) this clearly represents a fairly insignificant funding source.

This approach of securing developer contributions is set out in a guide, published by Leeds city council. The approach is relatively unusual and at first, it was viewed as akin to selling planning applications. However, more recently it has gained greater acceptance and was upheld in an inquiry by the planning inspectorate.

With the passing of the 1999 Transport Act, a much more significant method of funding came into the picture, with the legalisation of the introduction of urban road pricing on the basis that

the local authority should retain the revenue for reinvestment in the urban transport sector. This would provide a substantial future revenue stream with which to service private investment in supertram, and accordingly Leeds City Council developed proposals which initially would be based on a simple cordon around the city centre. More sophisticated forms of road pricing might follow. However, with the announcement of the 10 year transport plan in 2001 it became apparent that much more substantial public sector funding for urban public transport would be available, including sufficient funding for the Leeds supertram to go ahead without the income from road pricing. Accordingly interest in road pricing in Leeds has declined, with the City Council now saying it wishes to see supertram running to provide a high quality alternative to the car before road pricing is introduced.

London Docklands developer contributions

Throughout the 1980s the Docklands area of east London, just north of the river Thames, was subject to substantial redevelopment for both commercial and residential purposes. New transport infrastructure was viewed as a key factor in both supporting and driving this redevelopment and, consequently, there has been substantial investment in public transport in Docklands over the past 15 years.

The first stage of this was the Docklands Light Railway (DLR) which gained approval in the early 1980s, began construction in 1984 and was opened (to time and budget) in 1987. At a cost of approximately £70m, the original DLR was a low cost railway project whose funding came from central government (50% from Department of environment on development grounds and 50% from Department of Transport on transport grounds).

In 1985, with construction of the DLR underway, a massive £4bn high quality development was proposed for Docklands at Canary Wharf. The 30 HA site, with a potential working population of over 50,000, constituted the biggest commercial development in Europe. As such, it took everyone somewhat by surprise.

It soon became clear, even before construction of the DLR was complete, that the system would be insufficient for the scale of demand associated with Canary Wharf and other secondary developments. Original designs for the DLR catered for a forecast patronage of 25,000 passengers per year but subsequent to the Canary Wharf proposals forecasts escalated to up to 65,000 passengers per year. In addition, the developers were unhappy with the poor connections to the financial centre of London offered by the DLR. Therefore, a programme of works was identified, at a cost of £276m, to expand the DLR's capacity fourfold and to extend the system to Bank, providing links into the London Underground and to the financial centre of the City.

With development driving the planning of the system expansion, significant developer contributions of approximately £100m were secured from the developers of Canary Wharf. In addition, the speed at which the transport development took place, at least in part due to the developer's involvement, was also remarkable; from the conception of the expansion project in 1985, the 'City Extension' to the DLR was planned, funded, authorised, constructed and opened by 1991.

However, further attempts to involve the private sector in the expansion of the public transport network in the Docklands area have been less successful. Firstly, the 'Beckton Extension' to the DLR was designed to improve access to the Royal docks area of Docklands and to provide connections with the North London heavy rail line. At a cost of £280m, "the idea was for the extension to be funded from the future sales of land, enhanced by the additional value the railway itself would create, and managed through an independent land holding company" (Willis, 1997). Land prices had risen substantially in the area around the original DLR since its opening and the same process as anticipated in the area around the Royal Docks. However, soon after the letting of the contract in 1989 the property market collapsed and, with it, the proposed funding mechanism. Central government, through the Department of the Environment, was left to pick up the bill for the project.

The most recent development in the area is the Jubilee Line Extension (JLE) project. This is a large scale project extending the London Underground into and through the Docklands area, providing connections with the West End, with the rest of the underground network, with the mainline stations at Waterloo, London Bridge and Stratford, with the Docklands Light Railway and with bus services at 7 key stations and with a park and ride interchange at the North Greenwich station.

Though the initial ideas for the JLE were proposed in the mid 1970s, "until the late 1980s development boom and the impetus given to the area by the initial investment in the Docklands Light Railway, the prospect of an underground line being built in Docklands was remote" (Willis, 1997). Fears from the London Docklands Development Corporation (LDDC) about the capacity of even the expanded Docklands Light Railway to cope with the rapidly increasing working population in the area and growing pressure from developers themselves, fearful for the success of their investments, pushed the project up the agenda.

Negotiations, involving the Canary Wharf Developers, London Underground and the Department of Transport, resulted in a £1.7bn JLE project being given the go ahead in the early 1990s. Of this cost, Olympia and York were to contribute £400m. Two options for its route west of Docklands were considered and thanks to both strong planning and developer pressures, the option via Waterloo was adopted. However, when the first £40m instalment of the £400m developer contribution became due in 1992 Olympia and York were unable to pay and weeks later went into administration. Their interests were taken over by Canary Wharf Ltd, a consortium of 11 banks. The JLE was then halted whilst the government sought the funding from alternative sources. In late 1993, having emerged from administration, Canary Wharf Ltd contributed £98m immediately with a further £300m phased over 25 years from opening of the JLE. In real terms, however, this £300m equated to just £180m net present value so the level of private sector contribution was diminished. Furthermore, penalty clauses had always been attached to the developer contributions such that these contributions would be reduced in the event of the JLE opening behind schedule, which it will. Meanwhile, the most recent estimate of the total outturn costs of the JLE has increased to £2.9bn. Therefore, developers have been able to exert influence over the planning of a major transport scheme on the basis of their making a significant contribution to the overall costs of the project. These contributions have, however, been successively diminished over the construction phase of the project whilst the overall project costs

have escalated.

4. Conclusions

Private finance may be used to finance urban public transport schemes in a variety of ways. It is clear that there is a strong incentive to develop private finance as a way of supplementing government budgets and of increasing the efficiency with which the transport system is provided, but they also demonstrate some problems:

- outright privatisation will lead to key decisions being taken on the basis of commercial rather than social considerations. Governments who wish to maintain a degree of control over the transport system and to use it to pursue transport policy objectives have therefore tended to favour public-private partnerships of one form or another
- the private sector will only invest in transport infrastructure or operations if there is sufficient return to reward them for any risks involved. This may make this form of finance relatively expensive; alternatively it may lead the authority to reduce their degree of risk by granting them extensive monopoly powers. This is less worrying if the franchise is awarded by means of competitive bidding, as the discipline of this process should force the operator to act efficiently, and the franchise terms may restrict the potential use of monopoly power by controlling the fares and/or services to be provided

It is generally recommended that the franchising approach is the best way of obtaining private sector capital for transport projects without the public sector losing control; within this broad approach it has however been seen that a complicated set of options exists.

The combination of franchising and the pursuit of social objectives will generally mean that finance from sources other than user charges will be needed either to contribute towards providing the capital for investment or for servicing private capital (or both). A popular approach has been to seek to rely heavily on, developer contributions supplementing the private capital. However, in the cases we have examined only in the London Docklands, where improved public transport was crucial to the major scheme of a single developer, was a substantial developer contribution forthcoming (and even in that case the developer in question suffered severe financial problems). Elsewhere, whilst considerable success was achieved in attracting private capital into urban public transport investment, a continued public sector contribution was needed.

This public sector contribution will be made much easier in future if road pricing is introduced to provide cross subsidy from road users. There is evidence that such cross subsidy is both economically efficient and politically acceptable. Following the passing of the 1999 Transport Act it appeared that a number of cities were interested in such a package in order to finance public transport schemes they had long planned but been unable to fund. However, with the 10 year plan making much greater public sector funding available, interest in this package has waned.

REFERENCES

Banister, D. (1995), 'Private Sector Investment in Roads: The Rhetoric and the Reality'.

Transport and Urban Development, pp 272-277. E&FN Spon, London.

FATIMA (1999). Final. The Institute for Transport Studies, University of Leeds.

McKay, C. (1989), Möglichkeiten der privatwirtschaftlichen Finanzierung von Verkehrsinfrastruktur-Investitionen in der EG. Beiträge aus dem Institut für Verkehrswissenschaft an der Universität Münster, Vandenhoeck & Ruprecht, Göttingen.

Marler, N.W., Estlander, K., May, A.D., Himanen, V. and Timms, P. (1998), 'Identification of current practice and future opportunities in private financing of transport'. Proc. World Conference on Transport Research, Sydney.

Midgley, P. (1994), 'Urban Transport in Asia: An operational Agenda for the 1990s'. World Bank Technical Paper No 224, World Bank, Washington.

Miles, J. C. (1996), 'The private sector in Road Transport Telematics'. Traffic Engineering and Control, December, pp. 678-685.

Rienstra, S.A. and Nijkamp, P. (1997), 'Financing and Operation of Transport Systems'. Working paper in the EU-DGVII funded POSSUM (Policy Scenarios for Sustainable Mobility) project. Department of Spatial Economics, Free University Amsterdam.

Tyson, W.J. (1997), 'Manchester Metrolink and the Private Initiative'. Fifth International Conference on competition and Ownership in Land Passenger Transport, Leeds.

Willis J. (1997), 'Extending the Jubilee Line; the Planning Story'. London Transport.

bm/molde