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EXPERIENCES AND ISSUES IN URBAN TRANSPORT INFRASTRUCTURE CONCESSIONS

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PRINCIPAL ABBREVIATIONS AND ACRONYMS

ATC	-	automated toll collection
BALP	-	Buenos Aires - La Plata Motorway
BLT	-	Build-Lease-Transfer
BMA	-	Bangkok Metropolitan Administration
BNRR	-	Birmingham Northern Relief Road
BOO	-	Build-Own-Operate
BOOT	-	Build-Own-Operate-Transfer
BOT	-	Build-Operate-Transfer
BRT	-	Brooklyn Rapid Transit
BTS	-	Bangkok Transit System
CGL	-	City Greenwich Lewisham
CNRT	-	National Transport Regulation Commission (Argentina) (*Comisión Nacional de Regulación del Transporte*)
DBFM		Design-Build-Finance-Maintain
DBFO	-	Design-Build-Finance-Operate
DBOM	-	Design-Build-Operate-Maintain
DETR	-	Department of Environment, Transport, and Regions (UK)
DLR	-	Docklands Light Railway
DOH	-	Department of Highways (Thailand)
DRML	-	Docklands Railway Management Ltd.
ETA	-	Expressway and Rapid Transit Authority (Bangkok)
ETR 407	-	Express Toll Route in Toronto
FA	-	Argentine Railways (*Ferrocarriles Argentinos*)
GMPTE	-	Greater Manchester Passenger Transport Executive
HOT	-	high occupancy/toll
IRT	-	Interborough Rapid Transit (NYC)
LT	-	London Transport
MEL	-	Midland Expressway Limited
MEySOP	-	Ministry of the Economy and Public Works and Services (Arg.) (*Ministerio de Economía y de Obras y Servicios Públicos*)
MRTA	-	Metropolitan Rapid Transit Authority (Bangkok)
NPV	-	net present value
OCRABA	-	Buenos Aires Access Network Control Agency (*Organo de Control de la Red de Accesos a Buenos Aires*)
OPRAF	-	Office of Passenger Rail Franchising (UK)
PDG	-	project development group
PFI	-	Private Finance Initiative (UK)
PSR	-	Passenger Service Requirement (UK)
PTE	-	Passenger Transport Executive (UK)
ROSCO	-	rolling stock companies (UK)
ROT	-	Rehabilitate-Operate-Transfer
SPURT	-	Seventh Plan Urban and Regional Transport (Thailand)
SR91	-	State Route 91 (California)
SRT	-	State Railways of Thailand
TCL	-	Tramtrack Croydon Ltd.
UCPRF	-	National Railway Restructuring Unit (Argentina) (*Unidad Coordinadora del Programa de Reestructuración Ferroviaria*)

FOREWORD

This paper provides an overview of recent experiences in urban transport infrastructure concessions around the world, with a particular focus on Bangkok, Buenos Aires, and the United Kingdom. The work is based largely on a literature review, including the trade press, complemented by personal knowledge and unpublished data from Bangkok and especially Buenos Aires. We are grateful to many individuals who contributed thought and time to this effort: Ken Gwilliam (Principal Transport Economist) and Lou Thompson (Railways Adviser) of the World Bank, who graciously reviewed sections of this report and offered helpful comments and suggestions; Daniel Rodriguez, currently at the University of Michigan, whose initial research in this area formed the basis for much of the information presented here; Youssef Lahrech, whose work on Buenos Aires contributed important inputs to this paper; and Chris Cather, who provided background research on projects around the world and who assisted with report preparation.

The authors take full responsibility for the information contained in this paper; all views presented are those of the authors and not of the institutions with which they are affiliated.

Washington DC, August 1999

I. INTRODUCTION

Rising incomes, ongoing urbanization and rapid suburbanization are placing increasing demands on most of the world's cities. With more vehicles making more trips over longer distances, urban transport systems face saturation and potential collapse. This situation calls for an integrated package of solutions, including more effective management of existing infrastructure, accurate pricing, and urban growth management. In most cities infrastructure expansion and/or rehabilitation is also crucial.

Within this context, private sector concessions have become an important tool for infrastructure expansion, rehabilitation, and operation. The rationale behind urban transport infrastructure concessions is similar to that used in promoting private concessions in other sectors. Some supporters cite the state's poor performance in infrastructure delivery or highlight the fact that government resources can never keep up with investment needs. Several additional benefits of concessions are also often noted, including: delivery efficiencies in terms of saved time and resources; at least partial risk transfer to the private sector (improved risk management); independent and multiple verification of project feasibility (filtering out of "white elephants"); the introduction of technological and delivery innovations into projects; improved value from different quality, price, delivery time combinations; reduced public sector staffing needs; and reduction of political pressures on tolls or fares. Nonetheless, infrastructure concessions are not without problems and detractors. Some of the principal challenges to concessions relate to the typical need for some form of government guarantee, which reduces private sector efficiency incentives. The problems are compounded in the urban transport sector since the investment costs are often high and of no alternative use, and demand estimates are often highly uncertain. Further challenges in the urban sector relate to questions regarding exclusivity of service and the need for some level of infrastructure and service integration with a larger network.

This paper explores the positive and negative sides of urban transport infrastructure concessions by examining practical experiences to-date. The range of experiences considered in this paper is necessarily limited by the fact that most projects started less than a decade ago, and only a few are now showing results that can be adequately assessed. Furthermore, in-depth assessments are hampered by the fact that much of the information regarding concession structures, contracts and financial performance is not readily available.

The remainder of this paper is divided into five chapters. The following chapter provides an overview of the global trend in urban infrastructure concessions, including a brief history. Chapters III to V are case studies of experiences in three places with significant experience in this field: Buenos Aires, Bangkok and the United Kingdom. The final chapter offers some preliminary lessons from the experiences analyzed.

II. OVERVIEW OF URBAN TRANSPORT INFRASTRUCTURE CONCESSIONS

Concessions can range from a simple contract to manage infrastructure (where there is no capital investment and no financial risk) to the financing, construction, ownership and operation of infrastructure facilities. Infrastructure concessions are often simply referred to as Build-Operate-Transfer (BOT), although the actual delivery mechanisms include Design-Build-Operate-Maintain (DBOM), Build-Own-Operate (BOO), Build-Own-Operate-Transfer (BOOT), Design-Build-Finance-Operate (DBFO), Rehabilitate-Operate-Transfer (ROT), Build-Lease-Transfer (BLT), among others. While the differences among these various mechanisms can be important – and include the role of government in financing as well as issues of actual infrastructure ownership – we do not detail them in this paper.

A BRIEF HISTORY

Concessions in the transportation sector are not new, dating back (at least) to 17th Century France. In the early years of the United States, concessions were a common tool used for road, canal and railway development. In the urban transport sector, most early public transport systems in the United States were built by the private sector, under various forms of municipal charter or franchise, with revenues coming from fares and land development. The more capital intensive rapid transit systems were built with public monies, with long concessions granted to private operators (see below); monopoly rights were exchanged for long-term fixed fares. Inflation, political manipulation of fare increases, and competition from the automobile strained most private systems, leading most towards insolvency and a subsequent shift towards public ownership by the 1940s.

***The New York Subway, a "BOT" of the Past*:** Gripped by traffic congestion, by the late 1880s New York was desperate for a solution. Drawing on inspiration from the London Underground, but delayed for years by legislative and cost hurdles, the city in 1898 issued a tender through the Rapid Transit Commission (RTC) to build, equip and operate an urban railway for 50 years (with an option to renew for an additional 25 years). The government would own and finance the system; an approach which differed from the transport facility franchising (DBFO) method which dominated at the time. The tender specified the routes, provided minimum service requirements and required that a $7 million security bond be deposited by the concessionaire on contract award.

Two bids were received, one charging a flat $35 million price for capital infrastructure (the concessionaire would pay for rolling stock and signaling systems) and the other charging $39.3 million and offering the city a percentage of annual operating profits over $5 million. The RTC chose the $35 million bid and a contract was signed which required the concessionaire to pay an annual fee to the city (equal to the interest payments on the bonds issued by the city for construction plus an additional one percent). During the construction period, the concessionaire, Interborough Rapid Transit (IRT), acquired the city's elevated rail system from the Manhattan Railway Company – a move IRT deemed critical to ensuring "harmonious operation" of the system, but that many in New York saw as preventing competition.

Less than four years after the contract was signed, New York's subway opened on October 27, 1904 with immediate success, forcing quick modifications of the trains and

improvements to the signaling systems. Just one year later, the RTC proposed 19 new lines over 264 km at an estimated cost of $250 million. IRT opposed the plan, fearing increased competition and/or increased operating costs per passenger. As a partial response, IRT purchased the Metropolitan Street Railway, to try to consolidate its hold over the transit system and possible future expansions. A new regulatory commission established in 1907 changed the rules of the game through strict fare and schedule regulations. Despite cooperation with the other major street and elevated rail operator (BRT), the profits of the IRT began to fall; this was exacerbated by an inflation-eroded (and politically-charged) fixed fare, automobile competition and, eventually, direct government competition. An independent city-operated subway opened in 1932, the same year that the IRT fell into receivership.

TODAY: A "REBIRTH"

Recent years have seen a rebirth of private sector involvement in urban transport infrastructure, both for public transport infrastructure as well as urban motorways. This activity comes as much from an general ideological shift towards "privatization" of traditionally public sector activities as it does from a frank recognition that the public sector alone cannot fund the transport infrastructure needs so many of the world's cities currently face.

The recent history can be traced back to Hong Kong's Central Harbor Crossing, a BOT road tunnel opened in 1972 (see Table 2.1). Hong Kong continued at the forefront of urban transport infrastructure concessions, using the mechanism to deliver two other tunnels during the 1980s, and a fourth in 1997. The use of the concessions quickly spread to Thailand (as discussed in Chapter 4), Malaysia and the Philippines. By the early 1990s, many regions of the world had some demonstrated experience with infrastructure concessions in the urban transport sector. While not exhaustive (and not including the cases detailed in Chapters 3–5), Table 2.1 shows the breadth of experiences, including: various roads and railways in Asia and Europe; a busway, motorways and railways in Latin America; and several motorways in North America.

RECENT NORTH AMERICAN CASES

In North America, California was an early leader on this front, spurred by state assembly legislation: Assembly Bill 680 which called for four transport demonstration projects to be developed by the private sector. The legislation, passed in 1989, specified details such as the maximum concession term (35 years), the requirement for the concessionaires to fully reimburse the state for any related services (such as highway patrol), and the fact that any facility would have to supplement an existing facility (i.e., a non-tolled alternative had to be available to the public). It is interesting that AB 680 did not specify any particular projects for concession; instead the private sector was left free to propose the transport facilities to be developed through BOT. This approach led to the twin (and related) challenges of (1) designing criteria by which projects could be evaluated and (2) ensuring that the proposed projects were competitive (i.e., if only one bidder proposed a project, how could its competitiveness be ensured?). As a response, the state Department of Transportation developed a set of nine weighted selection criteria by which projects would eventually be judged: transport service (20 points); local support, ease of implementation, experience and expertise of sponsors (15 points each); business "sense,"

meeting environmental and energy conservation goals, technical innovation (10 points each); and, non-toll revenues supporting project costs (5 points). The broad range and apparent subjectivity of these criteria derive from the open call for proposals conceived in the initial legislation.

Ten consortia pre-qualified for project submission and eight proposals were eventually submitted, none of them directly competing among each other. Of the four ultimately selected and contracted, only one is currently in operation, the high occupancy/toll (HOT) lanes in the median of State Route 91 (SR91). The project aimed to alleviate congestion on SR 91, an expressway in rapidly growing suburban Los Angeles (Orange/Riverside Counties). During the 1980s, traffic on the eight-lane highway doubled, reaching 255,000 vehicles per day by 1995 and projected to increase another 55% by the year 2010. The concessionaire proposed a 16 km, four-lane road to be constructed in the median of the existing highway. The facility would be free to high occupancy vehicles (three or more passengers) – helping to promote the state's transport objectives – and allow other vehicles use for a toll payment (electronic tolling only). Some important characteristics of the concession agreement include: regulation via controls on return on investment (all revenues above a permissible rate of return go to state highway account); concessionaire free to set tolls; concessionaire pays land acquisition and obtains all environmental clearances. This project has been operating since December 1995 and includes variable congestion pricing. Of the other initial demonstration projects, SR57 – also in Orange County – has been placed on hold after the County declared bankruptcy in the mid-1990s, another in suburban San Diego is in the environmental assessment phase, and one in suburban San Francisco has been suspended due to political opposition.

Two other projects in North America are currently operational: the Dulles Greenway in suburban Washington, DC and the Express Toll Route (ETR) 407 in Toronto. Similar to the California experience, the Dulles Greenway was spurred by a Virginia state law passed in 1988 authorizing the private development of toll roads. During the same year, the Greenway – a proposed extension to an existing toll road – was approved and in early 1989 a private corporation applied to build the project. As no competitive bidding was required, the project was approved shortly thereafter by the government, and in 1990 it was officially authorized by the State Corporation Commission. Over three years passed before construction began, due to challenges in securing project approvals and putting together the financing package. Once initiated, however, construction proceeded ahead of schedule, with the project being finished in September 1995. Despite this early construction finish, the initial project delays proved a bad omen. Ridership in December 1995 was one-third the original projections and gross toll revenues have not been adequate to cover debt service. To make matters worse for the concessionaire, the State announced plans in 1997 to improve a nearby competing road.

Toronto's ETR 407, a fully electronic toll motorway, has a somewhat twisted history as a concession, although its results in terms of usage and technical innovation have been impressive. On the planning boards since the late 1950s, the highway finally materialized as a tolled private concession in 1993, when the provincial government issued a tender, based on the two pre-qualifying firms' initial "value engineering

assessments". The bid did not specify design characteristics and, as a result, two very different proposals – in terms of number of lanes, illumination, pavement type, toll collection systems, and completion date – were submitted. The two proposals shared two important characteristics: marginal equity contribution from the concessionaires and requests for a major government subsidy. After reviewing the proposals, the government took an interesting path to advancing the project: choosing the toll collection technology from one proposal and the highway design from the other proposal and advancing the tollway as a hybrid. The highway itself was developed as a traditional design-build project, with the government in charge of financing and operations; the toll system was a design-build-operate system, with the concessionaire responsible for operations. The project opened as a tollway in October 1997 and, in a final twist, was sold in April 1999 by the provincial government to the private sector for US$2.1 billion (it cost US$1 billion to build); the winning consortium will reportedly invest US$616 in extensions in exchange for a 99-yr concession.

BRAZIL VENTURES INTO PUBLIC TRANSPORT INFRASTRUCTURE CONCESSIONS

Brazil's first efforts to turn to the private sector for financing urban public transport infrastructure were initiated by the São Paulo Municipal Government in 1995, with a goal of reducing the subsidies required to operate a publicly-owned bus system and to produce an extensive network (241 km) of exclusive bus corridors. The concessionaire was to retain responsibility for designing, building, and maintaining the infrastructure and for operating 1,056 buses under an eight-year term. The bids were evaluated on technical and price proposals; for firms that passed the technical evaluation, the final awards were based on the lowest Net Present Value (NPV) of the proposed investment costs. Although contracts were awarded, none of the concessions have moved forward due to lack of financing. Among the lessons this experience offers: for such an innovative proposal, financing can prove difficult and costly to achieve (high perceived risk), if adequate guarantees are not in place.

Around the same time that the Municipal Government was attempting to concession its proposed busway network, the São Paulo State Government decided to concession the São Mateus-Jabaquara busway, which had been originally brought into service in 1987. The state busway had been designed as an electric trolleybus corridor, but costs precluded the complete development of the trolleybus line. The goals of the concession were to reduce the state's involvement in public transport operations, reduce the state's costs of service management, and to complete the electrification of the 33-km corridor. A three-stage bid evaluation was used; those consortia which passed the pre-qualification and technical proposals, were then evaluated according to price, with the award going to the bidder who offered the highest gross revenues to the state over the 20-year concession. Operations were initiated in May 1997. This concession benefited from the fact that much of the infrastructure was already in place, which gave the bidders immediate access to revenues and thus a reduced borrowing burden; moreover, the concession period was long enough to allow full amortization of the trolleybuses.

More recent experiences in Brazil have been focused on Rio de Janeiro, where a budgetary crisis exposed the need to reduce state subsidies to the Metro (subway) and commuter rail (Flumitrens). This need, combined with the desire to improve services and

reduce maintenance and investment backlogs led the State of Rio de Janeiro to the decision to concession both systems. The 41-km Metro system was concessioned in December 1997 to a consortium including Cometrans, the owner of the Mitre and Sarmiento rail concessions in Buenos Aires (see next chapter). The two-step bidding process entailed pre-qualification (based on experience) and then a cost proposal (NPV of best offer above a set minimum). The proposals ultimately received proved to be higher than what was expected. The Flumitrens concession followed a similar bidding process, benefiting from the Metro experience, and was signed in July 1998. The main positive lessons from the two experiences include the simplicity and transparency of the bidding process which was managed by the Rio Stock Exchange. Among the issues that remain to be resolved are the ongoing problems with labor redundancy, the challenge of modal integration, risk of predatory pricing by competitors, and the effectiveness of the regulatory agency.

CONCLUSIONS

Globally there are *at least* 36 private urban transport infrastructure concessions in operation: 9 in Asia (including Bangkok), 8 in Europe (including the UK), 3 in North America, and 16 in Latin America (including Buenos Aires). These operational projects imply some US$12 billion in capital investments, much of which has been financed by the private sector, with the private concessionaires also acquiring a significant portion of the operating risks. At least another 25 private sector projects are currently under construction.

It is possible that this recent wave of concessions in urban transport infrastructure marks just the beginning of the use of this delivery mechanism in the sector. As such, it is important to take stock of current experiences in order to begin to understand the implications in terms of strategic urban transport planning, regulatory structures, and system performance. To do this, in the next three chapters we explore the experiences of Buenos Aires, Bangkok, and the United Kingdom, three places with arguably the most operational practice to-date.

TABLE 2.1 SELECTED RECENT URBAN TRANSPORTATION INFRASTRUCTURE CONCESSIONS

Region	Project	City, Country	Description	Dates	Concession Term	Investment (US$mn)	Comments/Details
Asia	Metro Manila Skyway	Manila, Philippines	35 km motorway	Sign: 93; initiated: 4/96	R/BOT	2,500	Partial operation; recent (2/99) political intervention in toll-setting
	EDSA Light Rail Transit (LRT III)	Manila, Philippines	18 km	Award: 9/92; sign: 5/93	25-yr BLT	550	In Construction; build-lease-transfer, concessionaire charges govt. for cost and maintenance over term, then transfers.
	Noida Bridge	Delhi, India	5.5 km road bridge	Nov. 1997	30 years or 20% IRR	100	Bid: 2/92; construction start: 6/98; operations 2/2000,
	Bangalore Elevated LRT	Bangalore, India	96 km	Initiate process in 1995	Proposed 30-yr	1,300	Reportedly signed, but slow implementation
	Central Harbor Crossing	Hong Kong	Road tunnel HK - Kowloon	Opened in 1972	30 years BOT		DBFOM; all risks borne by concessionaire; steady traffic flows
	Eastern Harbor Crossing	Hong Kong	Road/rail tunnel HK-Kwun tong	Bid: 10/84; sign 7/86; construction: 8/86; complete: 10/89	30-yr BOT	730	Grew from: success of Central Harbor; high demand; transit expansion plans; an unsolicited private sector proposal. Completed 4 months ahead of schedule
	Tate's Cairn Tunnel	Hong Kong	4 km tunnel	Bid: 5/87; Sign: 7/88	30-yr BOT	350	Grew from unsolicited proposal
	Western Harbor Crossing	Hong Kong	2 km road tunnel	Bid: 3/92; const. start: 8/93, finish: end-97	30-yr BOT	974	First dual three-lane immersed tube tunnel in world
	STAR Light Rail	Kuala Lumpur, Malaysia	12 km	Sign: 12/92; start: 6/96	60-yr BOO	1,400	System initially opened to low ridership; contract renegotiable after 30 years.
	STAR extensions	Kuala Lumpur, Malaysia	15 km	Sign: 6/95; start: 1998	60-yr BOO	765	First phase (12 km) opened in 9/98
	PUTRA	Kuala Lumpur, Malaysia	29 km	Start: 1998	60-yr DBFO	1,400	Fully automated, driverless system; first phase (14 km) opened in 9/98
	KLPRT	Kuala Lumpur, Malaysia	16 km	Concession was signed	30-yr DBFO	600	Monorail; construction halted
Australia	Sydney M2	Sydney		1994		400	
	Melbourne City Link	Melbourne	22 km road, 5 km of tunnels	Bid: 7/94; award: 5/95; Sign: 3/96	34-yr BOT	1,400	Company floated on the Australian stock exchange; to be operational by end of 1999 (fully electronic)

TABLE 2.1 (CONTINUED)

Region	Project	City, Country	Description	Dates	Concession Term	Investment (US$mn)	Comments/Details
Europe	Tagus Crossing (Vasco de Gama Bridge)	Lisbon Portugal	18 km bridge/access roads	Sign: 4/94; takeover: 1996	30-33-yr BOT	$960	Concessionaire responsible for paying expropriations, resettlement; concession term depends on toll set; concessionaire took over existing crossing (a la Dartford); open, apparently with low traffic levels and govt. guarantees on these.
	Fixed Warnow Crossing	Rostock, Germany	3 km road tunnel	Sign: 9/96			To open in 2003
	Arlanda Link	Stockholm, Sweden	20 km rail link to airport	1995	45-yr BOT	$550	Government grant of $100 mn; govt. subordinate loan of $120; concessionaire equity of $70mn; to open mid-99.
	Arganda Rail	Metro Madrid	20 km	Bid: 11/96	30-yr	$120	In operation
North America	SR91	Orange County, CA	16 km	Invited: 3/90; opened 12/95	35-yr	$132	No state or federal funding permitted.
	SR57	Orange County, CA	19 km	Invited: 3/90	35-yr	$702 (1990)	No state or federal funding permitted; county pledged $15mn subsidy; project on hold since Orange County bankruptcy.
	ETR 407	Toronto, Canada	69 km, extend to: 108 km	Bid: 9/93; unbundled: 4/94; sold: 4/99	99-yr	$1,000	In operation
	Dulles Greenway	Virginia (Metro DC)	22.5 km	Authorized: 7/90; construction start: 9/93; open: 9/95.	42.5-yr DBFO	$326	Chronic problems meeting debt payments with toll revenues.
Latin America	Caracas-La Guaira Toll Road	Caracas, Venezuela	41 km (2 facilities)	Bid: 2/95; sign 12/96; transfer: 12/96	30-yr R/BOT	$118 (Stage I)	Existing motorway operated by concessionaire; no major investment yet
	Northern Corridor/Maddden Segment	Panama City, Panama	29 km	1997	30-yr BOT	$200	Non-competitive infrastructure covenant for entire concession term
	State Busway	São Paulo, Brazil	33 km	Bid: 1995; operations: 5/97	20-yr	n.a.	Completion of electrification of trolleybus corridor and operations.
	Metro	Rio de Janeiro, Brazil	41 km	Sign: 2/97	20-yr, renewable	n.a.	Operations takeover, State responsible for investment plan.
	Flumitrens Suburban Rail	Rio de Janeiro, Brazil	200 km	Sign: 7/98	25-yr, renewable	n.a.	Operations takeover, State responsible for investment plan.

Sources: *Civil Engineer International*, 1996, 1997a,b; Consejo de Administración, 1998; IHT, 1997; *Infrastructure Finance*, 1995a,b; Miller, forthcoming; Miller, 1997a,b,c; *PWF*, 1999; Rebelo, 1997, 1999a; Silborn, 1998; *Transport Finance*, 1998; World Bank data; *World Highways*, 1998, 1999

III. MOTORWAY AND RAIL CONCESSIONS IN BUENOS AIRES

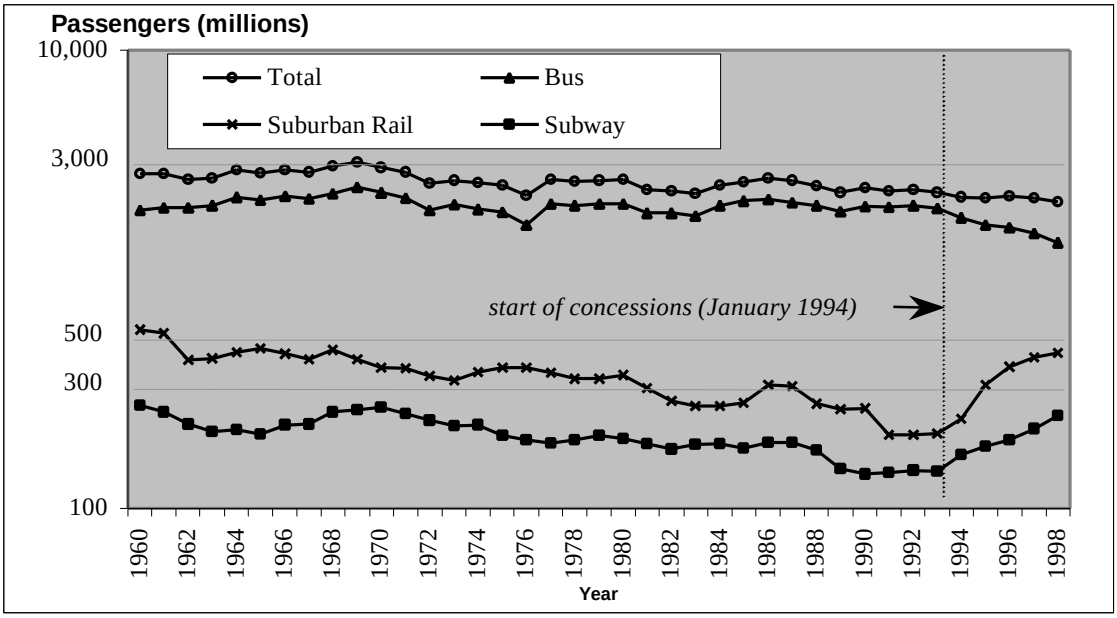
Buenos Aires offers something of a showcase of urban transport infrastructure concessions, with a variety of rail and motorway projects undertaken over the past decade. There is no other single city in the world where so many transport infrastructure concessions have been implemented and are operating (some of them for more than five years). The move towards concessions grew from government fiscal crises and declining service quality. The aggressive use of concessions has resulted in significant infrastructure enhancements and expansions:

- upgrading the subway and about 840 km of suburban railways in the metropolitan region, as part of packages that included some US$1.37 billion in investments;
- upgrading and expanding over 300 km of motorways, leveraging over US$1 billion in private sector investments.

RAIL

The concession process was initiated with the State Reform and Public Enterprise Restructuring Law of 1989, which aimed to reduce the public deficit, privatize state enterprises and revitalize the economy. Since the 1950s, the suburban railways had been run by Ferrocarriles Argentinos (FA), the state-owned national railway which by the end of the 1980s was the single largest drain on the national treasury, consuming an estimated US$800 million to US$1.4 billion annually. Almost 20% of this amount went towards covering the operating deficit for Buenos Aires suburban rail services. In addition, the subway required an estimated US$40 million per year in operating subsidies. This financial and service crisis precipitated a sharp decline in patronage; both subway and suburban rail use decreased throughout the 1980s and early 1990s leading to privatization in 1993-94 (see Figure 3.1).

FIGURE 3.1 PUBLIC TRANSPORT VOLUMES IN BUENOS AIRES METROPOLITAN AREA



Source: FIEL (1999).

***Concessioning Process*:** As a response, the government decided to concession Buenos Aires' rail services for renewable 10-year periods, except for the subway and Urquiza line which were given a 20-year term. To facilitate the concessioning, the government grouped the suburban railway services into seven different vertically integrated networks, based on those that had existed before their consolidation in the 1950s. Although the areas directly linked to service operations (platforms, ticket booths, etc.) were to be transferred to the concessionaires, all other real estate – including non-operational areas of terminal stations – were to remain with the government for a separate sale or concession.

The government accepted from the start that public financing would be required to operate passenger rail services and undertake the investments needed to rehabilitate the system. For each corridor the government set both maximum fares and minimum service frequencies. The latter were defined in terms of rail cars per hour for each 24-hour service cycle and for each day of the week. In addition, service quality standards were defined for each corridor, including percentage of on-time trains and percentage of canceled trains. By reaching or surpassing these service standards, concessionaires would be entitled to increased fares beyond authorized levels (an automatic US inflation-adjusted fare increase was also allowed), as a performance incentive. The bid documents also included expectations regarding service aspects such as station cleanliness, maintenance, and personnel behavior.

The government was to maintain ownership of the rolling stock and infrastructure, all of which would be assigned to the concessionaire. The concessionaire was given full responsibility for all operations activities, ranging from marketing to maintenance of rolling stock and infrastructure. A key design feature in the concessions was that monthly payments (for both operating subsidies and infrastructure investment funds) were to be made to each concessionaire over the entire term of the concession contracts, whereby the concessionaire had to assume all risks related to both demand levels and construction costs.

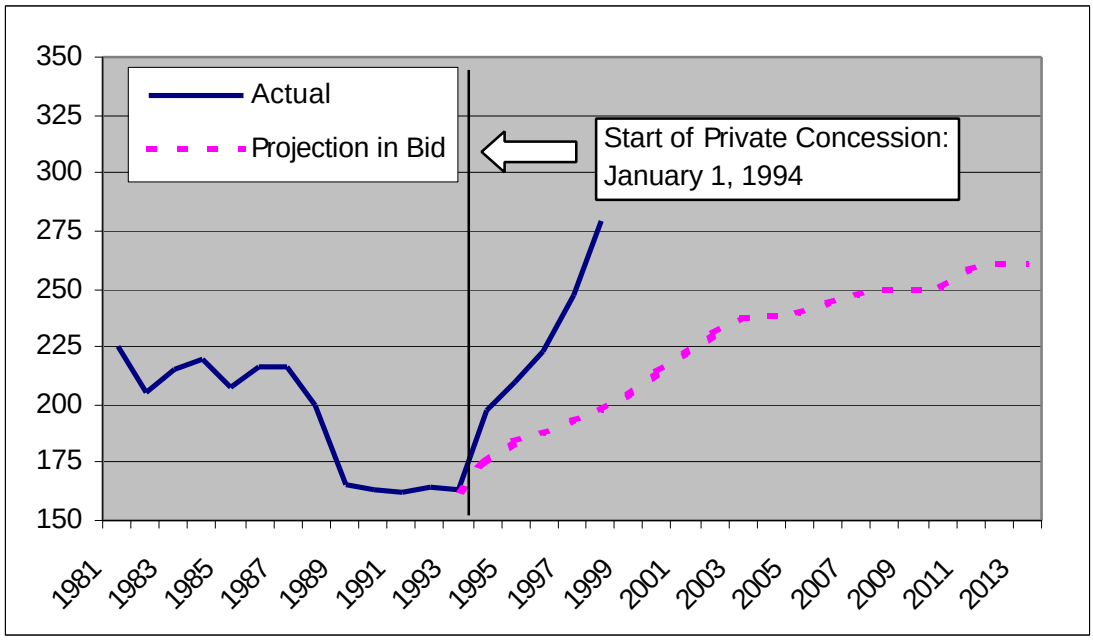
The bidding process used a "two envelope" approach: the first envelope contained information on the concessionaire (financial, business and technical capacity); the second envelope contained a business proposal and a financial proposal (amount of operating subsidy/payment and costs of investments).[1] Although the investments to be carried out were specified by the state, the bidders identified the schedule of investments to be made,[2] with the constraint that no more than 12.5% of total proposed investments could be undertaken in a given year. Bidders also included their own demand forecasts, projected revenues (including from publicity and renting locales), and costs of operation. Winning bids were chosen according to the lowest present value of the sum of the monthly payments required of the government.

[1] There was also the option to submit an "optional offer" envelope two, outlining a concessionaire-proposed alternative investment plan; no bidder exercised this option.
[2] Except in the case of the subway, for which the investment schedule was also specified.

Eight different consortia presented bids. Seven of them made bids for more than one line, and four consortia eventually won the seven concessions.[3], as shown in Table 3.1. Interestingly, bus companies form part of each rail consortium. The government had pre-established that there could not be only one operator for the entire system and that consortia needed to include foreign operating companies to prequalify. In the end the selected concessionaires included the following companies as minority partners: Burlington Northern (US); Transurb Consult (Belgium); Japan Railways Technical Services; and Bay Area Rapid Transit District (San Francisco, USA). The contracts left open the possibility for minor modifications to achieve notable service improvements, taking account of equipment conditions and changes in demand levels.

***Increased Passenger Volumes*:** From a service level and ridership perspective, the railway concessions have proved an undeniable success to-date. Initial ridership increases during the first three to four months of concessions ranged from 12% (San Martín) to 102% (Belgrano Sur), owing in part to improved controls that reduced fare evasion which had reached about 35% of all trips during state operations. These initial improvements continued, providing strong evidence that new users have been attracted to the system; by the end of 1998 ridership increases over 1993 levels ranged from 52% (Urquiza) to 802% (Belgrano Sur). In five of the eight lines, actual ridership levels have been higher than those predicted in the concessionaires' original bids, with the subway showing the most dramatic difference (see Figure 3.2).

FIGURE 3.2 PASSENGER VOLUMES FOR SUBWAY CONCESSION (IN MILLIONS / YEAR)



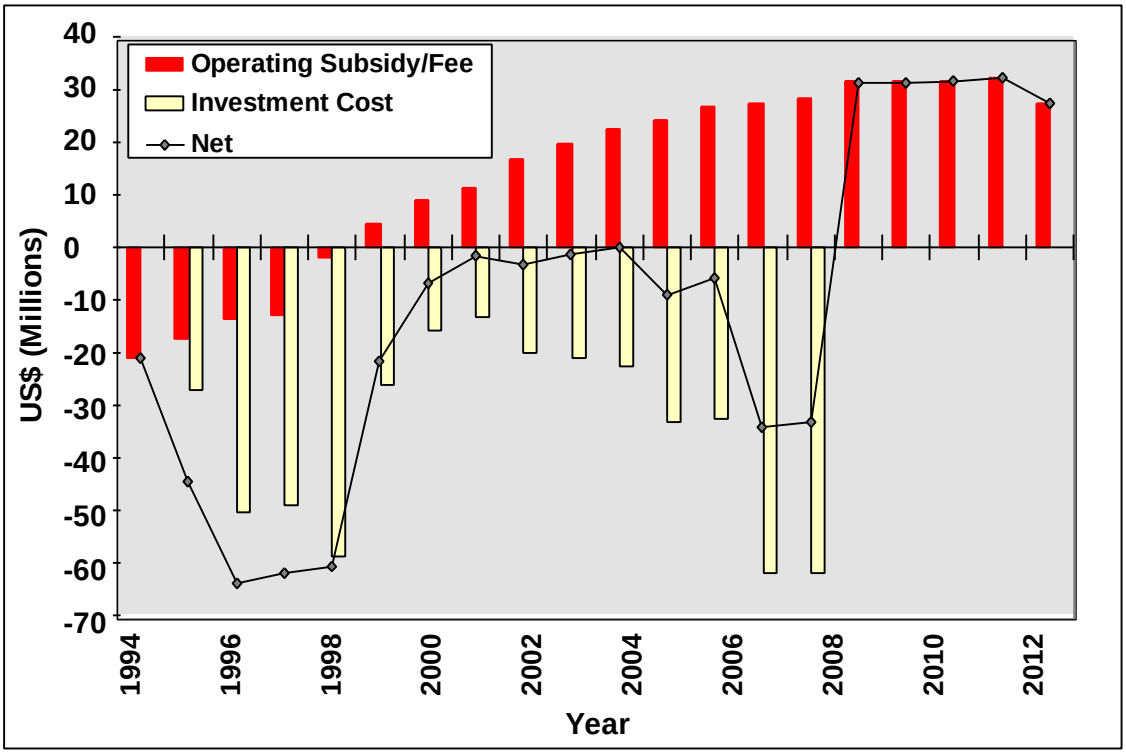
Sources: (1) World Bank data; (2) Secretaría de Transporte, 1999.

[3] The original winning consortium of Sarmiento, Mitre and Urquiza/Subway, split to form TBA and Metrovías.

Passenger-kilometers have increased by 150%, while train car-kilometers have increased by 50%. For suburban rail, absolute punctuality (on-time trains as a proportion of the total number of scheduled trains) was estimated at 96% in 1997 in comparison to 77% in 1993 and 83% in 1986. For the subway, average headways have declined from 4 minutes 18 seconds in 1993 to 3 minutes 20 seconds in 1997.

***Reduced Government Subsidies*:** Regarding effects on government coffers, state subsidies for operations have declined to approximately one-third of their 1980s levels. In terms of subsidy per paying passenger, the rates have declined from US$0.74 (1993) to US$0.20 (1997). For the subway, the estimated US$40 million annual subsidy has declined steadily over the first years of operation; starting in 1999, the concessionaire is now paying an operating fee to the government (see Figure 3.3). Furthermore, Metrovías has undertaken a US$20 million station rehabilitation scheme, improving retail and service spaces in some 50 stations for commercial lease. In terms of fares, the overall average suburban rail fare has increased (in real terms) by 9% since 1993, in part due to service quality increases and in part due to inflation correction. For the subway, fares have increased from US$0.45 to US$0.60 per trip (as of mid-1999).

FIGURE 3.3
SUBWAY CONCESSION OPERATING SUBSIDY / PAYMENT AND INVESTMENT COST



MOTORWAYS

The Argentine move towards road concessions had its roots in 1967 legislation allowing toll financing of new bridges, tunnels and highways to be carried out by the National

Highway Department. In the face of strong opposition to these tolls by users, the program proved a failure, forcing the government to revert to traditional public works financing schemes. In 1976, another toll road push was undertaken, this time with efforts to explicitly include the private sector. Five of the six projects proposed under this initiative were for the Buenos Aires metropolitan area, but none were ultimately successful private sector enterprises. Two of these concessions were bought by the city government due to lower than forecast traffic volumes, a third – the 9 de Julio Motorway – was revoked and partially completed by the city, a fourth was built completely by the public sector, and a fifth – the Buenos Aires - La Plata (BALP) Motorway – was delayed for many years due to lack of public financing.[4] The City Government signed a new contract for the completion of the 9 de Julio Motorway with the original concessionaire in 1993 (see Table 3.1).

Concessioning Process: By the end of the 1980s, the government fiscal crisis and the deteriorating state of road infrastructure led to a new initiative, which would allow for the concession of new and existing road infrastructure. As a response, a group of Argentine construction firms submitted a proposal to the government for the construction, extension, rehabilitation, and maintenance of a network of motorway accesses to the city.[5] The government awarded the group the concession without any competitive bidding, but the award was cancelled due to public opposition both to the toll roads program and the lack of toll-free alternatives. The Ministry of the Economy and Public Works and Services (MEySOP) then established a special concessions unit, unbundled the projects in the access network proposal, added the BALP Motorway, and opened up another bidding process. Except for the BALP, the projects to be concessioned – the Northern Access, Ricchieri Motorway, and the Western Access – each incorporated existing highways.

The call for bids took place in January 1993 and contracts were signed in July 1994. Winning bidders were selected according to the lowest bid toll (the state set a maximum toll in the invitations to bid, based on the minimum balance between the average user benefit and that which would provide a "reasonable" return to the concessionaire). The concession term was set at 22 years 8 months after which time the state would assume control of the facility, according to established standards (with concessionaires required to set aside security funds to ensure that the standards are met). This concession term was later revised and set at 20 years from the initiation of toll collection. The initial contracts specified that tolls could not be collected until the completion of works, which in turn had to occur within the first two years of the concessions. In some cases, this requirement was waived in subsequent contract modifications.

***Experience After Initiation of Toll Collection*:** The Northern Access has proven to be the most successful in terms of meeting demand expectations; indeed in terms of paying traffic the highway is the largest operating toll road in the country, with 334,000 paying vehicle equivalents per day in December 1998. The use of automated toll collection (ATC) technology is currently estimated at 35%, but the system is not compatible with

[4] The BALP motorway was to be financed by a combination of Provincial, National and private funds.
[5] The BALP motorway was not included as it was still under its 1981 concession, although not complete.

others being used in Metropolitan Buenos Aires.[6] The concessionaire is also implementing variable message signs as part of an intelligent transportation system (ITS) program. Another innovation of the Northern Access has been the recent receipt of US$40 million in prepaid royalties for commercial use of service areas. Of the other concessions under the national government jurisdiction in Buenos Aires, operational experiences have been less successful. Traffic volumes on the Western Access and BALP are lower than bid estimates, by 10% and 40% respectively.

REGULATION

In the case of both the motorways and the railways, the concessions preceded the establishment of a regulatory framework. For the railways, the task was initially assigned to the National Railway Restructuring Unit (UCPRF or *Unidad Coordinadora del Programa de Reestructuración Ferroviaria*). The UCPRF's duties included all aspects of regulation and enforcement related to fulfilling service levels and safety standards, meeting investment and maintenance plans, overseeing fares and fare adjustments, responding to public complaints, and ensuring that subsidy and payment schedules are met (by state and concessionaires). In November 1996 the National Commission for Transport Regulation (CNRT) was created, absorbing the duties of the UCPRF. Regulation to-date has been relatively ad hoc and according to FIEL[7] (1999), enforcement has proven to be laborious and bureaucratic. Regarding fare increases, FIEL criticizes the adjustment mechanism as being poorly defined and not transparent, although there have not been significant disputes.

The case of the roadways has been similar. At the time of the award of the concessions, the government set up OCRABA (*Organo de Control de la Red de Accesos a Buenos Aires*, or Buenos Aires Access Network Control Agency), as a relatively autonomous regulatory unit dependent on the Public Works Secretary of the MEySOP. OCRABA is financed via a moderate tax on toll collection and other revenue activities of the concessionaires. Its powers are essentially limited to monitoring compliance with the agreements and imposing sanctions; responsibility for major contractual changes, however, rests with the Public Works Secretary.

The regulations stipulate that the average toll on the facilities cannot exceed the average economic benefit of the service offered. A challenge to enforcing this regulation stems from the difficulty in actually measuring economic benefit (the method is not specified in the contracts) and from the fact that economic benefit is not necessarily linked directly to the CPI-based toll increases specified in the contracts. Another important regulatory feature is the requirement that additional revenues from traffic levels exceeding those in the offers be reinvested in the facilities. This also poses potential challenges in terms of monitoring routine operations and costs and ultimately enforcing the investment plans. A final important point to note is that not only is the Buenos Aires Access Network regulated separately from the rail system, but also from the rest of the nation's road concessions.

[6] Except Camino del Buen Ayre – a link between the Northern and Western Accesses.
[7] Fundación de Investigaciones Económicas Latinoamericanas, Buenos Aires.

RENEGOTIATIONS

Discussions to modify both the road and rail concessions commenced shortly after the contract initiation. In the case of the railways, these negotiations were formally authorized by a government decree issued in June 1997, while in the case of the motorways, the concession contracts were modified in several small steps. The authorization for the railway renegotiations grew from pressures for service expansion, changes in public expectations, the unforeseen need for infrastructure and rolling stock investments and the ensuing need for fare increases to accommodate the higher than expected passenger volumes, and concession term extension. The decree authorized the Transport Secretary (within MEySOP) to specifically renegotiate: scheduled services; investment programs; the concession term; specification of the concessionaires' "operating area" (to improve functionality of stations, entrances, exits); fare structure; state guarantees and payments; allowable financing schemes; and concessionaire membership. In the majority of the cases, the renegotiations are aimed at extending the contracts from 10 to 30 years,[8] with the principal goal being to get the concessionaires to embark on more ambitious investment plans. This goal is facilitated by a mechanism which now allows the concessionaires to use the rolling stock (which still belongs to the government) as collateral for raising debt. The revised agreements also contemplate staggered fare increases, allowing the extra revenues to be earmarked – together with the operating fees – to investment programs (through a trust fund account)[9]. Despite the importance of the goals behind the renegotiations, several groups voiced criticism and pointed out that a more transparent and competitive process should have been devised either through re-bidding or by allowing the five remaining concession years to first expire.

With regard to the motorways, negotiations on and modifications to the initial contracts were required as the works progressed, either to add new works or to change the original terms. For both the Western Access and the Ricchieri Motorway, the negotiations stemmed from delays due to expropriations (in the case of the Western Access, a toll increase was also allowed due to delay-related cost increases). Although some degree of flexibility has been critical given the unpredictability of land acquisition and resettlement issues, the government has mitigated business risk, which may send signals to concessionaires causing them to underbid. Indeed, the most recently awarded concession contract, for the President Perón ring road, explicitly contemplates renegotiations and toll adjustments. This clear offsetting of risk may have led to the winning concessionaire submitting a toll bid nearly 40% below the government maximum.

CONCLUSIONS

The Buenos Aires motorway and railway concessions are striking due to their impressive speed of implementation. This speed can be attributed to a strong and consistent government policy, a relatively simple and transparent bidding process, good entrepreneurial response, and a stable currency. Through the concessions, the

[8] Exception being the subway/Urquiza concession, which is extended from 20 to 24 years.

[9] The trust fund concept was adopted because of the positive experience gained with similar trust funds in the motorway concessioning.

government has achieved important cost reductions. In the rail sector this was achieved in part through the private sector's ability to undertake (through government funded redundancy payments) massive labor reductions: passenger-kilometers per employee have increased 380% between 1993 and 1997. In the road sector, the concession program has attracted over US$1 billion in private funding over the past five years.

The effects of the concessions on transport use and system performance are also apparent. In comparison to the last year of state operation, the number of paying passengers on the suburban rail and subway system has more than doubled and service indicators show important improvements. Of all person trips in the metropolitan area, the share of suburban rail has increased from 5.8% in 1991 to 9% in 1997; the subway which had declined to less than 3% of total trips in 1991 had rebounded to 5.5% in 1997. Most of these trips have come at the expense of bus trips; bus mode share has declined by 16% since peaking at 58% in 1991. Perhaps the most remarkable change in transportation trends during the decade, however, has been the rapidly increasing use of passenger cars, estimated to have grown from 22% to 33% of all trips in last seven years. The influence of motorway construction, and its subsequent effects on urban expansion and suburbanization, on this growth in car use cannot be ignored. This issue is further complicated by the fact that significant real estate development opportunities at and near rail stations have not materialized, which some sources blame on poor management by the government agency responsible for the former railway lands.

Although the initial bidding for the concessions was a model of efficiency, the separate and mostly uncoordinated approach among road and rail projects is a testimony to the lack of an overall transportation strategy for the metropolitan level. Furthermore, the absence of a pre-defined regulatory framework has proven troubling as has the (subsequent) post-award negotiations and renegotiations. Beyond setting poor precedents for future concessions, these renegotiations have lacked transparency and have also reduced private sector risk. At the same time, the poorly defined regulatory structure may expose concessionaires to future political and institutional risk, particularly in view of the government change in late 1999. The lack of a strategic planning approach and a unified regulatory agency for concessions in the metropolitan area may seriously hamper future efforts for integrated transport system development. For example, the President Perón Park Highway – an outer ring road awarded as a concession by the National Government in 1998, but not yet under construction – will directly compete in many segments with a another highway, which the Provincial Government plans to widen without tolls.

Ultimately, the future will show how successful the Buenos Aires experience has been. The concessions to-date have been operating with great success, during a period of relative economic stability; it is uncertain, though, what a downturn might bring. Other issues include ensuring safety performance and maintaining acceptable levels of service on the motorways, especially given traffic growth and the lack of congestion pricing.

TABLE 3.1 RAIL AND MOTORWAY CONCESSIONS IN BUENOS AIRES METROPOLITAN AREA

Project	Route	Agency & Concessionaire	Investment US$ mns	Bid	Sign	Term (yrs)	Toll Initiated	Operating Fee (Subsidy) US$ mn	Fare/ Toll (US$)[a]	Status in mid-1999
Belgrano North Suburban Rail	54 km diesel	MEyOSP[b] Ferrovías	68	Jan. 92	Mar. 94	10	n.a.	(196.7)	0.54	Renegotiated (20-yr extension) contract pending before Congress
Belgrano South Suburban Rail	66 km diesel	MEyOSP Metropolitano	51	Jan. 92	Apr. 94	10	n.a.	(166.1)	0.54	Public consultations on renegotiated (20–year extension) contract
Mitre Suburban Rail	186 km 69% diesel	MEyOSP TBA	230	Jan. 92	May 95	10	n.a.	(84.1)	0.53	Renegotiated contract (20-yr extension) approved by Congress; 2 court injunctions pending
Roca Suburban Rail	260 km 83% diesel	MEyOSP Metropolitano	106	Jan. 92	Dec. 94	10	n.a.	70	0.65	Public consultations on renegotiated (20–year extension) contract
San Martin Suburban Rail	56 km diesel	MEyOSP Metropolitano	72	Jan. 92	Mar. 94	10	n.a.	44.7	0.68	Public consultations on renegotiated (20–year extension) contract
Sarmiento Suburban Rail	185 km 75% diesel	MEyOSP TBA	243	Jan. 92	May 95	10	n.a.	177.9	0.63	Renegotiated contract (20-yr extension) approved by Congress; 2 court injunctions pending
Subway	39 km subway; 7 km light rail	MEyOSP Metrovías	432[c]	Jan. 92	Nov. 93	20	n.a.	438.4	0.60	Combined with Urquiza in one concession; renegotiated contract (4-yr extension) approved by Congress
Urquiza Suburban Rail	32 km electric	MEyOSP Metrovías	43	Jan. 92	Nov. 93	20	n.a.	(101.7)	0.54	Combined with subway in one concession; renegotiated contract (4-yr extension) approved by Congress
Acceso Norte & Av. Gral. Paz	119 km	MEyOSP AutoSol	791	Jan. 93	May 94	20	Sept. 96	n.a.	1.40	In operation; fourth contract modification under study
Acceso Oeste Motorway	55 km	MEyOSP GCO	211	Jan. 93	May 94	20	Jan. 99	n.a.	1.50	In operation
Bs. As. – La Plata Motorway	63 km	MEyOSP Coviares	533	79	93[d]	22	July 95	n.a.	1.90	In partial operation; contract renegotiation underway
Northern 9 de Julio Motorway	11 km	GCBA[e] COVIMET	205	Dec. 80	93[d]	20	July 95	n.a.	1.00[f]	In operation; complete works scheduled for 2001
Pdte. Perón Ring Road	94 km	MeyOSP Tribasa-Burgwardt	360	July 97	Aug. 98	20	--	n.a.	0.048 per km	Awaiting Government Decree for official contract award; in design
Ricchieri Motorway	57 km	MeyOSP AEC	109	Jan 93	May 94	20	Mar. 97	n.a.	0.70	In partial operation; Second stage works to open 1/2000

Source: World Bank data. Notes: n.a., not applicable. a) suburban rail fares are average fares and were last raised in January 1998; Subway fare was raised in 1999; b) MEyOSP denotes Ministry of Economy and Public Works and Services; c) In addition, MEyOSP will rehabilitate subway Line A at a cost of about US$ 125 million; d) a revised contract signed with the original concessionaire; e) Government of the City of Buenos Aires; f) to increase to $1.30 with completion of all works.

.IV. MEGAPROJECT CONCESSIONS IN BANGKOK

Bangkok, known for its traffic congestion, has attempted to solve its transportation woes through the construction of several "megaprojects." Bangkok has also increasingly been turning to the private sector as a source of financing for these megaprojects. Indeed, the authors of the nation's *Seventh Plan Urban and Regional Transport* (SPURT), published in 1991, considered the use of concessions to be "further developed in Thailand, and notably in Bangkok's transport sector than in most other places."

When the Royal Government of Thailand started considering concessions for improving its urban transport infrastructure, a main objective was to "alleviate the investment burden of the Government and to have the private sector participate in the development of the nation's transportation system" (Terms of Reference for Second Stage Expressway as quoted in SPURT, 1991). In the early 1980s, the private sector became to be viewed as a potential financing source for infrastructure investments. A five-year transport plan for Bangkok published in 1985 anticipated approximately two percent of road infrastructure investments to be financed by the private sector (these were initial construction expenses for the Second Stage Expressway). In this same plan a 20-km rail mass transit scheme was also proposed as a private sector concession, with land and civil works to be paid by the government. This project was eventually to become the ill-fated "Skytrain."

THE CONCESSIONS IN 1991

By the time SPURT was published, the initial forays into private concessions contained in the 1985 plan had grown into six megaprojects to be financed via concessions – valued in 1991 at nearly US$8 billion, or more than 60% of all transport infrastructure investments planned for the city during the period 1992-1996.[10] SPURT also identified a seventh concession, a rail transit project, which was in initial bidding stages at the time of the Plan's publication.[11] At the time there were four different government agencies leading the various concessions: the Department of Highways (DOH), the Bangkok Metropolitan Administration (BMA), the Expressway and Rapid Transit Authority (ETA), and the State Railways of Thailand (SRT).

The increased private sector role formed part of an overall major escalation in transport infrastructure investments for the city. If the planned infrastructure concessions had been implemented according to SPURT, rail transit investments would have comprised 42% of total route-km and 58% of total capital investments (see Table 4.2). However, by 1999 only three of the seven projects in SPURT had opened or were close to opening: the Don Muang and Second Stage Expressways and the Bangkok Transit System. The Third Stage Expressway (no longer a concession) was still in preliminary construction stages, while Skytrain was cancelled and the Hopewell scheme was suspended. Of the three fully or nearly completed projects, rail transit makes up approximately 31% of total kilometers and 44% of total investment costs. An additional concessioned motorway, the Bang Pa In – Pak Kret expressway which was not identified as part of the SPURT report, also opened towards the end of 1998.

[10] The Hopewell rail/highway project was not "officially" included in SPURT investment estimates; we have included it here.

[11] This project, which would become the Bangkok Transit System, was not included in SPURT's investment plan.

Most of the originally planned concessions were intended to be financed in part by user fees with additional revenues coming from real estate development and/or government subsidies in the form of toll revenues from existing expressways, land acquisition and preparation, tax exemptions, and guarantees. Based on the initial concession plans, SPURT attempted a preliminary assessment of the "success" of the concession policy, based on several criteria (see Table 4.1). The authors did not, at the time, draw overall conclusions regarding the concessions, but their early observations proved to be somewhat prescient. While noting the potential promise to attract more capital to the sector, the SPURT report raises several concerns including: the apparently slow pace of projects moving forward; the potential for the concessions to wind up dictating the public investment budget and the overall transport strategy; possible macroeconomic instability arising from the high levels of foreign investment; and a variety of potential risks stemming from contractual issues and government liability. SPURT further pointed out that the government lacked an effective system of project development, resulting in sometimes incompatible projects, few bids (little competition), uncertainty about the government's ability to deliver, land acquisition problems, unidentified public costs due to the need for project integration, and contingent liability of the government, among others.

TABLE 4.1 SPURT'S INITIAL ASSESSMENT OF BANGKOK'S CONCESSIONS IN 1991

Criteria	Initial Assessment
Mobilization of additional funds	→ Anticipated, but not secured.
Implementation time	→ Projects taking longer than expected
Economic efficiency and economic effects	→ Indeterminable at the time
Efficient forms of urban development	→ Indeterminable at the time
Environmental impacts	→ Potentially severe due to elevated structures in downtown skyscape
Risk allocation	→ Potential for contract disputes, risk of project abandonment, new interest group pressures on transport policy

THE CONCESSIONS TODAY

Eight years after the publication of SPURT, we see a Bangkok that is in many ways different, but also very much the same. While the recent economic crisis may have at least brought moderate relief to its severe congestion, the fundamental challenges to the city's transport system remain: institutional coordination and effectively balancing transportation demand with supply. The overall transport strategy that continues to dominate the region still revolves around the megaprojects. Indeed, the megaprojects program has apparently expanded further, especially with regard to expressways. Completion of all projects currently under construction would yield a rail rapid transit network of 45 km and an expressway network of some 355 km. Furthermore, an additional US$30 billion in approved projects are in the planning stage, although only about US$1 billion in funding for these projects is apparently available.

Interestingly, while authorities continue to embrace the megaproject approach in Bangkok, the use of concessions has apparently waned. The three concession expressways (Don Muang, Second Stage, and Bang Pa In – Pak Kret) are either complete or almost complete and only one major additional urban road concession is currently planned: the South segment of the Outer Ring Road, including a bridge over the Chao Phraya River (estimated cost of US$1.04 billion). In rail transit, beyond the BTS project which is nearing completion, the Metropolitan Rapid

Transit Authority (MRTA) plans to fund the rolling stock, the command and control system, and the power system as part of the operating concessions for its Blue Line (a 20-km, 20-station underground system due to be completed in 2003). In addition, at least one light rail feeder line to the BTS has been proposed as a concession. A scaled-down Hopewell project (rail only) may also eventually be built, despite the ongoing contractual and legal wrangling.

PROBLEMS AND CHALLENGES

Why, after an aggressive early start on using concessions in the urban transport sector, has Bangkok seemingly cooled to the approach? Problems in at least five areas can be identified:

- political intervention;
- the absence of an adequate policy framework for the concessions;
- institutional problems among competing agencies;
- failure to integrate the various projects with each other and absence of an overall transport plan; and
- the (recent) financial crisis.

Regarding political intervention, complications posed by the first round of concession experiences has likely made both the public and private sectors wary of the approach. Beyond the Hopewell and Skytrain troubles, even the "successful" concessions in Bangkok faced various contractual hurdles and disputes. In the case of the Second Stage Expressway, for example, the government prevented the original (foreign) concessionaire from implementing a contractual toll increase and from collecting its share of the First Expressway toll revenues; the company eventually sold its interest to local companies, after which the toll increases were allowed. The Don Muang expressway also suffered from the government's failure to uphold contractual obligations regarding the demolition of competing infrastructure. Most recently, the Pak Kret – Bang Pa In concessionaire closed the highway during a dispute with the government which attempted to force it to offer toll discounts during the Asian Games. In this context, the inevitable politicization of the process raises important issues of risk allocation. Evidence suggests that the private sector cannot avoid carrying some of the financial risk of revenue losses due to political intervention.

These problems stem from one of the primary concerns that SPURT had initially identified regarding the concessions process: insufficient institutional capacity and policy framework. Beyond presenting eventual problems related to toll setting and other contractual issues, the lack of an appropriate institutional and policy context can result in – as in the case of Hopewell – premature commitment to a specific project promoter, without confirming project design and feasibility. In addition, problems inherent to urban transport infrastructure projects – such as securing land and dealing with environmental impacts – are only compounded without adequate institutional capacity. Finally, the political backlash related to toll and fare setting may be linked to the initial, non-participatory approval process.

Further complications have almost certainly arisen from the fact that five different government agencies are currently involved in transport infrastructure concessions in Bangkok. These multiple agencies have, in turn, contributed to project overlap and competition and a lack of integration. This lack of integration manifests itself at three levels: (1) long-term strategic planning consistency; (2) initial design of specific infrastructure (links, accesses/egresses, stations); and, (3) traffic management policy. In terms of project design, while project

integration has historically been a problem with some of the expressways (i.e., integration with the local road system), it now seems an imminent problem for BTS and consequent necessary changes in bus routes and the development of feeder bus systems and terminals (an estimated 80% of BTS passengers will be transfers). Regarding traffic management policy, there are cases (i.e., Don Muang) of traffic management schemes significantly improving traffic flows on competing, non-tolled infrastructure, with direct, negative effects on toll revenues.

The lack of project and policy integration is not a problem, per se, of the concessions, rather an example of the need for an overall urban transport strategy. It is possible that such a strategy was impossible to achieve, since different parts of the government were competing for slices of the concession pie. In other words, the concessions may have actually hindered coherent planning. Indeed, the 1991 SPURT report itself was not really a "plan," but rather a compilation of ongoing projects that were being promoted by different government agencies. Not only was effective planning hampered, but now there is the real concern that the existence of these concessions (and the commercial interests behind them), without a strong urban transport policy, might unduly influence implementation of other transport projects and policies in Bangkok, such as exclusive busways and/or congestion pricing.[12]

Finally, it is likely that the Asian financial crisis has played an important role in slowing Bangkok's concessions. Private concessionaires have been affected by unfavorable debt market conditions and the depressed domestic stock market (a former incentive to concession companies was the possibility to profit from public stock offerings). Whether the private sector concessions actually contributed to the recent economic problems – as SPURT had warned might happen – is difficult to determine, but not likely.

CONCLUSIONS

In 1991, Bangkok was considered to be among the most advanced cities in terms of transport infrastructure concessions. As a testimony, over the past decade, concessions have been able to attract private sector funds to transport infrastructure in the city; of all the megaprojects either opened or under construction, concessions have produced 84 km of roads and rail lines (20% of megaproject route-km) and US$2.9 billion in investments (almost 50% of total megaproject investments to-date). Unfortunately, the timing of these projects has been relatively slow due to contractual and legal issues as well as problems with some projects' basic designs.

The Bangkok experience raises important interesting questions regarding the viability of this urban transport infrastructure delivery mechanism in Thailand and perhaps provides an indication of why the initial heavy emphasis on private concessions has seemingly tapered off within the megaproject strategy. The problems that Bangkok has faced derive primarily from the absence of an accepted overall urban transport policy and investment program, within which new road/rail concessions might have been defined. Further complications came from the fact that there were so many different agencies pursuing concessions in the metropolitan area.

[12] Irrespective of the existence of concessions, neither busways nor congestion pricing seem to be high on the government's list of priorities, despite past successful experiences with exclusive bus lanes and the fact that congestion pricing had been planned for Bangkok as long as 20 years ago. The existence of the concessions and other toll roads could, in theory, help move forward a congestion pricing, at least on limited access roads.

Beyond the above, it can be argued that Bangkok lost valuable time by searching for private sector support for its rail mass transit. After a quarter century of planning, the first line is only now slated to open. In the intervening years which coincided with Bangkok's remarkable economic boom, physical development sprawled seemingly unplanned in all directions, leaving a city for which future transport solutions will be difficult to implement. (In contrast, the Government–driven transport investments of Hong Kong and Singapore have produced a mass transit infrastructure which functions efficiently and has helped to shape urban growth.) The Bangkok experience highlights the lesson that the pursuit of an appropriate urban transport policy and strategy, and not primarily the pursuit of private financing, should shape the context within which concessions occur. The private sector projects should desirably be situated within an overall strategy and then be implemented in a clearly defined and transparent process.

TABLE 4.2 BANGKOK TRANSPORT "MEGAPROJECT" CONCESSIONS AS PLANNED IN 1991-92

Project	Km	Agency[a]	Cost (US$ bn)	Mechanism/ Details	Status in March 1991	Status in 1999
Don Muang Expressway	24 (elevated)	DOH	0.32	Bid: 9/87, Sign: 8/89; 25-Yr (from sign); tolls set in bid, with schedule; re-negotiation if competing roads built; BOT	Preliminary construction; delays due to financing	Open; approximately 10 kms in extensions recently opened.
Second Stage Expressway	32 (mostly elevated)	ETA	1.32	Bid: 1987, Sign: late 89; 30-Yr (from construction start); revenue pooling from FES[b]; no specified integration with local roads; toll and schedule set; compensation if competing roads built; BOT	Construction recently begun; land acquisition still underway	Mostly complete and operating; extensions underway.
Khlong Saen Saep Expy	22 (elevated)	DOH	0.3	Bid: 1/90	Negotiations proceeding	
Third Stage Expressway	30 (mostly elevated)	ETA	0.76	Bid: on two corridors in late 89; bidders free to propose alignments; one bid received by 9/90	Further studies underway	Some construction underway; completion estimated for 2002; no longer concession?
Bang Pa In - Pak Kret Expressway	34	ETA	0.96	BTO		1st segment opened; tolls in dispute; 2nd segment to open in late 1999
Skytrain	34 (elevated)	ETA	2.04	Bid: 1986, Re-bid: 1988, Sign: expected in 1991; delayed payments for land; govt. w/25% equity	Contract negotiation	Cancelled
Bangkok Transit System[c]	23.5 (elevated)	BMA	1.65	Prequalifications requested: 2/91; Bid: 4/91; Sign: 4/92; 30-Yr (from service start); Fully private sector financed; civil works – BTO; electrical/mechanical - BOT; govt. set fare; no guarantees.	Initial meeting with 10 firms in January; tender in preparation	Scheduled to open in December 1999 (King's Birthday)
Hopewell Road/Rail[d]	60 (mostly elevated)	SRT	2.8-3.2	Bid: 10/89; Sign: 1991; Hopewell responded to RFP with larger project; includes land development rights; competes with other projects	One-year feasibility study underway	Govt. terminated concession in 1998; approx. 14% complete; renegotiations underway

Sources: (1) SPURT, 1991; (2) NESDB, 1996; (3) World Bank data.

Notes: a) for full agency title, see text; b) First Stage Expressway; c) this transit system, known as the BMA "Electric Train" in the SPURT report, is also referred to as BTSC or Tanayong (after the concessionaire) and was described in SPURT but not included in the implementation plan; d) the Hopewell rail (60 km)/ highway (57 km) project was not included in SPURT investment estimates and only the rail component formed part of SPURT's Recommended Investment Programme

V. URBAN MOTORWAY AND RAIL CONCESSIONS IN THE UK

The United Kingdom has been at the forefront of the recent global trend towards private sector provision of transport infrastructure and services, as part of a broad national policy started under the 1979-97 Conservative Government to increase the private sector role in the economy. While in the transport sector, the privatization efforts are probably best known for their much publicized impacts on the national railways and bus services, important effects have also been felt in the urban transport infrastructure sector.

The Government formally created a mechanism for private sector involvement in traditionally public infrastructure and services provision with the launching of the Private Finance Initiative (PFI) in late 1992. The PFI's purpose is to enable the public and private sectors to work more closely together, based on the principles of appropriate allocation of risk, transparent competition, clear performance indicators, and "value for money". This last principle aims to ensure that the transaction costs associated with the PFI approach do not ultimately make the project more expensive than the full costs implied via the conventional public sector procurement method. The anticipated benefits of PFI projects include: transfer of risk to the private sector, more rapid project implementation (accelerated realization of benefits), and reduction of public sector capital expenditures.

EARLY PROJECTS

The first modern private concessions in urban transport infrastructure in the UK actually pre-dated the PFI: the Dartford River Crossing, the Greater Manchester Metrolink light rail, and the proposed Birmingham Northern Relief Road (BNRR). Although the Manchester Metrolink can be characterized as a primarily "urban" project, both the Dartford Crossing and the BNRR might be better described as regional projects, since Dartford is a river crossing on London's M25 orbital motorway and the BNRR is a proposed urban bypass (to the north and east of Birmingham).

Dartford Crossing: The Dartford Crossing was the first of the privately financed projects, with bids invited in 1986 for either a government financed or a privately financed expanded river crossing. The winning bid was privately financed and the contract was signed in April 1987. The concessionaire took over operations of the existing Dartford Tunnel, including toll collection and debts of approximately US$65 million, and opened a new 4-lane bridge in October 1991 at a cost of approximately US$240 million. The contract specified a maximum of 20 years to recover its costs via toll collections, after which the crossing will return to the government. Based on annual gross toll income of approximately US$76 million (£48 million), it is likely that the project will be transferred to the government by 2000. The Crossing forms an important link in the M25 motorway, which is intended to keep trucks and other long distance traffic out of London. Since opening, traffic at the Crossing has increased 46% and it is predicted to reach capacity by 2002. Despite heralding the Crossing as "an example of major infrastructure projects funded by the private sector," the government recognizes that "it has contributed to an undesirable growth in traffic" (DETR, 1997). The project's "success" can be attributed to the fact that it is an exclusive link on a larger motorway, with proven traffic demand and strong growth potential. The government is currently

working on plans for what to do when the Dartford concession ends, specifically focusing on whether and how "continued charging might contribute to integrated transport objectives in the area" (DETR, 1999b).

***Manchester Metrolink*:** The second major urban transport infrastructure project was the Greater Manchester Metrolink light rail system. The project was initially conceived by the Greater Manchester Passenger Transport Executive (GMPTE) in the early 1980s, prior to bus deregulation and rail privatization, and aimed at improving rail transit in the region. The original intention was to deliver the project through the traditional public sector (design and build) approach. However, when the national government approved a grant for the project in 1987, this approval was subject to private sector participation in project delivery and operation.[13] The objective was to get the private sector to assume some of the construction and commercial risk and to provide for some of the capital costs.

GMPTE's initial conceptualization of private sector involvement was to separate the system's operations from infrastructure (the process eventually chosen for privatizing British Rail). Ultimately, however, a DBOM approach was chosen (15-year term; with an option to terminate after four years) to ensure that: system construction would take into account long-term operating costs, the concessionaire would pay for operating rights (thereby offsetting some capital costs), and the concessionaire would assume all operating risk. The government would still pay for the majority of the capital costs. The tender documents detailed physical characteristics (buildings, stops, civil engineering works, and rolling stock) as well as the principal service characteristics: minimum service levels (frequency and operating periods); minimum capacity levels; and enforcement through financial penalties for reduced operations (starting at 98% of train-km operated; contract termination at less than 70%). Bidders were free to propose innovations as well. The concessionaire was free to set fares, since bus operations posed competition to the service.

TABLE 5.1 PASSENGER TRIPS (MILLION) ON LOCAL PUBLIC TRANSPORT IN GREATER MANCHESTER

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Bus	355	320	320	323	307	290	254	256	249	249	236	228	227
British Rail	24	25	25	25	20	20	13	11	11	10	11	11	n.a.
Metrolink	-	-	-	-	-	-	-	7.64	11	12.8	12.7	13.6	13.8
Total	379	345	345	348	327	310	267	275	271	272	260	253	

Source: GMPTE Trends & Statistics, 1986-1998. Note: n.a., data not yet available.

The initial results of the concession were deemed positive by GMPTE. Metrolink ridership increased 78% over the first five years of operation and strengthened total rail ridership in the region during a period when overall public transport trip-making was declining (see Table 5.1). Fare increases, meanwhile were in line with inflation (and less rapid than bus fare increases); private sector operations were profitable from the start;

[13] At the time, the only recent precedents for private sector participation in (UK) transport infrastructure were the Dartford Crossing and the Channel Tunnel.

and, importantly, 12% to 14% of all Metrolink trips were estimated to be former auto trips. There were, however, drawbacks. First, the concession payment (which totaled approximately 5% of capital costs) was judged in hindsight to be too low, since the operations turned a profit almost immediately. In addition, Metrolink fare integration with bus and rail was lacking. Finally, it was believed that the concession structure gave little incentive to the concessionaire to re-invest in the system.

Partly to correct these shortcomings, but also due to the fact that system expansion plans were quickly materializing, the GMPTE exercised in 1996 the contract termination clause after four years of operation. A new bid tender, for an extension of the network and for operation and maintenance of the entire system, was issued. In a two-stage bidding process, a new consortium, consisting of Altram (Ansaldo Transporti/John Laing/Serco), outbid the initial concessionaire and was selected in December 1996. The basis of the contract was similar to the original concession (cost and revenue risk assumed by concessionaire), but with improvements from GMPTE's perspective, including: through-ticketing agreements with bus and train operations; and significantly increased private sector funding – with the concessionaire providing approximately 67% of system costs. The transfer of the system from the first to the second concessionaire went smoothly; operations continued and all staff were initially kept by Altram.

***Birmingham Northern Relief Road*:** The final urban concession initiated in the early years of the recent British experience was that of the Birmingham Northern Relief Road (BNRR), a proposed 43-km highway bypass in the Birmingham metropolitan area. The motorway, with construction costs estimated in the range of US$700 million to US$1 billion, was initially conceived in the 1980s and was to be the first in a series of private toll motorways in the UK. The project was first announced as a private concession in May 1989 and three pre-qualified groups were invited to submit bids in April 1990. In February 1992 a 53-year concession was signed with Midland Expressway Limited (MEL). Although the original route had passed through the required public participation process (known in the UK as Public Inquiry) in 1988, the decision to develop the road as a DBOM project pushed it again into Public Inquiry in June 1994. The project was then subjected to a legal battle waged by a coalition of citizens and environmental groups that expressed serious concern over the project's destruction of the region's greenbelt, its likelihood to generate additional traffic and air and noise pollution, its probable encouragement of "inappropriate development," and its inadequate environmental impact assessment. Arriving at a final legal judgement was further complicated by issues raised over confidentiality of information in the agreement; the original concession contract was signed before government environmental regulations regarding information disclosure were established. In mid-1999, it was reported that a compromise had been reached between the opponents, making it again more likely for the project to move forward.

CONCESSIONS: THE CURRENT SITUATION

Building on the primarily positive initial experiences with urban area transport infrastructure concessions, activity on this front in the UK has increased significantly in more recent years, especially with respect to light rail/tramway projects (see Table 5.2). There has also been important activity in terms of road concessions; in 1996, the government signed eight DBFO road contracts (valued at US$945 million) to be financed

through the UK's innovative "shadow toll" program. Four of these are essentially new construction projects (including the Leeds bypass which opened in February 1999) and four are upgrades of existing facilities. To some degree, most of these roads pass through urban/suburban areas, although only one – the 30-km, US$340 million Leeds bypass – can perhaps be characterized as primarily urban/suburban. The shadow toll concept could feasibly be used to help privatize urban roads. An additional seven DBFO roads (valued at US$1.1 billion) have been announced, including the Thames Gateway, an access motorway within the Greater London area.

***Croydon Tramlink*:** Of the rail concessions, two are in the Greater London area, totaling 55 route-km.[14] One, the Croydon Tramlink is a 28-km system which will provide transport service to a large suburban commercial/residential area south of London and also serves as a feeder to the London Underground. Initial engineering, economic, and environmental viability of the project was first confirmed by a 1987 study and further detailed in a 1991 study. By 1994, parliamentary authorization was received and London Transport and the Croydon Council (the two project proponents) convened a project development group (PDG), comprised of a private sector operating firm, a manufacturing firm, and an engineering firm. Through this innovation, the project proponents were able to draw on industry expertise and experiences in developing the performance specifications and the concession terms. Private sector members of the PDG were reimbursed for their services and also allowed to bid on the project; none formed part of the winning consortium. Final award was based on six criteria (in descending order of importance): compliance with major technical, construction and operation standards; financial strength of bidder; level of request for public sector financing; business track record; use of proven and established technologies; and service, equipment or works which exceed the bid specifications.

Of the four pre-qualified bidders, Tramtrack Croydon Ltd (TCL) – a consortium comprised of two engineering firms, a rolling stock manufacturer, a bus operator, and a bank (see Table 5.2) – was awarded the 99-year BOT concession. The government provided a fixed grant, covering approximately 65% of the estimated US$320 million in costs. The concessionaire carries full traffic risk, with income from fares and prepaid fares via London Transport's travelcard system. As such, the financing structure decided upon by the consortium and its financiers had to be able to handle the risk associated with traffic variation. Additional risks came from construction and related activities, since there were potential complications related to power, gas and water lines in the town center. Eventually, the project was financed via a combination of bank debt and guarantees, consortium equity, and nonrecourse leasing for both the trams and the track. Since the Bank guarantees were only for 20 years, while the leases were for 28 years, the consortia will be required to build up cash collateral as security over the eight remaining years of the lease. The project is scheduled to open towards the end of 1999, two years after construction began.

[14] In addition, BAA (the owner of Heathrow airport) runs the Heathrow Express, a 27-km high speed rail line between London and the airport; the service is operated on a mainline owned by Railtrack (electrified by BAA) as well as a tunnel to Heathrow owned by BAA and managed by Railtrack under a contract which includes guarantees on maintenance, timing, and reliability. The system cost US$720 million and opened for operation in June 1998. System expansions into downtown London are planned.

***Docklands Light Railway*:** The other London system, the Docklands Light Railway (DLR), was initially built over a three-year period starting in 1984, as a design-build project aimed to serve the transport demands of an urban redevelopment scheme. Further extensions were completed in 1991 and 1994, all with public funds. In March 1995, the government issued a tender for a 4.2-km DBFM expansion to Lewisham, to be financed completely by the private sector. Private sector participation assuming all construction and operations risks was initially deemed feasible for two reasons: the extension was to connect to a built-up urban area with established demand; and, it was to provide a river crossing with few competing alternatives, offering time and money savings.

In June 1996, a 24½-year concession was awarded to City Greenwich Lewisham (CGL) Rail, a consortium of construction/engineering firms and an electric utility (see Table 5.2). The eventual funding scheme chosen by CGL for the US$370 million project included a secured bond issue covering approximately 70% of project costs, government grants for 23% of project costs, and consortium equity and subordinated debt accounting for the remaining 7%. Revenues will come from two sources: a fixed availability fee, payable for infrastructure provided according to specified standards, and actual usage fees. During the estimated 3½-year construction period, the concessionaire draws funds – upon fulfillment of specific milestones – from an account established with the bond proceeds. After completion of the project and up to year 14½ of the concession, CGL's revenues will come solely from the fixed availability fee. During the remaining ten years of the concession, revenues will then depend on actual passenger usage of the system. So, although initial project conception considered it possible for the extension concessionaire to assume most operating risk, according to the final contract the fixed availability fee will account for nearly 70% of total project revenues, with actual usage contributing the remainder.

The actual usage fee is comprised of two parts. The first, is a unique "cross-toll," which will be added to the tickets of travelers that use the river crossing. The toll – incorporated into the integrated ticketing system of the London Underground – was seen as particularly important in encouraging private sector involvement in the project by providing an identifiable, dedicated revenue source. Beyond this toll, the variable usage fee to be paid to the Lewisham concessionaire will be based on an "incremental" revenue calculation. The incremental revenue mechanism is designed to compensate the concessionaire for the increased revenue on the entire DLR system due to the extension. While it was acknowledged that this revenue was both difficult to estimate and would likely vary over time, a specific method was agreed at the outset to improve predictability and decrease the possibilities for future disagreements. This issue became even more important (and complicated) when it was decided to concession the operations of the rest of the DLR, with a seven-year contract signed in 1997. A final important issue regarding revenues is the fare policy. Reportedly, bidders for the Lewisham Extension grew wary of political intervention in fare-setting, a risk over which the private sector has little control. In the final bid negotiations, an agreement established that the concessionaire would neither suffer *nor benefit* from real fare decreases or increases resulting from political decisions.[15]

[15] This agreement is based on a formula to calculate the revenue increase/decrease according to the price

During the evaluation and negotiations of the Lewisham Extension concession, a prequalification was held to concession the operations of the existing DLR system. Bids were invited in September 1996, with two consortia submitting bids. The award of the concession to Docklands Railway Management Ltd. (DRML) – comprised of the DLR management team at the time and Serco plc – was announced in March 1997 and the seven-year franchise was officially initiated in April 1997. DRML has full responsibility for train operations (entire system) and track and signaling maintenance (except for the Lewisham Extension), with fares essentially locked into London Transport's integrated fare and ticketing structure. The Lewisham concessionaire is responsible for providing and maintaining the extension.

***Other Rail Systems*:** Although not urban infrastructure concessions per se, it is important to mention the franchising of the UK's suburban and regional commuter railways as part of the national rail privatization scheme, formally initiated by the Railways Act of 1993. In April 1994, the state-owned rail company British Rail was broken up into 80 separate organizations, with the goal of selling these to the private sector. One company, Railtrack, was established as owner and operator of the rail network, stations, and depots and several companies were created as owners of the rolling stock (ROSCOs). Railtrack and the ROSCOs were eventually sold to private investors. Freight operations were also privatized. In terms of passenger services, over the period of December 1995 to February 1997, 25 different franchises were awarded for inter-city, regional and suburban commuter services. Isolating these passenger rail services as urban/suburban is partially a question of semantics; as many of these services operate both as suburban and inter-city and themselves expand the "urban" area. Suburban rail services operate in eight metropolitan areas including London. In the London metro area, there are ten commuter rail franchises,[16] covering some 4,500 route-km[17]. Eight of the ten franchises are for seven years, with the remaining two being 15 year terms. While all of these franchises received government subsidies for operation in 1997-98, by the seventh year three will be making net payments to the government.[18]

Finally, London Transport (LT), which operates the London subway system has plans for separating the rail infrastructure from operations, leasing the infrastructure to the private sector, while keeping operations in the hands of LT. The plans call for private sector infrastructure companies to undertake an estimated US$12 billion in infrastructure investments over 15 years in exchange for service payments to be made by the subway system. Various concession schemes have already been used to lease 106 trains for the Northern Line, to contract power supply to the subway, and modernize the system's ticketing and revenue collection system.

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elasticity of demand. Due to the difficulty in estimating this elasticity, it was fixed in the agreement for purposes of calculation. In this way, the effect of the politically-caused fare change on revenues can be estimated and the amount for payments to/from the Concessionaire determined. The challenge remains as to what constitutes political decisions effecting fare changes (Maier, 1997).

[16] Other essentially metro-area services are the Gatwick Express, providing high speed non-stop services over a 43-km route between London's Victoria Station and Gatwick airport and the BAA Heathrow Express, mentioned earlier.

[17] Not all of these route-km can be considered as urban/suburban since some London suburban services also provide inter-city travel.

[18] Gatwick Express makes payments over its entire 15-year franchise.

REGULATION

In the case of the current road projects, regulatory authority rests with the national Department of Environment, Transport, and Regions (DETR), through the Highways Agency. Apparently, the proposed new Greater London Authority (referendum passed, elections scheduled for May 2000) will have authority over the major strategic network in the London metro area, including the proposed Thames Gateway DBFO, but not the M25 (Dartford Crossing). Local authorities also have authority to develop road concession schemes. For the DBFO projects that are to be funded via shadow tolls (i.e., Thames Gateway), the payment from the government to the concessionaire will be made over the 30-year contract terms according to three criteria: usage (differentiated by vehicle type), service availability, and performance (based on both safety and lane closures). For the safety aspect of performance, an incentive scheme is used, whereby the concessionaire receives 25% of the estimated economic cost of each personal injury accident avoided over a given period (relative to accident rates prior to the scheme). For lane closures, financial penalties are incurred in the form of reduced shadow toll payment, dependent on the number and duration of the lanes closed. For urban area roads, where traffic risk is lower, the payment mechanism will be refined to focus on optimizing use of road space and improving safety performance. The concession contracts maintain some flexibility regarding changes in design or additional future works, for which toll payments would be adjusted accordingly. Beyond the incentives/mechanisms for performance, the government can take remedial actions, suspend payments, and terminate the concession.

For suburban railways, the regulatory structure was established as part of the 1993 Railways Act, which provided for the establishment of both a Rail Regulator and a Director of Passenger Rail Franchising. The Rail Regulator's role is to oversee track access, aiming to ensure fair competition by the infrastructure monopoly (the eventually privatized Railtrack) in allocating and charging for track access and ensuring network preservation and connectivity. The Franchising Director, operating through the Office of Passenger Rail Franchising (OPRAF) monitors and manages the passenger train franchises. The ROSCOs were to be left unregulated. OPRAF is the most directly relevant regulatory body for the suburban railways, enforcing the franchise contracts and the Passenger Service Requirement (PSR). The PSR comprises an important part of the franchise contract, establishing core service levels on each route. In the seven metropolitan areas outside London, Passenger Transport Executives (PTEs) – statutory bodies controlled by local authorities which are responsible for public transport planning and funding – specify the services to be included in the PSR.[19] PTEs are also co-signatories of five franchise agreements and collaborate with OPRAF on franchise compliance audits.

Among the suburban rail service, elements regulated include passenger overcrowding, other service characteristics, and fares. Both London and Edinburgh are subjected to OPRAF overcrowding audits, using incentives and penalties as control mechanisms. Approximately US$ 4 million in financial penalties were levied for overcrowding in fiscal year 1997-98. In other metro areas, PTEs can also specify overcrowding controls. Finally, OPRAF operates incentives to improve performance where market incentives

[19] In London, public transport planning is conducted by London Transport.

might not be strong. For fare regulation, PTEs are entitled to set fares in some commuter markets. In London, Cardiff, Edinburgh and Greater Manchester, however, OPRAF takes a more comprehensive approach to fare regulation. OPRAF sets a price cap (indexed to inflation) according to service quality. Failure to meet punctuality and reliability standards can cause changes in the price cap. In London, for example, from January 1998, commuter rail operators who improved performance significantly over a measured year were permitted to increase their fares by up to 2% above inflation (measured by the Retail Price Index or RPI). Those who showed poor performance had to maintain fare increases to below inflation, again by a maximum of 2%. It is important to note that these are *permitted* fare increases, not all increase their fares by the maximum permitted. In 1997-98 for the London area, the average permitted adjustment was RPI+0.6%; but the average increase was RPI+0.3% (two operators that were permitted fare increases actually reduced their fares).

In terms of service renegotiations, OPRAF cannot renegotiate contract extensions without the authority of ministers. In February 1999, the Minister for Transport announced that the Government would be willing to renegotiate franchises in cases where more investment and better performance would be generated. The willingness to renegotiate would be based on "the franchisee's track record; extra or accelerated investment which renegotiation would generate; willingness to commit to more demanding performance standards; initiatives to promote integrated transport; a greater voice for passengers; and value to the taxpayers, including the pros and cons of allowing a franchise extension rather than reletting a franchise via competition" (OPRAF, 1999)

While the regulatory structure created by the 1993 Railways Act has been relatively effective, the system has proven somewhat burdensome and particularly confusing for passengers. To overcome this problem the government has recently announced plans to establish a Strategic Rail Authority (SRA), which would subsume the duties of the Rail Regulator and OPRAF, as well as the rail freight grant functions of the Department of the Environment, Transport and the Regions.

For the rest of urban public transport services, those in Greater London are subjected to regulation by the 1984 London Regional Transport Act, which enables London Transport to effectively control bus and subway/light rail fares. For other urban areas in the country, the 1985 Transport Act severely limits the controls that PTAs/PTEs can place on bus services, although it does give them authority over fixed link (i.e., rail, busway) services. Of the various light rail systems in proposal or in operation, most fall under the jurisdiction of the relevant PTEs and/or City Councils, although we have been unable to get much information on specific regulatory features. In the Manchester light rail case, the PTE specifies minimum service levels (frequency, hours of operation, crowding) and has power to levy penalties and terminate the contract. The operator has freedom to set fares, since when designing the concession it was decided that bus service would provide enough competition to obviate the need for fare regulation.

Of the two London examples, the Croydon City Council is tasked with planning, approving design, and monitoring the construction works for the Croydon Tramlink, while London Transport's powers to construct and operate the Tramlink have been

transferred to the concessionaire. London Transport will set operating standards and will be responsible for monitoring and regulating system operations. In the case of the Docklands Light Rail, Docklands Light Rail (DLR) Ltd. is part of the London Docklands Development Corporation. DLR oversees the operating franchise of the rail and also administers the Lewisham Extension concession. The entire system remains under the ownership of DLR which has the power to exercise financial incentives and penalties. London Transport still plays an important role in the system since the DLR remains an integral part of the London Transport zonally-based Travelcard system.

CONCLUSIONS

The UK, spurred by prevailing government ideology, embarked on a major privatization and deregulation reform of the transport sector in the mid-1980s. By the end of the 1980s three urban/suburban transport infrastructure projects had been bid out to private concessionaires. Of these, two can be characterized as successful, at least when judged by usage today: the Dartford Crossing and the Manchester Metrolink. The future of the third, the BNRR, remains uncertain due to serious community opposition to this major new motorway.

These initial forays led to a formalization of the role of the private sector in infrastructure delivery through the 1992 Private Finance Initiative (PFI). The Railways Act of 1993 also played a crucial role in opening the sector to private participation. Today, five systems totaling some 138 km of light rail are either in operations or close to operational, with the private sector involved as operating concessionaire (DLR and Stagecoach Supertram) or as BOT concessionaire (see Table 5.2). At least two other systems, totaling 31 route-km are also in development. Furthermore, as part of the railway privatization, a large network of suburban rail services is being operated by the private sector in greater London and other metropolitan areas. In the roads sector, private financing through direct road tolls is not viewed by the government as very likely, beyond some river crossings (at estuaries) and perhaps the long–delayed Birmingham Northern Relief Road; instead the shadow toll approach seems to be the preferred mechanism. The government may eventually reconcile its stated transport goals of reducing road traffic demand with its policy toward urban road concessions. For example, the shadow toll on the Thames Gateway will reportedly be structured to give incentives for bus priority measures. The future for congestion pricing and concessioned urban roadways still appears uncertain.

Of the rail projects, all are essentially public-private partnerships, with government grants providing most (in some cases all) of the capital costs. In these projects, transport policy and regulatory regimes has had an impact on the level of private capital attracted. For example, more private capital was attracted to the Croydon Tramlink (42% of project costs) in comparison to the initial Manchester concession (5% of project costs). This large difference can, in part, be attributed to the fact that the Croydon system operates within the regulatory domain of London Transport, which strictly controls and regulates bus services, while Manchester's system faces competition from the bus system, over which the Manchester PTE has little regulatory power.

Overall, the UK experiences reflect relatively transparent processes. The project with the murkiest tendering history, the BNRR, has also proven to be the most difficult to implement to-date. Perhaps partly in direct response to the ongoing complications over the BNRR, the government is grappling with ways to ensure confidentiality of commercial information, while maintaining public openness and freedom of information. It will be interesting to see how this important issue can be resolved. At least in the case of Manchester, flexibility and foresight in the original contract was also demonstrated, allowing for an open re-bidding of the concession after only four years of operation, permitting a transparent expansion of this successful rail transit system (contrasting with the experience of Buenos Aires). The Manchester experience also raises the question of the need for government benchmarking, since authorities, in hindsight, judged the initial private sector contribution to be too low. While the overall initial experiences in the UK with concessions seem positive, the effectiveness of the regulatory structure (particularly the newly proposed Strategic Rail Authority for the suburban rails), and the long-term commercial viability of the systems remain to be seen.

TABLE 5.2 URBAN TRANSPORT INFRASTRUCTURE CONCESSIONS IN THE UK

Project	Route	Agency & Concessionaire	Cost (US$ mn)	Mechanism/Details	Status in 1999
Bristol CityLink Light Rail	16.7 km (on road & shared with rail)	Bristol City Council/South Gloucestershire Council City Link Consortium (Pell Frischmann/Norwest Holst/ AEA Technology/First Group)	160	Operation planned for late 2003	Contract Awarded, route being planned
Croydon Tramlink (Greater London) Light Rail	28 km (17 on converted rail, 3 on road, 8 new alignments)	London Transport/Croydon Council Tramtrack Croydon (Amey/Sir McAlpines/CentreWest/ Bombardier Eurorail/ Royal Bank of Scotland/3i)	320	Bid: 6/95; Award: 11/96; 99-yr term; ticketing integrated with London network, under LT, specs and regs; DBFO (Central Govt. providing 63%)	Construction underway, to open in late 1999
Docklands Light Railway (DLR)	23 km	London Transport/Docklands Light Railway (DLR) Docklands Railway Management (DLR and Serco)	n.a.	Bid: 9/96; sign 4/97; 7-Year contract to take over existing operations; government plans to sell entire system at contract end	In operation
DLR Lewisham Extension (Greater London)	4.2 km	London Transport/Lewisham Borough Council/DLR City Greenwich Lewisham Rail Link plc (Mowlem/Hyder/ London Electricity/Mitsui)	370	Bid: 3/95; Sign: 10/96, Construction start: 1996, 24½-Yr Term; DBFM	To open in 2000
Manchester Metrolink Light Rail	30.9 km	Greater Manchester PTA/PTE 1st: GEC-Alsthom/Mowlem/AMEC/GM Buses; 2nd: Altram	200	Bids: 7/89; Sign: 6/90; opened 1992; 15-Yr, with 4-Yr escape clause; DBOM; Re-bid in 1996 as part of Eccles Extension	In operation
Manchester Metrolink Eccles Extension	6.4 km	GMPTE Altram (Laing/Ansaldo/Serco/ 3i Venture Capital)	256	Pre-qual: 1/96; Sign: 4/97; 17.5-Yr Term; DBOT; Government (GMPTA, EU Devt Fund, Dept of Envt) providing 33% of funding	Partially open late 1999, fully in 2000
Midlands Metro Line One (Birmingham)	20.4 km (18 along rail RoW; 2 on road)	Centro (West Midlands Passenger Transport Executive) Altram (Laing/Ansaldo/Travel West Midlands)	232	Sign: 1995; 23-Year term; DBOM; penalties due to construction delay (opened one-year late); 19-years left on concession	Opened May 1999
Nottingham Express Transit	14 km (10 segregated, 4 on road)	Nottingham City Council Arrow (Adtranz/Tarmac/ Transdev/Nottingham City Tpt)	267	Bids received: 6/97;27-Yr Term; DBFO	Construction to begin
Sheffield (Stagecoach) Supertram	29 km 15 on street 14 separate	Stagecoach Holdings	--	Acquired: 12/97; re-launched 5/98; 26-year operations/maintenance franchise	In operation
Birmingham Northern Relief Road	43 km	Highways Agency Midland Expressway Limited (Kvaerner/Autostrade)	700 - 1000	Sign: 1992; 53-yr term; financing still uncertain; DBOM; Ongoing delays due to opposition	Decision uncertain
Dartford–QE II Tunnel/ Bridge (London metro)	1.5 km link on M25	Highways Agency Dartford River Crossing Limited (Kvaerner)	240	Bid: 1986; Sign: 4/87; 20 year concession to recoup costs; likely to revert to Govt. by 2000.	In operation

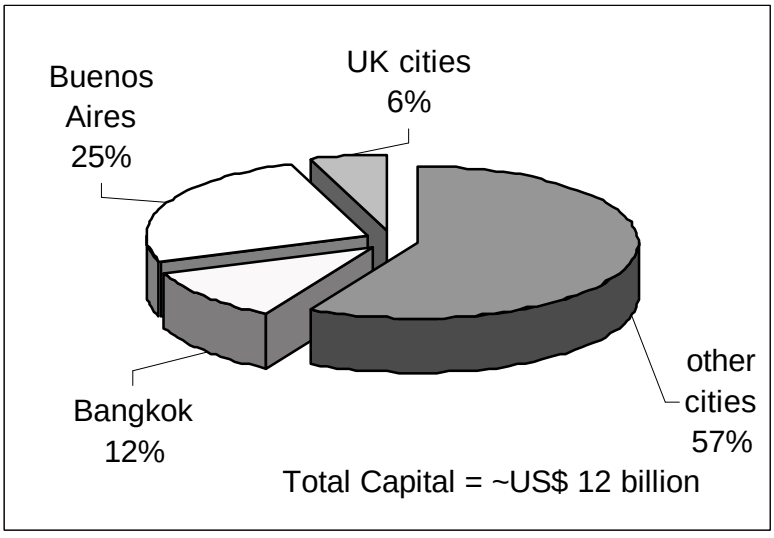
Sources: (1) Private Finance Quarterly, Summer 1997; (2) Infrastructure Finance, March 1997; (3) Tyson (1997); (4) DETR, 1999a, 1998b, 1997; (5) Light Rail Transit Association (www.lrta.org); (6) Brown, 1999; (7) World Bank data. Not included: Thames Gateway Road DBFO (contract not yet awarded); Leeds Supertram (contract apparently awarded); Cardiff Tramway (tenders invited); Heathrow Express; Gatwick Express. Notes: n.a., not applicable; Kvaerner bought Trafalgar, the original concessionaire for Dartford and BNRR.

VI. SUMMARY, LESSONS, AND QUESTIONS

Concessions offer an important tool in upgrading and expanding urban transport infrastructure as well as improving the services that infrastructure provides. Concessions can improve the delivery efficiencies of both road and rail infrastructure, improve the operating efficiencies of rail systems, attract private capital for infrastructure investments, and get the private sector to absorb at least some construction and operating risks. Even so, experiences to-date indicate that these concessions confront real difficulties. Urban transport concessions face somewhat unique problems related to the political risk regarding fares/tolls increases; challenging environmental and resettlement issues; the multiplicity of agencies with some jurisdiction in an urban area; system integration (fare, services, toll collection technology); and the lack of exclusivity. While they will likely play an important role in the future of urban transport infrastructure, concessions are not easy to implement and are certainly not a panacea to the present and future infrastructure deficit plaguing many urban areas.

In perhaps the earliest "modern" experiences in this sector, Hong Kong built four tunnels in the last three decades, projects which are generally considered as successful. In a recent review of the Hong Kong projects, Miller (forthcoming) attributes this success to a variety of factors: (1) strategic planning; (2) belief in private sector efficiency; (3) private sector project screening; (4) reliable project sponsors; (5) good project rationale; and (6) good return on investment. These last three were considered critical to attracting private sector interest. Miller also highlights the form of competition which took place in Hong Kong – occurring on projects that had been defined in considerable detail (i.e., 10% design stage) – as being important to overall project success.

FIGURE 6.1 ESTIMATED AMOUNT OF CAPITAL INVOLVED IN URBAN TRANSPORT INFRASTRUCTURE CONCESSIONS IN OPERATION [20]



For the present review, we were not able to gain access to all the information regarding project development, bid design, selection criteria, and operations and rate of return

[20] Derived from Tables 2.1, 3.1, 4.1, and 5.2.

results which would enable a comprehensive assessment of the Buenos Aires, Bangkok, and UK experiences. Nonetheless, it is important to attempt to draw general lessons from these experiences due to the sheer relative size of activity on this front that the three places represent. Although it is clearly difficult – due to differences in the timing, type and source of the investments – to make comparisons regarding the amount of total capital involved in different infrastructure concessions, a rough estimate indicates that the projects in Buenos Aires, Bangkok, and the United Kingdom account for over 40% of capital investments involved in the currently *operational* concessions around the world (see Figure 6.1).[21]

SUMMARY OF EXPERIENCES

***Buenos Aires*:** Due to a strong and consistent government policy, relatively simple and transparent bidding processes, good entrepreneurial response, and a stable currency, the Buenos Aires concessions are possibly most noteworthy for their rapid speed of implementation. In the past five years, the government attracted over US$1 billion in private motorway investments, and also achieved enormous improvements in rail operations and usage while slashing operating subsidies. While the initial results are clearly positive, the Buenos Aires experience raises questions regarding:

- the changes needed in the existing concession contracts and the transparency of the renegotiations process;
- the role of regulatory agencies, particularly relating to contract modifications and their effectiveness as guardians of public interest;
- the issue of whether and how railway land should have been incorporated into the concessions and how to deal will this issue in the future; and,
- the effects of the concessions on urban growth and sprawl.

Possibly the main criticism of the concession process was the fact that it occurred within an urban planning vacuum, although this shortcoming was somewhat mitigated by the fact that most of these concessions were for the upgrading of existing facilities and services. According to an Argentine colleague, the planning of transport infrastructure (based on social, economic, environmental, and urban development criteria) is being replaced by financial market forces with their perhaps accidental effects on physical development. If correct, this trend would be regretted by those who know (and love) the physical characteristics of Buenos Aires.

Nevertheless, it is fair to say that most things were "done right" in the initial round of concessions. Many of the problems which are now apparent only became obvious with hindsight. Others (such as the absence of an overall transport plan for the city) were known at the time, but their solution would have delayed – and possibly altogether stopped – the concessioning process. Efforts are now underway to establish a coherent transport planning process for Greater Buenos Aires.

***Bangkok*:** Thailand's capital was an early adherent to the use of concessions for delivering urban transport infrastructure, with the first projects finding their genesis about 20 years ago. Today, the city has attracted some $3 billion from the private sector to finance a rail transit line and three expressways. In the face of this impressive amount of

[21] Based on those identified in the preparation of this report.

capital, however, is the reality that most projects have been delayed, while several of the originally planned projects have either been scrapped or face uncertain fates. Furthermore, the evidence seems to suggest that Bangkok, by focusing on concessions, lost valuable time in the development of rail transit. In the meantime, ongoing motorization and the absence of effective mass transit may have contributed to urban sprawl which will make the solution of Bangkok's transport problems all that more difficult.

The problems that Bangkok has encountered can be attributed to:

- the absence of an agreed, comprehensive transport policy, planning and investment strategy/framework;
- the dispersal of concession authority among several competing government agencies;
- the lack of an open planning process and subsequent political complications (and interventions) regarding tolls and fares; and
- the financial crisis.

Due largely to these problems, the future use of concessions in Bangkok's transport sector remains in doubt. By failing to uphold contractual obligations in the case of several projects, the government's credibility is at risk. Multi-agency involvement will continue to pose a serious challenge as will the lack of a clear regulatory structure. The imminent opening of the BTS rapid transit system will provide a good indication of that concession's commercial viability and will have important implications for future project developments.

***United Kingdom*:** The UK also ventured relatively early into the field of urban transport concessions, with two infrastructure projects coming into operation in the early 1990s. By the time the government's privatization efforts took hold in this sector, several projects were in the works; as of mid-1999, four concessioned urban rail projects are in operation, another is due to open by the end of the year, and one urban road project is functioning. Furthermore, as part of the privatization of the national railway, private suburban rail services currently operate in eight metropolitan areas. There are several characteristics of the UK experience worth highlighting:

- a generally transparent process with subsequently quick implementation;
- in contrast to Buenos Aires and Bangkok, a solid and effective planning framework, providing a clear vision on transport development and priorities;
- in consequence, a strong emphasis on rail transit, with heavy government financial support in almost all cases;
- the overall public transport regulatory structure in different cities may have affected the private sector's willingness to contribute to rail transit capital costs; and
- apparent conflicts, in at least one case, between a policy of public involvement in project and policy development and confidentiality requirements of concession contracts.

The UK's future with concessions in the sector rests on the effectiveness of the regulatory structure, overall urban transport policy, and (consequently) the long-term business viability of the rail transit enterprises. In addition, it will be of particular interest to see how the government will reconcile its ostensible policy of road traffic reduction with the commercial needs of urban road concessionaires. Where congestion pricing fits into this

equation will also almost certainly be a major future issue.

***Comparison Among the Experiences*:** In each of the cases examined, the need to attract additional financing to the sector was an important stimulus to the move towards infrastructure concessions. Beyond this common root, however, it seems that each place had somewhat differing additional incentives behind the move towards private sector involvement. In Bangkok, the massive size of the megaprojects underscored the need for funding diversification. In Buenos Aires, an unprecedented fiscal crisis left the government with little choice, while in the UK, the move might best be ascribed to an overall government shift in ideology.

Although both developing country cities lacked an effective overall urban transport plan, Buenos Aires has demonstrated more success than Bangkok to-date in terms of carrying out its planned projects. This relative success is partly due to the fact that Buenos Aires used concessions to upgrade existing infrastructure, implying lower costs, more certain demand estimates, and fewer environmental issues than was the case with the construction of new megaprojects. Most importantly, the concessioning process benefited from a clearly defined and consistent policy strongly supported by the Argentine government and from highly-qualified professionals implementing that policy.

Of the two cities with the longest operational experiences with rail concessions – Buenos Aires and Manchester – both cases show increases in rail passenger trips, decreases in bus passenger trips, and a continuing decline in total public transportation use. While both cities utilized a similar initial concessioning process, Manchester more effectively anticipated system expansions and could thereby quickly re-bid the initial project, while Buenos Aires had to face a controversial process of contract renegotiations, most of which have not yet obtained the final approvals necessary for implementation.

The concession process, types of projects, and results in the various cities were certainly affected by the differences of the economic and cultural environments in which the concessions took place. Moreover, the UK has a more publicly open planning process and an explicit government policy aimed at reducing road travel and promoting public transport travel which has also likely had a great impact on the types of projects ultimately delivered, method of delivery, and subsequent results. Finally, although in the three countries road and rail projects were tendered separately, this seems to pose less of a problem in the UK where the projects fall into a more comprehensive overall planning framework.

LESSONS LEARNED

The overview of experiences in this paper leads to several lessons regarding the use of concessions for urban transport infrastructure:

1. Concessions should desirably occur within the context of a clear transport policy, institutional, legal and regulatory framework, and overall strategy for the sector.
2. Economic stability is critical, as are political will and consistency; without these, considerable time can be lost in pursuing concessions.
3. The government must be a reliable and professionally competent sponsor, defining well the scope of the individual projects (including technical, political, economic, and social/environmental rationale), promoting transparent and head-to-head competition;

remaining open to technological innovation; and, importantly, being capable to implement.

4. When designing a concession, emphasis should not be placed solely on getting the contract awarded, signed, and implemented; just as important is considering the process that might be required to modify/expand the concession thereafter.
5. Simplicity in the evaluation process, while not easy to achieve, can obviate future potential disagreements, regarding bidding outcomes as well as project design and operations.
6. A private sector capable of responding is clearly a necessity.
7. A strong and effective regulatory body – independent and accountable to (and respected by) the public – is critical.
8. Urban rail concessions can meet social objectives by improving transport for low-income travelers, as long as the government clearly defines (and subsequently enforces) service quality and fare criteria.
9. Public involvement from the outset of the concessioning (and the overall urban transport planning) process could prove to be key for long-term success.

Overall, perhaps the most important lesson is that if concessions drive the overall urban strategic transport planning process, then problems will certainly arise. If investment *decisions* are devolved to market forces, then we might get the delivery of some major infrastructure (particularly motorways), but we will not get coherent urban transport programs.

FINAL COMMENTS: SOME OUTSTANDING QUESTIONS

While offering some important lessons for urban transport infrastructure concessions, the review of current experiences has brought to the surface several issues and questions that remain to be answered:

1. *How will the current and future operations of private facilities be treated with respect to external costs and benefits?*

   Transport infrastructure and its use often imply costs and benefits external to the direct providers and users. These accrue for both public and private projects, but it remains to be seen how they will be effectively incorporated into private concession schemes. For example, external effects associated with motorways can include: air and noise pollution, traffic safety, negative or positive effects on adjacent landowners, and potentially undesirable impacts on urban form. These can be exacerbated by long-term traffic generation due to the expanded infrastructure supply. The opposition which has held up the concessioning of the Birmingham Northern Relief Road for several years has utilized these valid concerns (discussed in Chapter V). Similarly, government attempts to concession a new urban motorway in Santiago de Chile have been delayed in part because of citizen concerns over air and noise pollution, traffic safety, and negative impacts on adjacent neighborhoods. These problems are not new to urban road infrastructure, but raise additional questions regarding compensation, access to information, and private sector responsibilities.

2. *What should be done regarding the building and/or concessioning of competing facilities?*

In urban areas, competing facilities and services often either already exist or will/should be provided in the future. In many countries, competing (non-tolled) facilities must be there for an infrastructure concession to be allowed (see, for example, the California case discussed in Chapter II). In other cases, however, concessions are granted an exclusive right to the corridor. How to reconcile the concessionaires' interest in exclusivity with the government's responsibilities toward the public at-large needs further clarification, particularly as more segments of urban networks are concessioned to the private sector.

3. *How should an effective regulatory structure be designed, and how should this be related to strategic objectives?*
   Except perhaps in the case of Hong Kong, little experience exists on the long-term effectiveness of regulatory structures. A regulatory agency can play at least two roles: either that of simply enforcing existing contracts, or that of also modifying those contracts (as discussed in Chapter III for the case of Buenos Aires). In the urban context, where multi-modal concessions (bus, rail, road) are possible, it is not clear whether these should be regulated by the same agency or not, and whether this should occur at the national, regional, or local level. The question depends, in part, on local capacity and specific legal contexts. The question also depends on whether one believes that such regulatory power should be united with or separated from an over-arching metropolitan agency responsible for multi-modal transport planning.

4. *Do concessions worsen, improve, or have no effect on the political patronage often associated with project planning and funding?*
   Political patronage and special interest group influence over urban transport infrastructure is probably as old as the first projects in the sector. It remains to be seen if through a process of concessioning the sector can become de-politicized due to open competition for projects, private sector screening of "white elephants," and legal regimes regarding upholding of contracts; or, if the more explicit market forces behind infrastructure delivery and operations lead to more closed door deals, less transparency, and more interest group influence in policy decisions.

5. *What will be the eventual impact on the private sector?*
   There can be several interesting effects on the private sector, including the potential to develop local industry and expertise, for international joint ventures and consortia to accelerate technology transfer, and for other forms of cross-fertilization. For example, British interests, which had owned many Argentine railways in the first half of this century, are now reportedly back as potential investors and advisors to the Argentine concessionaires. While a future of closer cooperation is a possibility, so is the potential for cartelization among concessionaires.

6. *Can successful busway projects ultimately be developed?*
   Busways are often pointed to as a more cost-effective public transport option than rail transit, due to their typically lower construction costs and greater operating flexibility. Despite their attractiveness from a financial and performance perspective – and their proven effectiveness in several Brazilian cities and elsewhere – concession experiences are limited and have not had much success. In Bogotá, efforts to concession a busway failed in 1996, due to inability to attract financing and lack of

cooperation by existing transport providers. The attempt by the Municipal Government of São Paulo to concession a network of busways also failed, due primarily to lack of financing (see Chapter II). The future viability of busways as concession projects may prove critical to developing well-balanced urban transport systems.

7. *How viable in the long-term are the enterprises – particularly the public transport enterprises – currently operating as concessions?*
   Due to the limited operational experiences to-date, the long-term sustainability of these initiatives is still uncertain. For example, thanks to the positive initial effects of the Buenos Aires rail concessions, it is virtually certain that the next Argentine government will maintain the current policy in this regard. However, the operating experience is still quite short and we do not know how the economy and society will change in the next 10 to 20 years. Might the governments eventually revert to takeovers, repeating the cycle of an earlier generation of projects (see "Brief History" section in Chapter II)?

VII. REFERENCES

Allport, R. and J. Bamford. 1998. "Realising the Potential of Mass Rapid Transit (MRT) Systems in Developing Countries," paper presented at the World Conference on Transport Research, Antwerp, July.

Brown, G. 1999. Managing Director, Stagecoach Supertram, personal communication, July.

Caltrans. 1998. "AB 680 Public/Private Partnership Program," web site of the California Department of Transportation (page updated in February), http://www.dot.ca.gov/hq/paffairs/about/toll/status.htm.

Civil Engineer International. 1996. "Tagus Tie," December.

_____. 1997a. "High Wire Action," October.

_____. 1997b. "Star Quality," "Mass Appeal," November.

Consejo de Administración. 1998. "Ferrocarríl de Arganda," presentation materials, Sociedad Promotora de Proyectos Integrados, 19 February.

Dale, S. "Bond Keeps Rail Project on Track," *Corporate Finance*, November.

Department of the Environment Transport and the Regions (DETR). 1997. *Roads Review – Consultation Document: What Role for Trunk Roads in England?* London.

_____. 1998a. *Annual Report 1998*. London, April.

_____. 1998b. *A New Deal for Trunk Roads in England*. London, July.

_____. 1999a. *Public/Private Partnerships and the Private Finance Initiative*. London, March.

_____. 1999b. *Annual Report 1999*. London, April.

Engel, E., R. Fischer, A. Galetovic. 1997. "¿Cómo Licitar una Concesión Vial Urbana?" *Estudios Públicos*, 67, Winter.

Fundación de Investigaciones Económicas Latinoamericanas (FIEL). 1999. *La Regulación de la Competencia y de los Servicios Públicos: Teoría y Experiencia Argentina Reciente*. Buenos Aires.

Greater Manchester Passenger Transportation Executive (GMPTE) Trends & Statistics 1986-1998. 1998, Manchester.

HM Treasury. 1992. *Private Finance: Guidance for Departments*, December.

Halcrow Fox & Associates (HFA). 1985. *Metropolitan Bangkok Short Term Urban Transport Review: Final Report. Volume 1: Main Report*. Prepared for the Office of the National Economic and Social Development Board. October.

Highways Agency. 1998. *DBFO – Value in Roads*. Department of Environment, Transport and Regions, London.

Institution of Highways and Transportation (IHT). 1997. *Highways & Transportation: Special Malaysian Issue*. Journal of IHT and the IHIE, London, September.

Institution of Highways and Transportation (IHT). 1999. *Highways & Transportation*. Journal of IHT and the IHIE, London, June.

Infrastructure Finance. 1995a, August/September.

Interborough Rapid Transit Company (IRTC). 1904. *The New York Subway: Its Construction and Equipment*. Commemorative published by IRTC celebrating the opening of the subway, New York.

Jacobson, C.D. and J.A. Tarr. 1995. "Ownership and Financing of Infrastructure: Historical Perspectives," World Bank, Policy Research Working Paper 1466, June.

Kerf, M., R.D. Gray, T. Irwin, C. Levesque, R. Taylor. 1997. "Concessions: A Guide to the Design and Implementation of Concession Arrangements for Infrastructure Services," World Bank, Private Participation in Infrastructure Group.

Laconte, P. 1997. "Public Service and Private Risk: Some UK Rail Partnerships," *Public Transport International*, 1, pp. 6 – 11.

Maier, H. 1997. "Docklands Light Railway: Franchising Operations in the Context of the Lewisham Extension Concession," *Infrastructure: Finance, Provision and Operation*. Proceedings of Seminar J of the 25th European Transport Forum Annual Meeting, 1-5 September, pp. 7 – 15.

Miller, J. Forthcoming. *America's Emerging Public/Private Infrastructure Strategy: The End of Privatization*. Aspen Law and Business Publishers.

Miller, J. 1997a. "The Dulles Greenway," Infrastructure Development Systems Case Study IDS-97-T-014, Massachusetts Institute of Technology, Department of Civil and Environmental Engineering.

Miller, J. 1997b. "Highway 407 ETR, Toronto," Infrastructure Development Systems Case Study IDS-97-T-013, Massachusetts Institute of Technology, Department of Civil and Environmental Engineering.

Miller, J. 1997c. "The SR91 Express Lanes," Infrastructure Development Systems Case Study IDS-97-T-012, Massachusetts Institute of Technology, Department of Civil and Environmental Engineering.

National Economic and Social Development Board, Infrastructure Projects Division (NESDB). 1996. "Major Infrastructure Projects in Thailand," July.

Office of Passenger Rail Franchising (OPRAF). 1998. *1997 – 1998 Annual Report*.

OPRAF. 1999. Web site.

Official Journal of the European Community (OJEC). 1995. "Notice of a Public Works Concession UK-London-Croydon: Light Rail System," mimeo of notice to be published on June 3.

Poulter, T. 1997. "Tram Finance," *Infrastructure Finance*, March, p. 96.

Public Broadcasting System (PBS). 1998. *The American Experience: New York Underground*. Part of a documentary series, published on the www (http://www.pbs.org/wgbh/pages/amex/technology/nyunderground/).

Public Works Financing (*PWF*). 1999. "Ontario to Double its Money on Highway 407 Sale," April.

Rebelo, J.M. 1999a. "Reforming the Urban Transport Sector in the Rio de Janeiro Metropolitan Region: A Case Study in Concessions," World Bank, Policy Research Working Paper 2096, April.

_____. 1999b. "Rail and Subway Concessions in Rio de Janeiro: Designing Contracts and Bidding Processes," *Viewpoint*, Note No. 183, World Bank, April.

Rebelo, J.M. and P.P. Benvenuto. 1995. "Concessions of Busways to the Private Sector: The São Paulo Metropolitan Region Experience," World Bank, Policy Research Working Paper 1546, November.

_____. 1997. "Lessons from São Paulo's Metropolitan Busway Concessions Program," World Bank, Policy Research Working Paper 1859, December.

Rodriguez, Daniel. 1999. "Expanding the Urban Transportation Infrastructure through Concession Agreements: Lessons from Latin America," paper presented at the Annual Meeting of the Transportation Research Board, Washington, DC, January.

Routes/Roads. 1997. "Dartford-Thurrock: The First UK Tolling Concession," No. 296, October.

Secretaría de Transporte. 1999. *Principales Indicadores de Actividad del Sector Transporte*. Ministerio de Economía y Obras y Servicios Públicos, April.

Shaw, J., C. Charlton, R. Gibb. 1998. "The Competitive Spirit Re-awakens the Ghost of Railway Monopoly," *Transport Policy*, No. 5, pp. 37 - 49.

Silborn, Hans. 1998. Personal communication, Swedish Association of Local Authorities, February.

SPURT. 1991. *Seventh Plan Urban and Regional Transport: Final Report*. Prepared for the Government of Thailand Office of the National Economic and Social Development Board by Halcrow Fox & Associates with Pak Poy & Kneebone and Asian Engineering Consultants, March.

Sully, J. 1999. "Eccles extension on target," *Modern Railways*, March.

Supreme Court of Judicature, Court of Appeal. 1999. *Alliance Against the Birmingham Northern Relief Road – v – Secretary of State for the Environment, Transport and the Regions & Midland Expressway Limited*. Transcript of the Handed Down Judgment of Smith Bernal Reporting Limited, London, 23 March.

Thompson, L.S. and K-J Budin. 1997. "Global Trend to Railway Concessions Delivering Positive Results," *Viewpoint*, Note No. 134, World Bank, Finance, Private Sector and Infrastructure Network, December.

Tyson, W.J. 1997. "Manchester Metrolink and the Private Initiative," presented at the Fifth International Conference on Competition and Ownership in Land Passenger Transport, Leeds, May.

Virginia Department of Transportation (VDOT). 1993. "Facts About the Dulles Greenway," mimeo.

Wentworth, M.A. and A.K.C. Beresford. 1998. "Major U.K. tolled road crossings reviewed," *Transport Policy*, (5), pp. 51-59.

Woodings, N. and M. Gannon. 1997. "The Private Finance Initiative Within London Underground Limited," *Infrastructure: Finance, Provision and Operation*, Proceedings of Seminar J of the 25th European Transport Forum Annual Meeting, 1-5 September, pp. 17 – 25.

World Bank. 1999. *Bangkok Urban Transport: Options for Sustaining Mobility* (draft). Transport Sector Unit, East Asia and Pacific Region.

World Highways. 1998. "Germany's First BOT Road," July/August.

World Highways. 1999. "407 Goes Private," May/June.