

GRID LINES

Sharing knowledge, experiences, and innovations in public-private partnerships in infrastructure

Private sector participation in urban rail

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Getting the structure right

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There is growing interest in using rail transit—trams, metros, light rail—to solve urban transportation problems, particularly road congestion and air pollution. In developing urban rail projects, a range of major cities around the world have turned to public-private partnership models, to leverage both public and private resources and expertise. Dissecting the successes and failures of public-private urban rail schemes, this note examines how policy makers can best deal with the main risks involved in designing, procuring, and implementing such schemes. It also draws lessons on best practice in developing and managing contractual arrangements that can help ensure their success and sustainability.

New urban rail systems are complex, capital intensive, and typically customized to a particular city or transportation corridor. Managing such complexity and the associated risks can be a daunting challenge for even the most experienced and sophisticated public authorities.

When an urban rail system is developed by a public-private partnership (PPP), a key factor in determining the success of the scheme is how risk is allocated between the parties. Achieving the right allocation of demand risk between the public and private sectors is critical. So is ensuring adequate physical infrastructure and integration with other modes of public transportation, both of which have a direct effect on demand.

In determining the contractual design, public authorities need to consider whether to use an integrated approach, with a single concession or build-operate-transfer (BOT) contract, or a layered approach, with separate contractual arrangements

for different aspects of system development and operation. And accounting for urban growth will require contractual flexibility to allow for network extensions. How these extensions are incorporated in the private operator's contractual obligations needs careful consideration.

Another issue is the high capital costs of urban rail systems, suggesting that some form of public support is likely. Yet the challenge for planners is to avoid offering too much public support¹ and to ensure good value for money.²

Designing the structure to adequately manage risks

In allocating demand (or passenger ridership) risk in urban rail PPPs, a critical consideration is whether the public or private sector will exercise control over such issues as fare setting, intermodal and ticketing integration, and licensing of competing services. The public authority typically has control over these factors. Alternatively, the authority may decide to allocate demand risk entirely to the private operator, with the fares paid by passengers being the private operator's main or sole source of income. But it is important that fares not only reflect customers' ability and willingness to pay but also are aligned with policy goals (such as promoting a switch to public transportation, managing traffic congestion, or improving urban air quality).

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Allocating all demand risk to private operators has a poor track record. This is clear from experience with urban rail PPPs worldwide but notably so in the cases of the Skytrain project in Bangkok, Thailand, and the STAR and PUTRA projects in Kuala Lumpur, Malaysia, where demand was significantly lower than forecast (Halcrow Group 2004). The projects either were restructured (as in Bangkok) or failed and were subsequently nationalized (as in Kuala Lumpur). The authority may prefer to share demand risk with the private operator through a minimum revenue guarantee (as in South Africa, for Gautrain) or decide to bear this risk itself and pay the operator an availability fee to cover the costs of investment and delivery of passenger service (as in the United Kingdom, for the Nottingham Express Transit tram system). Commercial best practice for such fee payment would typically incorporate performance incentives and penalties against defined (and contracted) service delivery targets.

In some instances public authorities have decided to be responsible for fare setting. Great care needs to be taken in exercising this authority, especially where the private operator's sole or principal source of revenue is the farebox. Kuala Lumpur's STAR and PUTRA PPP projects suffered when temporary discounts designed to increase ridership became politically impossible to reverse. In other projects operators have had the freedom to set the fare structure so as to shape demand or take advantage of higher-value or discretionary routes, such as airport connections. In South Africa, for example, the Gautrain concessionaire has substantial freedom to set fares on its link to the O. R. Tambo International Airport and can use the higher fare revenues from this link to effec-

tively cross-subsidize other parts of its network. In the United Kingdom, phase 2 of the Manchester Metrolink project showed how politically sensitive fares can be as public outcry over higher fares contributed to the premature termination of the concession.

Planning in advance the links with other modes of transportation—such as buses, metros, taxis, and private vehicles as well as other transit systems—is also critical in designing a new urban rail system. Customers for the new system need convenient links to start and complete journeys. So planners need to consider how passengers will get from their homes to the new rail stations and from the stations to their ultimate destinations (such as workplaces, shopping centers, and schools and colleges)—and similarly for their return trips. “Park and ride” and “kiss and ride” facilities, for example, will attract private vehicle commuters. Public-private urban rail schemes have managed this intermodal integration risk in a range of ways, including the following examples:

- Bangkok's Skytrain introduced new dedicated feeder bus services in its bid to increase ridership from the unexpectedly low levels at the start of operations (box 1).
- For South Africa's Gautrain, the project design for the initial rail concession includes cobranded feeder buses.
- The Nottingham Express Transit tram system has introduced park-and-ride sites with more than 3,000 parking spaces as well as tram stops linked to national and commuter railway stations.

Allocating all demand risk to private operators has a poor track record

BOX 1

Integrating urban rail with other transport solutions

In Bangkok during the development of Skytrain, several public institutions—including the Ministry of Transport, the Bangkok Metropolitan Authority, and the State Railway of Thailand—were implementing transportation solutions. Coordination among these entities was deficient, and little consideration was given to integrating the systems. This oversight contributed to disappointing ridership levels when Skytrain opened: 150,000 riders a day rather than the 600,000–700,000 that had been forecast. Revenues were so low that the concession company eventually became unable to meet its financial obligations.

Skytrain's services offered clear value to customers by enabling them to avoid Bangkok's extreme traffic at a reasonable cost. But without supporting modes of transportation, many of the city's residents lacked easy access to the system. Later improvements in the integration of services, including the addition of feeder buses and new aerial walkways, helped to increase ridership to some 460,000 passengers per weekday.

Source: Halcrow Group 2004; Spicer 2008.

Physical integration with other transport systems, such as buses and metros, also requires an integrated approach to ticketing. Many cities are adopting transit smart cards to pay for multimodal and multitrip journeys, recognizing that a typical commute or journey might involve, for example, catching a bus from home to the train or metro, then riding the urban rail system to an office in the center of town. Among such schemes are London's Oyster Card and Singapore's Ez-link systems. Increasing passenger convenience in this way helps to both increase ridership and meet other policy objectives, such as reducing the number of private vehicles in urban centers.

Designing and implementing contractual arrangements

Contractual arrangements for urban rail PPPs are likely to be complex, encompassing arrangements with government agencies and regulators, lenders and investors, landowners, utilities, contractors, rolling stock and system providers, and operators. Public authorities need to decide whether to adopt an integrated contractual approach, with a single concession or BOT contract, or a layered contractual approach, with separate contractual arrangements for design and construction, for rolling stock and systems, and for operation and maintenance.

Proponents of the layered contractual approach see it as offering more flexibility for dealing with

line or network extensions and the replacement of operators. If extensions are needed, the public authority can procure a new construction-only concession contract and competitively procure additional rolling stock or operational services. However, this approach poses substantial challenges for the public authority in integrating and coordinating these contracts. The Docklands Light Railway in London, one entity that has adopted a layered contractual approach, has managed these challenges successfully (box 2). Many other authorities, however, have chosen the integrated approach because of lack of capacity to coordinate the multiple contracts involved in the layered approach. In addition, in some jurisdictions (such as the Russian Federation) the layered approach for PPP projects is incompatible with local public procurement legislation.

Where cities envisage extensions to the new rail system, some public authorities have opted to include such extensions within the contractual arrangements, on a right-of-first-refusal and negotiated basis. This strategy brings risks, however: parties may fail to reach agreement on extensions within the first few years of the contract, when the operator is in a strong negotiating position and may have an incentive to cash out through early termination (claiming its future profits). This situation has arisen recently in both Manchester and Nottingham and, in the case of the Manchester Metrolink, has been costly for the public authority. Potential ways to mitigate this risk include specifying a pricing regime for such extensions in the

The complexity of urban rail contracts demands that they be well managed

BOX 2

Aligning incentives with factors under the concessionaire's control

The Docklands Light Railway has used a layered contractual approach. It has implemented three infrastructure-only concessions for building and maintaining network extensions—for Lewisham, London City Airport, and Woolwich Arsenal—and has a fourth in development. A separate contractual arrangement provides for service delivery by a franchise operator.

The concession for Lewisham was the first private finance initiative for transport in the United Kingdom. It was structured so that the concessionaire would be paid an availability fee for the first 10 years of the concession period, then take farebox risk for the last 11 years. Planners later realized that this approach to risk allocation failed to offer value for money because the concessionaire had little control over factors relating to ridership levels. The concessionaire was not involved in service operation and so could not influence the quality of service beyond ensuring that infrastructure assets were well maintained.

Subsequent infrastructure-only concessions have been based on availability payments for the infrastructure. That approach to risk allocation aligns performance assessment and payment systems more closely with factors under the concessionaire's direct control.

Source: Keep 2008.

contract, specifying reduced termination payments if the parties fail to agree on a price for an extension, or moving away from integrated concession arrangements to letting contracts in smaller pieces or using layered contractual arrangements.

Urban rail contracts, because of their complexity, require strong and effective management on behalf of the contracting authorities. Governments therefore need to plan institutional arrangements for implementing contracts well in advance, to ensure that contract performance is properly monitored and managed. Well-designed incentives, created through a sound performance management system linked to performance-related payments, can help ensure that the developer meets or exceeds the performance targets. The experience of the Docklands Light Railway shows the importance of aligning incentives with factors under the concessionaire's control (see box 2). Gautrain and Canada Line provide examples of contractual structures that allow private partners to share in the gains from growth in system ridership.

Conclusion

There has been growing interest in urban rail PPPs over the past 10 years. Cities around the world—from Dublin to Jakarta, from Jerusalem to Lagos, from Mumbai to St. Petersburg—have recently embarked on such ventures.

The record of urban rail PPPs underscores the importance of effectively allocating risk between the public and private partners. Especially critical are how and by whom demand risk is managed and how well the urban rail system is integrated with other transportation systems, not only physically but also with respect to ticketing arrangements. The success of urban rail PPPs can also depend on how governments provide financial support and which contractual approach is chosen,

whether integrated or layered. The constant growth and evolution of urban centers puts a premium on contractual flexibility for dealing with network extensions—and avoiding some of the associated pitfalls.

Achieving the right balance of risk between partners also requires that private partners have something to lose for nonperformance at every stage of project implementation. Accordingly, contractual arrangements need to provide for the government's own structures for contract monitoring coupled with performance management systems linked to remuneration.

Experience has shown that there is no single best way to structure an urban rail PPP. Instead, each city must find its own way, based on its unique history, politics, finances, and geography. Addressing the issues raised here will give policy makers more than a fighting chance of success.

Notes

This note is based on Mandri-Perrott with Menzies (2010), which discusses the issues involved in urban rail PPPs in much greater detail.

1. Public support can take many forms, including the provision of revenue guarantees, availability payments, financial guarantees and capital grants.

2. *Value for money* is used here in the broader sense to introduce the rigor of a structured PPP approach that would satisfy both public and private objectives.

References

- Halcrow Group. 2004. "A Tale of Three Cities: Urban Rail Concessions in Bangkok, Kuala Lumpur and Manila." Background paper for the Asian Development Bank, Japan Bank for International Cooperation, and World Bank East Asia and Pacific Infrastructure Study, Washington, DC.
- Keep, David (company secretary, Docklands Light Railway). 2008. Interview by Iain Menzies, October 1.
- Mandri-Perrott, Cledean, with Iain Menzies. 2010. *Private Sector Participation in Light Rail-Light Metro Transit Initiatives*. Washington, DC: PPIAF and World Bank.
- Spicer, Martin (chief credit officer, International Finance Corporation). 2008. Interview by Iain Menzies, September 17.



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