OTHER EXPERIENCE

A. People's Republic of China (PRC)

1. Context

Historically, there has been little travel between cities, and PRC depends upon the rail system (and lately air transport as well) for the main inter-urban movements. The road system is poorly developed. Most roads are single 2-lane carriageways, although some dual-carriageways exist. Provinces often impose tolls on road users at irregularly spaced toll plazas. Typically, the traffic using the existing road system includes animals and bicycle traffic, farm vehicles such as small tractors (rotovators on wheels with trailers), a high proportion of goods vehicle, and few cars. Average speeds are low, accidents frequent, and congestion can be severe as the high proportion of slow vehicles reduces road capacity.

Traditionally, road construction has been the responsibility of the public sector, with construction undertaken by government and the provinces. Some provinces have set up specific departments to manage expressway construction, although these are always subservient to the province for revenues.

2. Government Policy

Government used to be strongly against tolls, but it is now supportive and developing policies for tariff setting, provision of tax exemption during the debt service period etc. Almost all expressways in PRC now collect tolls. Operations are complex, involving government and provincial corporations. The tolls vary by location and project.

Government has determined to construct a large National Trunk Road System, linking all cities greater than 0.5 million people (Figure A2.1). This will comprise 12 trunk highways comprising 35,000 kilometers of expressways (like the US interstate freeways). Many World Bank (e.g., Beijing-Tianjin, Xiamen-Guangzhou) and the Asian Development Bank (ADB) projects comprise sections of this network, implemented under loans to Government or provinces.

Funding for roads comes from a combination of:

- The State (a Ministry of Communications support which used to be around 3 million Rmb/km for any expressway on the planned network - and is now a loan).

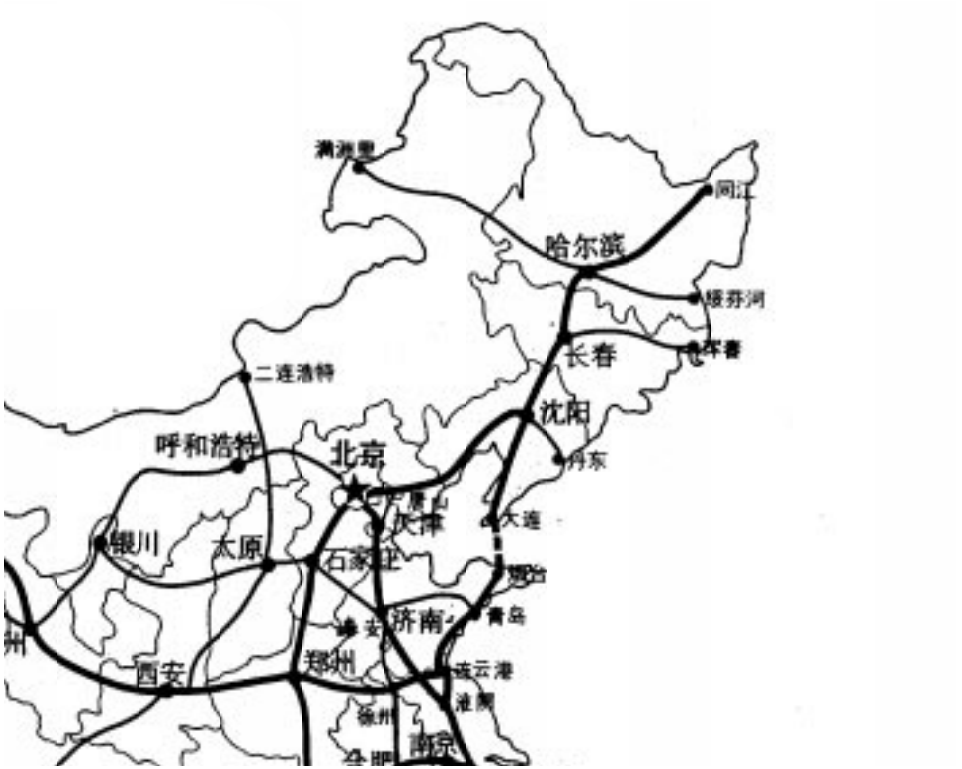
- The Provincial budget - taxes and user charges which include tolls on existing roads.

Increasingly, expressway financing has moved from central to the provincial authorities, who access private funds and foreign capital markets.

Cities are treated differently and are under different jurisdiction. Expressways are more difficult to develop in urban areas for the usual right-of-way reasons, but both Shanghai and Guangzhou have a ring road system, and Beijing has a tolled expressway to its airport.

Government has recently announced a massive investment program in infrastructure, and is about to finalize a framework (for build-operate-transfer (BOT), corporatization, concessioning, leasing) and Implementing Rules and Regulations which are intended to 'open China' to foreign investors. The currently unclear and complex approach to private sector funding may then become clearer.

Table A2.1: China National Trunk Road System



3. PRC is Different

PRC is different - because toll roads are often 'profitable' - that is the toll revenues are adequate to fund their capital, operations and maintenance costs and provide an acceptable return to shareholders. This is because:

- Capital costs are low, inputs are often not costed at market prices, and technical standards are 'appropriate'. Typically, toll roads in PRC are built with large contingents of local labor mobilized by the local Governments, together with local materials. The sole non-local component is the thin blacktop at the end, and the sole high-tech. machinery is that required to apply it. The result is a very low capital cost.

- Revenues are high. This is a combination of:

  - High traffic diversion to the toll-road at opening: the alternative is either nonexistent or heavily congested, so that the time savings are large.

  - Relatively high tolls, which are acceptable (there is little history of resistance to government-imposed tariffs).

  - Tolls are often a small proportion of the perceived total journey cost (which includes provincial taxes, routine bribes to the police, and fuel). Hence, they are regarded by many companies/drivers as 'good value for money' given the large time saving over the alternative congested road, with more efficient use of the vehicle resulting.

  - High traffic growth, a result of rapid economic growth, and a lack of alternative routes.

4. Private Sector Participation (PSP) Practices for Toll Roads

Most of the concessionaires for privately-financed toll roads have been based upon joint ventures with public entities. These may be foreign-owned, equity joint ventures or cooperative joint ventures. The latter is most common, allowing flexibility in the allocation of rights and obligations between the local and foreign partners.

Traditional forms of project financing are rare in this sector, and most foreign financing is sourced from equity investments and shareholder loans to cooperative joint ventures in PRC from the parent company abroad. These funds are typically raised through a public offering of shares, or through commercial loans; for example, nine PRC highway stocks had been listed on the Hong Kong Stock Exchange by 1997. In a few cases conventional project financing has been achieved, with the public sector entity guaranteeing the revenues of the project company.

It is estimated that 2,800kms of expressways have passed into private hands in the last 5-6 years, raising some US$5 billion-US$6 billion of private capital. There are about 800 concession agreements, all of which are either leasing or Buy-Operate-Transfer. Typically, an upfront payment is made by a developer, the proceeds of which are used to further develop the network. There are no conventional BOTs.

5. Key Issues

Much has been learned in this sector, and both ADB and the World Bank have been active in assisting government develop its policy framework for PSP. The main issues which have arisen include:

- Concerns with asset securitization. This is in widespread use, an existing asset (e.g., an expressway built under multilateral funding assistance) has been used to raise finance from foreign investors. Typically, construction/completion risks are carried by the Government entity, and the Government accesses additional financing readily, while the prospect of returns from tolls are high for the private sector. The concern is twofold: that the assets may be over-leveraged (compromising the ability to repay the original loan), and that use of the capital markets may not be a secure source of funding, in the event of the boom-bust characteristics of many stock markets. This is a particular concern in the light of the recent crisis.

- Need for reform to the legal and regulatory environment. There are many problems at present, including the fact that the currency is not convertible (and access to foreign exchange when it is required), limitations on provisions of guarantees by Government, no automatic increases in tolls, institutional complexities when central Government is involved etc.

- Land acquisition has led to frequent delays, and the private sector has been expected to shoulder unreasonable risks. Capacity building in Government and adequate compensation are required to remedy this.

- The credit-worthiness and commitment of public entities has sometimes frustrated and delayed development in the sector, and substantially increased costs due to the resulting risks.

- Toll levels - there has been early resistance to the level of tolls on expressways, which can be relatively high (over seven US cents/km for large cars on some roads). Traffic flows are certainly low on a number of expressways near major cities (e.g., around 10,000vpd on the Beijing-Tianjin expressway, and even less on both Shanghai -Jiading and Shanghai-Xinshang-Sungzeng). However, a more commercial approach to the problem is now evident. Thus, truck drivers are now often reimbursed by their firms for toll receipt tickets collected when they use the expressway (ensuring they use the expressway), and different rates may be applied to ‘foreign’ and local vehicles (see below). When tolls are not excessive, there is now little resistance to them. Most of the traffic on the inter-urban network comprises goods vehicles and buses - cars are still the exception and are usually owned by Government entities.

- Need for transparent procurement processes – private negotiation rather than competitive bidding is the common practice. The negotiations have sometimes lasted many years and after the event, have been found unsatisfactory (understandings have not been delivered).

The role of ADB and the World Bank has been important in increasing the effectiveness of the PSP approach in this sector. An ADB-funded study of the road sector in PRC, completed in 1998, concluded that construction risk is best left to the public sector, but that when expressway

traffic grows to a sufficient level, leasing or securitization should be considered to mobilize private capital for the sector.

Often *ad hoc* deals take place, based upon relationships between Hong Kong, China or Taipei,China investors and a city - maybe from which they originate. Alternatively, government development companies may be given the task of implementing a required project, and they may have stakes in foreign contractors. These deals involve no competition, and may have a wide range of incentives and obligations.

6. Kumagal Gumi (Hong Kong, China) and Everbright[1]

Kumagai (Hong Kong, China) recently became partly owned by China Everbright - a PRC Government development company. They expect thereby to become substantially involved in infrastructure development in PRC. The mechanism may typically be:

- The mayor or governor of a municipality/province identifies the need for a project (e.g., a bridge or expressway), and sells the concept to Beijing.
- Beijing decides that it warrants investigation and requests one of its development arms (such as Everbright) to look at its feasibility.
- Subject to a satisfactory outcome it is then requested to negotiate a deal with the appropriate authority, and then implement the agreement.
- Kumagai (Hong Kong, China) are then given a contract by Everbright on agreed terms to manage implementation, employing sub-contractors as necessary.

This approach offers attractive prospects to foreign firms, minimizing their risk, while providing their expertise in developing PRC's infrastructure.

There are, however, many other problems, and these are acting as a constraint on the future development of the road system, with some developers generally cautious about making this type of investment in PRC. The case study of Hopewell Holdings illustrates the issues:

7. Hopewell Holdings[2]

Hopewell's much-publicized involvement has been in the Hong Kong-Guangzhou-Zhuhai 'golden triangle', conceived as part of a strategic vision (Figure A2.2). This is notably different to the ad-hoc projects seen elsewhere in Asia, and is innovative in concept, the individual projects linking to, and reinforcing each other. Their characteristics and status are as follows (Table A2.1):

---

[1] This is based on discussions in Hong Kong, China.
[2] Interviewed as part of the Hong Kong, China case study.

Table A2.1: Hopewell Holdings PRC Projects

Project	Status	Route-kms	Other
Guangzhou-Shenzhen-Zhuhai (GSZ) Superhighway:	A non-stop expressway.		30 year operating franchise from 1997. Hopewell Holdings receive 50% of profits for Years 1-10, and about 45-50% for the next 20 years.
• GSZ East to Shenzhen	Parallel Route 107 Has a low level of service, with tolls charged at some bridges	123kms, closed toll system	Tolls increased twice. 71,000vpd in 1997 (20% increase over 1996)
• GSZ West to Zhuhai	Part opened 1994 - 22 out of 58 kms	58 kms	
Shunde Roads	Opened 1996. A high-class road system with shoulders, but some level crossings	102 kms D3 highways - development of a primary road network on west shore of Pearl River 8 toll plazas	30 year operating concession from 1996 Hopewell Holdings receive 50% of operating surplus from jv company 94,000vpd in 1997, 30% increase over 1996
Shunde National Route 105	Preliminary agreements with [7]the Municipality. Phase 1 (l6kms) approved.	41 kms upgrade of existing road	Cost RMB1 .5 billion Hopewell Holdings has 30% interest, for a 28yr cooperation period
Guangzhou Ring Road (East-South West): • South-East • South West	Partly open (tollgate in a short section) Construction	38kms	30 year operating concession Hopewell Holdings has 37.5% equity stake and are assured of a 20% return. They receive 100% of operating surplus of jv company for years 1-10, 40% thereafter
Boca-Tigris Bridge	Opened May 1997	16 kms across the Pear River delta	30 year concession period Traffic 1 6,000vpd in Aug 1997 Hopewell Holdings has 10% equity, and receives 7% of net operating surplus from jv
TOTAL NETWORK		**379 KMS**	

- The concept for the expressway came after PRC's 'open-door' policy of 1979. In 1983 Sir Gordon Wu became involved in a hotel development after experiencing brownouts, hence a power station, and then this expressways concept.

- The various agreements reached depend for large measure on agreement being reached about many issues - they were not water-tight contracts. The contract allows a 15 percent FIRR for the tolled expressway, together with land development.

- Funding is from a US$800 million syndicated loan from 34 banks (60 percent) and 40 percent equity. Income is in RMB or HK$ - i.e., foreign exchange risks.

- Land acquisition and costs have been a major problem. The GSZ requires a continuous strip of land 1 23kms long and 50-80m wide:

  - the contract said 'government would help' - but responsibility was with Hopewell Holdings, who did not have the power to make it happen.

  - Hopewell Holdings are liable to land costs, which the government determined should be at market rates.

- These factors resulted in a 3-year delay in implementation.

- Once problems of acquisition were settled, construction was rapid.

- Hopewell Holdings had understood that Hong Kong-plated cars would be allowed to travel relatively freely into PRC - for example for day trips to Guangzhou. But this has not been allowed by the Hong Kong, China Government, and traffic is lower than expected.

- Tax has been problem - Hopewell Holdings are required to pay taxes on gross revenue as well as withholding and land tax. There have been differences as regards the intent of the concession agreement.

- Property development has been a problem. This has been frustrated by difficulties in transferring land rights, allowing changes in permitted use and requiring that social facilities be linked to development. Little has yet happened, and the recent property downturn has reinforced these problems.

- Petrol stations are being leased along GSZ East, together with facilities for buses, restaurants, vehicle service centers and car parks.

- Technical standards - there have been differences concerning road capacity and standards.

- Tariffs are as follows:

  - Different tariff for Hong Kong-plated vehicles and PRC vehicles, with trucks 4/5 times, and buses 3/4 times the car tariff. Note that Hong Kong-plated vehicles pay double the PRC rate[3]

  - Toll increases are by application to the Price Bureau, not automatic. Hopewell Holdings have succeeded twice in raising tariffs.

---

[3] The actual tariffs on the Guangzhou-Shenzhen Superhighway are:

Vehicle class	PRC: RMB/km	HK: HK$/km
Car, small van, mc	0.6	0.8
Light goods, light buses, vans	1.2	1.6
Medium goods, medium buses	1.8	2.4
Large goods, large buses, trailers	2.4	2.6 (after discount)
Multi-axle vehicles, 4Oft container trailers:	3.0	3.2

- Hopewell Holdings are looking to market the road to truck operators to increase traffic -an innovative approach.

- Traffic:

  - Traffic is 71,000vpd (1997) on GSZ East. Since a poor start at 38,000vpd in 1994 to 49,000 in 1995, 59,000 in 1996.

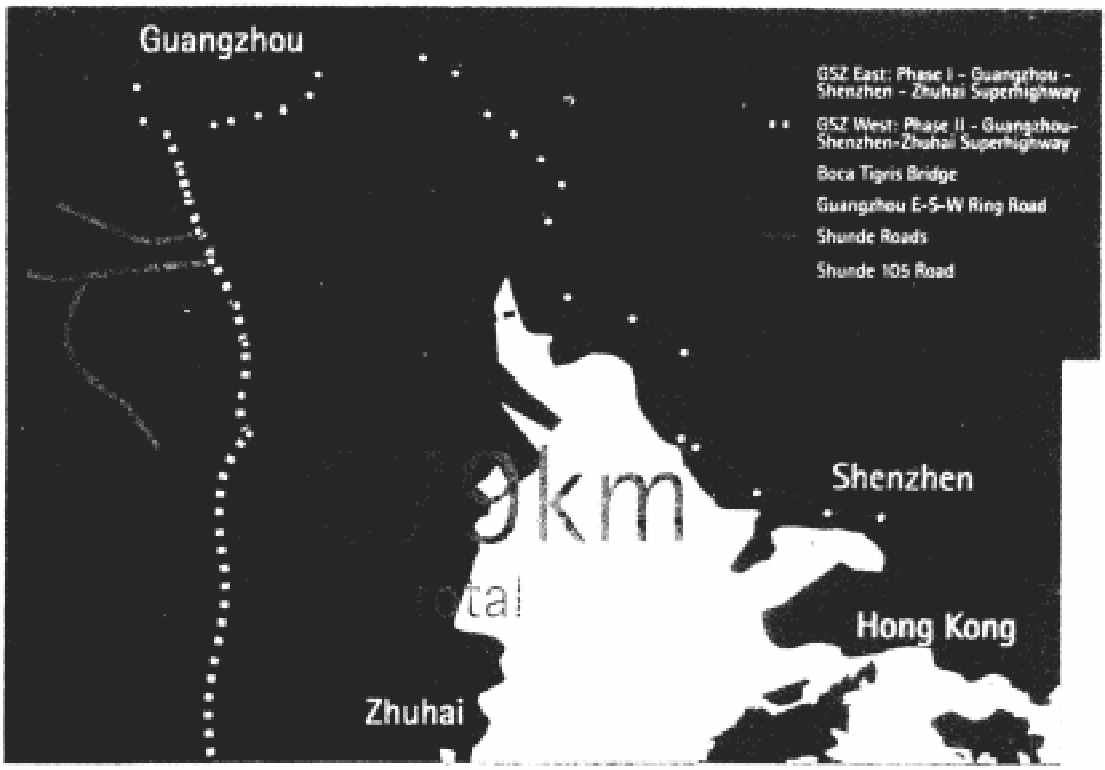
  - PRC-plated traffic is in line with forecasts, but Hong Kong, China vehicles are low because of the unanticipated delay in relaxing cross-border restrictions.

  - Traffic is mainly buses, trucks and container-trucks, not cars.

  - 90 percent of revenue is from PRC vehicles.

  - 30 percent growth in toll revenue in 1997 over 1996.

Figure A2.2: Hopewell Holdings PRC Projects



B. Indian Sub-Continent

In recent years India, Pakistan, Bangladesh and Sri Lanka have endeavored to progress participation of the private sector in the provision of roads. There have been flurries of international interest in all four countries, but progress has been at best very slow. Of all sectors of infrastructure, the roads sector is recognized as the most risky, even in countries where there is a demonstrable ability to pay for road use. The risk is substantially higher in countries where no track record - either of successful PSP or public acceptance of toll roads - exists.

It is concern over the limited economic capacity of users in the Indian Sub-Continent to pay for road space, which has dissuaded potential investors. This could be partially offset by government guarantees or at least an understanding of, and realistic sharing, of project risks. But in countries with a recent history of, and ongoing evidence of, civil unrest, strong labor union influence, and political instability, government commitments may not count for much. India has made the most sustained effort to attract private investment in its roads.

1. India

There are about 39,000 km of National Highway, less than 5 percent of which is 4-lane, about 80 percent 2-lane, and the rest is single lane. Since 1991, the Government of India has adopted a more liberal attitude towards private sector involvement in the management and development of the country's road system. In 1994 the Ministry of Surface Transportation actively promoted the development by the private sector of a "super national highway" ultimately to be 10,000kms of dual-carriageway segregated route along the main national corridors. The plan was to let PSP concessions first for a few well-trafficked routes to be followed by further concessions with roads opening throughout a 30-year development period.

State governments also actively promoted private sector involvement, since they saw PSP as a means of achieving their own shopping list of roads projects, invariably with no real appreciation of the requirements of a bankable project.

The Government took important steps to attract the private sector, including necessary legislative changes to expedite toll road concessions, but despite this it became apparent that major expressway projects could not attract international interest without substantial Government guarantees. Not surprisingly, international interest soon waned, but domestic investors remained positive, and positioned themselves for the time when Government expectations might be more achievable.

The plans for a whole new expressway network have now been shelved and the Ministry of Surface Transportation plans to four-lane about 14,000km of the existing network over the next 10 years. The priority corridors linking Delhi, Bombay, Madras, and Calcutta total 6,000km, and 5,000kms of this has still to be widened. Technical project preparation is in hand for most of this length.

About eleven BOT concessions have been let, all small projects - bridges and bypasses, to major Indian players. These projects require relatively low long-term capital investment, and have a more easily-captured revenue.

Tolls are being charged on a section of the Delhi/Bombay road. A franchise for toll collection was let, but the concessionaire is facing problems because of low traffic. In India, it

has proved important to keep the truck drivers (highly unionised) happy, and relations between state and the central government are sometimes problematic, frustrating project development.

It is envisaged that much of the planned network upgrading will be funded through the World Bank, but the Ministry of Surface Transportation is trying to define criteria for the selection of lengths which could be viable for private sector funding. Government has put one rupee per liter "road tax" on the price of petrol (not diesel yet), and this could provide public funding support for PSP deals.

2. Pakistan

Prior to 1995, the Government of Pakistan, through the National Highway Authority, had offered a variety of projects to the private sector for development on a BOT basis. Generally, the projects were not well prepared and were not supported by independent feasibility analysis. This resulted in international bidders having serious doubts about the credibility of the National Highway Authority and its ability to understand and therefore to deliver any commitments made. Recognizing this, ADB funded a technical assistance project to prepare a comprehensive plan for PSP in the road sector, covering policy formulation, institutional development, the preparation of model procedures and documents, and the identification of projects worthy of detailed feasibility study. A private sector cell within the National Highway Authority was set up, among other things to administer a proposed Private Sector Highway Development Fund.

The Government has initiated a major (US$5 billion) motorway program, but lack of professional resources to administer the program is likely to undermine credibility. A number of projects have been promoted, but none yet implemented as BOT.

The operation and maintenance contract for the recently opened Lahore-Islamabad Motorway — constructed using contractors credit — is reportedly being awarded to a private consortium with international members, which is also seeking to complete and operate the Lahore Bypass and Lahore Ring road within the same contract.

3. Bangladesh

The Government of Bangladesh has signaled its intention to bring about economic reform and take measures to attract private sector investment in infrastructure. Emphasis has been put on the power sector and in 1996, the Government established a Power Cell, charged with coordinating the country's private power program, which it is doing with notable success.

In the road sector, the only initiative taken by the Government (and World Bank) to date has been the evaluation of the Dhaka Eastern Bypass as a BOT project. As part of the consultancy study, model procedures and documentation were prepared which could form the basis for road sector PSP policy and plans. Realistically, however, this should be viewed as the first step towards developing an appreciation by the public and private sectors of the realities, opportunities and limitations of PSP in the country's roads sector.

To build upon this start and spread the program to other sectors of infrastructure, the Government, with international support, has established a Private Sector Infrastructure Development Fund and an organization to administer it. But realistically, the road sector will need to fall in line behind power and telecommunications which will be perceived by private investors as providing better, less risky opportunities.

4. Sri Lanka

The country's Road Development Authority does not have the resources — financial or professional — to progress major road schemes. The Airport Expressway (ColomboKatunayake) has been a Road Development Authority priority since the early '80s, with no progress made as yet. The Road Development Authority has offered the project for PSP and international companies have made exploratory investigations. If any corridor can offer a viable PSP scheme, then it must be this one. The fact that international interest has not resulted in any positive moves suggests that it could be some time, dependent upon improvement in the internal situation, before private investment in Sri Lanka's road sector will become a reality. Having said this, the Government is again actively seeking to promote this project as a BOT project, but now with some government support.

5. The Problems

The private sector perceive the following problems which need to be overcome before significant private sector investment will occur in the road sector in the Indian Sub-Continent:

- Lack of institutional capacity and experience in project finance.
- Limited consumer affordability and low traffic densities.
- Unclear tariff policies and absence of regulatory framework.
- Lack of transparency and competition in procurement.
- Political instability, civil unrest, labor union power.

C. Indonesia

1. Development of Toll Roads

Between 1978 and 1990, Government financed all toll roads. The state toll road agency Jasa Marga initially operated them, but later took responsibility for financing and construction. The 46 km Jagorawi toll road south of Jakarta was the first such toll road, and Jasa Marga was responsible for toll collection and maintenance. The finance for toll roads was sourced through foreign loans repaid by the Ministry of Finance, and low-interest bonds sold to employee pension funds.

After 1990, the Government granted a license to Jasa Marga to develop, construct, and operate toll roads in cooperation with the private sector. Presidential Decree 25/1 987 required that Jasa Marga be involved in all toll road construction. Private entities were required to set up joint ventures with Jasa Marga, who were therefore both investor and regulator.

There are two forms of private sector arrangement:

- Build-Transfer-Operate. A cooperation agreement is signed with Jasa Marga, and the road is handed over to Jasa Marga once constructed. The private investor receives a share of the toll revenues over the concession period.

- Modified turnkey. Investors fund, design, and construct the toll road. Jasa Marga then operates the road and the investor receives an agreed share of revenues, with no involvement in the operations.

Since 1994, foreign investors can work with Indonesian companies in promoting projects. They are required to cooperate with Jasa Marga through a domestic joint venture.

Indonesia's Sixth National Development Plan provided for the construction of 688 kms of toll roads by 1999, and 1935 kms by 2020. By mid-1997, 15 projects and 472 kms had been constructed, of which 150 kms had been constructed and were being operated by private sector concessionaires.

2. Key Issues

There have been many problems to date, as follows:

- Uncertainty about tariff adjustments. This has required the approval of the President to every such change, undermining confidence in the revenue stream.

- Transparency in procurement. Concessions have usually been granted to well-connected parties, and not as the result of competitive bidding. This has distorted the objectives of PSP.

- Land acquisition. This has been problematic and a major problem. Responsibility for the cost is with Government, yet they have sometimes tried to transfer this to the private sector.

- The road planning framework has sometimes been weak, and there has not been confidence that the projects identified for implementation are the key priorities.

- The domestic capital markets for private capital have been small, leaving the government banks and pension funds as the only sources of domestic capital.

- Privatization of Jasa Marga. Prior to the crisis, it was the government's intention to raise substantial funds from this. It is now recognized this will not be possible and the role and capitalization of Jasa Marga are under consideration.

3. The Economic Crisis and Government Response

The economic crisis hit Indonesia hard, resulting in a major currency realignment, increased domestic interest rates, increased petrol prices, lower traffic levels, and lower expectations of future traffic. This has created major problems for existing projects, and the collapse of the domestic banking sector has stopped all ongoing toll road projects.

The Government has taken steps to restructure the toll road program in the light of these events. All projects have been reviewed, and been prioritized.

These changes, together with political changes, have led government to reappraise and realign its policy for PSP in the light of the new imperatives. Presidential Decree 7/1998 provided a major change to the procurement of toll roads. This:

- Mandated the issue of open competitive bidding for all infrastructure projects.

- Required such projects to come from a 'List of Infrastructure Development projects' that had been subject to initial screening on their bankability and planning aspects.

- Mandated that all unsolicited bids would be subject to competitive bidding. Work to implement these provisions has proceeded.

As noted above, all toll roads have been reviewed and prioritized, and the future of Jasa Marga is under consideration.

D. Latin America

Latin America has many examples of PSP in the roads sector, and three countries have been selected as of direct relevance to this technical assistance:

- Argentina, which has innovated extensively
- Mexico, which has implemented a vast BOT program of expressways - with many lessons.
- Colombia, where the government has a system of public tolled roads as well as a road concessioning program. The concessioning program has had regional economic development as one of its objectives.

1. Argentina

There are three different approaches to private sector investment in roads in Argentina:

- Concessions - for rehabilitation, operation and maintenance of 9,000 kms of the main road network with traffic volumes of at least 2,500vpd.
- Construct, operate, and maintain for a relatively small network of non-tolled national roads, in good condition. This approach is still under development.
- Contrato de Recuperación y Mantenimiento (CREMA) for rehabilitation and maintenance of 14,400 kms of the national road network. Most of the roads in this program required some initial rehabilitation work.

The Government introduced these private sector initiatives because of a crisis in road management by the end of the 1 980s when under-funding over many years had left Argentina with the worst maintained network among all upper middle income countries. Thirty percent of the paved roads were in poor condition in 1989.

In 1989, the Highway Reconversion decree anticipated private sector involvement in highway matters and this was followed by the State Reform Law which provided for Direción Nacional de Vialidad (DNV) to repair and maintain the national arterial road network through partial or total concessions. Since then, the mechanisms by which the private sector is involved, have evolved.

a. Concessions

The first mechanism for private sector involvement was to concession approximately 9,000 km of the main road network. The call for bids, in 1989, specified that:

- Concessions would run for 12 years.
- There was a fixed toll structure. There was a uniform rate per kilometer for each class of vehicle and tolls were then applied on the basis of size of vehicle, number of axles and distance from last toll plaza. There was also some inflation protection for concessionaires, through a formula involving Consumer Price Index (CPI), Wholesale Price Index and the US dollar value.

- A list of initial rehabilitation works, which had to be completed before tolls could be collected, was specified.

- A list of priority works, which had to be completed before 3 years of the concession had elapsed, was specified.

- A list of improvement works, which were necessary to keep the road at the quality required for the 12 years of the concession, was specified.

- No Government guarantees for the project were given.

- The concessionaire was required to form a corporation or joint venture for the sole purpose of administering the concession.

- Income above expected levels would be used to improve the level of service provided on the roads.

- The concessionaire must control excess loads at weighing stations and were authorized to collect compensation from such loads.

- The concessionaire was required to take legal responsibility for any accidents occurring because of a poorly maintained road.

However, it did not specify how the corridors must be packaged, leaving bidders free to bid for groups of corridors.

All 147 bids were assessed in terms of the appropriateness of their traffic studies and on the economic and financial plans which they involved. A weighted formula was used to consider the following elements for all bids:

- Total expenditure on:

  - initial works
  - priority works
  - investment in improvement works
  - investment in any additional works

- Proposed routine maintenance work.

- Proposed toll collection system and facilities.

- The ‘canon’ to the state - which was the key criterion. In Latin America, the term canon is widely used to refer to payments from private sector to Government for the right to provide, and charge for the provision of, a service.

Concessions were awarded in 1990. The road segments all had at least 2000-2500 vpd. The total canon to be collected by the Government was US$890 million (in 1990 dollars).

A control entity was established to manage the concessions on behalf of the DNV. It ensures that the concessionaires comply with their technical obligations and deals with relations with road users. However, it relies on the concessionaires for all the traffic and toll revenue information.

Problems with the concessions approach were, however, already evident by early 1991:

- The convertibility law in February 1991 set the Argentinean dollar to parity with the American dollar thereby doubling the relative price of the toll for local users (to around $3 per 100km). This pegging also made the tariff escalation clauses illegal.

- The concessionaires were collecting tolls without having undertaken the initial works.

- Tollbooths were located to capture traffic in suburban areas which was generating significant popular opposition to the program.

The DNV suspended contracts and re-negotiated the concession agreements. The renegotiation led to the following changes:

- Reduction of tolls by 50 percent.

- Elimination of the canon payments.

- Introduction of government subsidies of around US$57 million per annum (allocated between concessionaires on the basis of their value added tax contributions – in effect therefore a shadow toll).

- Relocation of the tollbooths.

- Changes to the schedule of works.

- Extension of the concessions to 13 years.

Traffic on these inter-city concessions more than quadrupled between 1991 and 1996. This took toll revenues from around US$60 million in 1991 to US$258 million in 1996. The growth, however, flattened out because of the recession from 1995 onwards. Maintenance also improved greatly, so that only 25 percent of roads were in bad condition in 1993 and a predicted 10 percent in 1997.

The government proved reluctant to allow toll increases and hence the support payments rose from US$23 million in 1991 to US$65 million in 1996 (the Government has not estimated whether the private sector is maintaining roads at a lower cost than the public sector did prior to concessioning.)

Subsequently about 500km of the network has been concessioned on the access roads to major cities (starting with Buenos Aires in 1992). These concessions involve some new construction and are for longer durations - in Cordoba for example a 349 km network has been concessioned for 25 years.

The structure of the access roads concessions is similar to that described above, in particular, they require substantial investments before tolls can be levied and there are no traffic guarantees. However, the concessions were usually bid on the single criterion of the basic toll level (which is indexed on the US CPI). Concessionaires were also sometimes required to build parallel free roads, mainly to act as collector streets.

One example of these access roads was the Acceso Ezeiza Canuelas (the Ricchieri Tollway). This contract consists of improvements to the existing 16 km highway (from central

city to airport), construction of a new 31 km road, at the end of the existing road, and maintenance and operation of the full length of the road. Tolls cannot be levied until the end of the construction period (two years) and will be adjusted annually on the basis of the US CPI. The peso toll level is to be adjusted monthly to reflect changes in exchange rates.

The concession was awarded for 22 years and 8 months in 1993 and the award criterion was the size of canon that the concessionaire would pay the Government. The Government and concessionaire worked together to identify the alignment which represented a balance of economic and socio-economic objectives. The concessionaire is required, under the contract, to build another lane if the traffic level grows above a certain threshold.

Though very innovative, the concession was undermined when the largest of the six companies in the consortium went into receivership in March 1996 and the project has therefore been put on hold.

Some of the new construction for these concessions has required land acquisition and population resettlement. This has been managed by the relevant provincial government with assistance from municipalities as necessary. The risks associated with this were, however, assigned to the concessionaires and this did lead to significant delay on two of the concessions (such that by 1997 construction was still delayed).

In 1995, the Government issued rules on concession re-negotiating. All negotiations in 1991 had been on a bilateral basis, with each party looking to maximize its gains. There were no rules to specify what could and what could not be changed. The new rules however determine all options and terms of eligibility so that each concessionaire is dealt with on the same basis. In December 1996 the regulation of concessions for road and rail was handed to a new agency reporting to the Secretary for Public Works and Transport.

Typically the concession companies are joint ventures of Argentinean and International construction companies.

The IFC has lent to two toll road projects in Argentina:

- REC Toll Highway - approved in 1995. The project is $161 million with an International Finance Corporation (IFC) loan of $20 million.

- Western Access Road - approved in 1996. The project is $272 million with an IFC loan of $35 million.

The Inter-American Development Bank is currently preparing a loan to support the Cordoba access roads project through the 2 year construction phase before tolls can be levied.

b. COT (Construct-Operate-Maintain)

The construct, operate, and maintain network includes 1,879 km of national roads to be concessioned under a non-tolled arrangement. The government will allocate US$36 million per year for the up-keep of these roads. Arrangements for this form of concession are still being developed in 1998.

c. CREMA (Rehabilitate and Maintain)

The contracts under CREMA are fixed price rehabilitate and maintain contracts for five years. Bidding is highly specified in terms of defining the minimum level of service and contracts are awarded to the lowest bidder.

The CREMA system operates on a performance, or output, rather than on payment for the quantity of work done. The minimum level of rehabilitation is specified by DNV and must be carried out within the first year of the contract (following detailed engineering design). Maintenance requirements are specified and are regularly inspected (though inspection team size is minimized through the output specification). The requirements are categorized in the following way - potholes, cracking, rutting on pavement, condition of shoulders, culverts, drains, bridges, roadside, environment, horizontal and vertical signs. Penalties for non compliance on each item are established. The contracts are specified in this manner in part to ensure that the concessionaire has an incentive to rehabilitate efficiently since he will then be required to maintain the road for the full five year concession period.

The program covers around 14,400 km (in 100-300 km networks). 11,818km were let during 1997 in 61 separate contracts, at about $1 1,000 per km/year. Rehabilitation is expected to account for approximately 75 percent of the total cost. Between 5 and 20 proposals were received for each package.

2. Mexico

The Mexican Government awarded 53 concessions for 5,500 km between 1989 and 1994, thereby doubling the national toll road network. By the first quarter of 1995, 44 of these were in full or partial operation (5,120km).

The Secretary of Communications and Transport was responsible for the concessioning program. Concessions were let under the General Means of Communication law. The concessions were not to exceed 15 years (later extended to 30 years) and a parallel free alternative to the highway was required. Other state level road concessions were also awarded. These tended to be modeled after the federal arrangements.

Special purpose entities for the toll road projects were required, and these were typically consortia of local construction firms (though they were not always special purpose entities in practice). The call for bids defined the project in terms of:

- Alignment.
- Location of interchanges and tollbooths.
- Number of lanes.
- Design and construction standards.

The Government supplied bidders with traffic and cost projections and basic designs. Bidders were assessed on many criteria but were favored if they promised to transfer roads back to the Government in a short period. This was partly because of the concern that only short-term financing would be available, but also because the administration was looking for ‘success’ within its period of office.

The concession agreement specified the tolls to be charged, by category of vehicle, which were to increase semi-annually in accordance with the consumer price index

(or whenever the CPI rose by 5 percent or more following the previous adjustment). Most toll changes had to receive written approval from the government. Traffic levels were guaranteed by category of vehicle. Where the actual volumes fell short of the guaranteed levels, concessionaires were entitled to request an extension to the concession to recover their investment.

As the concessions were initially set for very short periods (as short as three years in one case) the concessionaires negotiated very high toll rates. Given these high tolls, forecast traffic did not materialize and concession periods were extended.

Other problems included:

- Substantial construction cost overruns (for example, on the 267 km road from Cuernavaca to Acapulco the cost over runs were around 200 percent and the time delays about 30 months.). In some cases, this was because the concessionaires provided “sweat equity”. Originally this accounted for around 20 percent of the investment costs but as lenders demanded higher equity cushions so the construction budgets rose.

- Failure to concession a cohesive network so that long distance traffic was not attracted to the new roads.

- Under-staffing at the Ministry of Communications and Transport which led to long permit approval times and inadequate enforcement of the requirements of the concession (for example, bidders were required to post construction bonds but these were either not lodged or not effective)

- A weak pre-qualification process which did not ensure that concessionaires had the technical capacity to plan and design the road. For example, some traffic projections were that trucks would account for between 20 and 45 percent of the traffic. In fact, trucks turned out to account for only about 5 percent. Anecdotal evidence suggests that there was a black market in toll receipts which allowed truckers to use the free alternate routes while pocketing the toll charges.)

- Weak scrutiny from lending banks. Large amounts of non-recourse financing were provided by government-owned commercial banks without undertaking their normal project screening or appraisals. Anecdotal evidence suggests that this was because banks understood that all projects would be supported by government even if they proved commercial failures. Even had the Banks been undertaking such due diligence, their negotiating position was weak since they were not allowed a collateral assignment of the concession agreement (i.e., they had no right to take over the infrastructure if the sponsor firm collapsed)

- Right-of-way acquisition was not completed before the construction began. Since opposition to the projects grew and acquisition became more problematic, construction costs rose as machinery stood idle and interest costs increased.

- Government reacted to local pressures by specifying change orders unilaterally.

- Concessionaires did not avail themselves of the right to develop ancillary services (a right which extended for two years past the end of the concession) and paid little heed to the need to provide good access roads.

- There tended to be very few bidders for each project (few international investors were attracted, in part because of their unfamiliarity with the Mexican legal system which governed the concessions — there was no recourse to international arbitration)

The December 1994 currency crisis in Mexico brought matters to a head, since traffic levels dropped off steeply. By March 1995, only 5 of 32 projects which were operating could meet their base case revenue projections. On average, actual project revenues were 30 percent below original projections. The companies were not marketing the time and distance savings that the roads could provide, but even with this the very high tolls would have been significant disincentives.

By early 1997 the World Bank's Operations Evaluation Department estimated that nearly 40 projects (with $1 1.5 billion in equity and debt investments) had submitted requests to the Government for financial restructuring. In August 1997 the Government of Mexico announced a restructuring package of around (US$8.9 billion for 23 projects). The government also planned to reduce tolls for cars and trucks by 15 percent and 35 percent, respectively.

Despite all of these difficulties, three projects did successfully refinance before the 1994 crisis. The IFC was involved in the refinancing of the Toluca toll road in June 1992. Generally despite high interest rates, the deal was not well received because of the tight debt service coverage ratios and the currency risk. The two other projects to be re-financed were the Ecatepec-Pirámides and Manzanillo Armeria roads and the Mexico City-Cuernavaca road.

3. Colombia

There have been publicly-owned tolled roads in Colombia for many years. In 1993 two laws were passed which now permit transport concessions. The Government has subsequently developed a three-tier system of concessioned roads:

- Expansion of existing roads.
- New construction.
- Road maintenance.

One particular objective of the program is to develop roads in those areas where economic development requires further development of the road network. The Government developed a standard basic contract, which has been adapted for each of the tiers.

One of the criteria on which concessionaires are selected is the lowest proposed tariff. The concessionaires, in theory, estimate the level of toll that they would require to cover the investment costs to achieve a "rate of return equivalent to that which would be achieved from another project facing similar risks". If these tolls are deemed politically unacceptable, then the bidders must consider altering construction plans, the design of the construction, or requesting government investment.

The Bogota to Villavicencio Road concession was signed in 1994. This consists of repairs to 13.5 km of road, construction of 34 km (including two tunnels), construction of two underpasses, rehabilitation of 7.5 km and various auxiliary works. The Government agreed to rehabilitate another 55 km section of road and to build a new tunnel. The contract for all the work was divided into three stages — design and programming, construction, and operation. Each stage is of fixed duration and the contract ends at the end of the operating stage (16 years from the start of the project) when the road reverts to Government at no charge.

There are several interesting aspects to the agreement:

- Land acquisition - the National Roads Institute acquires the land for the concessionaire, though this is paid for by the concessionaire. The cost of the land is specified in the concession agreement, and the national roads fund is required to compensate the concessionaire if the total cost rises above the agreed level.

- Treatment of revenues - the tolls charged from the start of the operating period will rise with CPI, but only if the index moves 20 percent from the last adjustment, or once a year. Though this is established in the concession agreement, the National Roads Institute may refuse to grant permission, but must then compensate the concessionaire. Minimum and maximum revenue streams for the concessionaire are also specified in the concession agreement (on the basis of traffic levels by vehicle type). Where toll revenues are less than the minimum in any given year, the national roads institute compensates the concessionaire for the difference. Where the toll revenues are greater than the maximum, then the concessionaire places 50 percent of the excess in a special account and the rest will be used to pay for additional maintenance costs. The funds in the account will be used by the National Roads Institute to pay the concessionaire when revenues fall below the minimum, or to fund additional works.

- Dealing with environmental permission processes - If this process is delayed, but the concessionaire is not at fault, the concession is suspended until the end of the delay. Where this seriously affects the economic position of the concessionaire, there are compensation mechanisms in the concession agreement.

Despite all these arrangements, there have been difficulties. Detailed engineering was completed within the specified period, but determined that the project cost would be far greater than first thought. This led to renegotiation of the concession agreement. The Government too has faced difficulties (cost overruns and delays) in undertaking its construction obligations.

E. Eastern Europe

1. Overview

The ambition to involve the private sector in funding the development of the road network in the former Eastern Europe has not so far been fulfilled in practice. Table A2.2 identifies the road sector projects submitted to the European Bank for Reconstruction and Development (EBRD) for their consideration and their current status. Of the eleven projects submitted, only two, both in Hungary, have been implemented with private finance.

There are a number of reasons why most private sector transport infrastructure projects have not reached fruition. EBRD cite the most important as:

- Poor financial viability, particularly for motorway projects - projects may be economically attractive but not financially viable without a contribution from the public authorities. In the case of motorways, EBRD's experience is that upgrading roads to full motorway standards is likely to be economically and commercially viable for very few (if any) sections, in the short to medium term, if rigorous evaluations are conducted. Despite initial hopes and aspirations, present income and traffic levels in the region are usually too low to generate sufficient toll revenue to service the debt of a fully privately-financed facility.

- Public affordability and political acceptability - political factors have been behind the lack of progress of some concession projects in the region:

  - It may not always be acceptable that transport infrastructure is provided by the private sector, usually involving foreign interests.

  - Proposed toll levels may be out of reach of local motorists traveling for their own purposes, rather than on corporate or other business, which will recompense toll payments. This can preclude political acceptability.

  - Governments may be reluctant to lose control of a strategic asset.

  - Bureaucrats may be reluctant to see the private sector take control of an asset on which they should continue to be employed.

- Level and equitable allocation of risks - lenders may not be willing to take full traffic risk arguing that it is properly an equity risk. They may therefore require support from the state, in the form of:

  - Guarantees of a base level of traffic or revenue (Spain).

  - Provision of cash-flow deficiency guarantees (Hungary).

  - Linking the concession period to the outturn traffic volumes (Dartford Crossing and Second Severn Crossing, United Kingdom (UK)).

Table A2.2: Road Projects Submitted to EBRD for Consideration

COUNTRY	PROJECT	COMMENT
Croatia	M12 Zagreb-Gorican	Discussions under way with government's preferred tenderer Subject to review
Czech Republic	Zagreb-Karlovac-Rijeka D5 Motorway	Concession tender canceled and project completed by the State
Hungary	M1-M15 Toll Motorway	private financing using BOT structure; M1 opened to traffic in January ; 1996; outturn traffic about 40 per cent lower than forecast
	Szekszard Bridge	Concession awarded, but project never reached financial closing, due to poor financial viability
	M5 Toll Motorway	private financing using BOT structure; first section opened to traffic December 1996
	M3 Toll Motorway	having tendered the project as a BOT concession, the government decided in September 1995 to cancel the tender and build the motorway as a state sector project
	M7 Toll Motorway	Concession tenders submitted; government reviewing options
Poland	A-2 Motorway Concession	two concession tenders submitted
	A-4 Motorway Operating Concession	Preferred tenderer selected by government
Romania	Initial motorway concession	Concession advertised July 1996

EBRD's past experience with the M1/M15 Motorway in Hungary (see Case Study below) may lead it to require project sponsors or the host state to bear traffic risk. Where substantial public support is required to a privately-funded scheme, conflicts can arise, reflected in legal arrangements and risk premiums and adverse effects on project development and implementation.

- Lack of equity - returns to shareholders in early years can be limited by long construction periods, debt service obligations, and slow traffic/revenue build-up. For the M5 Motorway in Hungary, first dividend payments are permitted only 10 years after financial closing. Thus, only those with a construction interest are likely to invest, which leads to conflicts of interest difficult to control. Competing investment opportunities are likely to be more attractive.

- Lack of local funding - for projects that generate mainly local revenues, part of the debt has to be denominated in local currency to limit exposure to currency devaluation and inflation risks. Local financial and capital markets in the region are generally insufficiently developed for this type of funding. EBRD supported local funding instruments for the M1/M15 Motorway in Hungary such that 50 percent of the debt is denominated in local currency. Otherwise the host-state might guarantee a fixed exchange rate (as in Spain).

- Regulatory and legal constraints - ideally there will be a concession law in place. In the absence of such a law, lenders will require various security arrangements, the absence of which will reduce their willingness to participate.

- Lack of convincing examples from Western Europe - most of the Central European countries look to Western Europe for examples of privately financed infrastructure. Unfortunately, there are few examples and success has been mixed.

EBRD now believes there are likely to be few (if any) financially viable motorway concessions in the region in the next five years or so, without substantial public sector financial support. EBRD will continue to aim to mobilize private finance for transport infrastructure through concessions and public/private partnerships. But it expects opportunities to be limited and to focus more on co-financing operating assets and transport services, leaving infrastructure financing to, say, the World Bank and European Investment Bank which have mandates for sovereign lending.

2. Case Studies

Case studies of the two motorway projects in Eastern Europe which have been implemented using private funding, both in Hungary, are presented below, together with the current situation in Poland as another case study. The conclusions from these case studies and the experience generally in Eastern Europe are set out below.

3. Conclusions

The three case study examples presented below provide common themes which illustrate the problems associated with involving the private sector in developing the region's motorway network:

- Governments had, and may still have, ambitious plans for the development of comprehensive motorway networks utilizing private finance.

- Current levels of income (gross domestic product (GDP)/capita is currently estimated at US$6,500-US$7,S00 in both Poland and Hungary) and vehicle ownership/usage generate toll motorway daily traffic flows in the range of 7,000-10,000.

- Initial traffic forecasts in support of concession bids have often been substantially higher.

- The construction of motorways in Eastern Europe is not significantly cheaper than in Western Europe where vehicle ownership and incomes, and therefore the ability and willingness to pay tolls, are higher.

- It follows that the private sector cannot bear all of the traffic/revenue risks. Substantial government contributions, of up to 50 percent of project costs, are required to make projects bankable.

- Lenders will be increasingly reluctant to participate in such projects without independent traffic forecasts on which to base financing decisions and government contribution to a public/private partnership.

- The EBRD foresees few, if any, privately-funded motorway projects proceeding in the former Eastern Europe in the next few years.

CASE STUDY: *M1/M15 MOTORWAY, HUNGARY*

The Project

- 43 km of dual 2-lane motorway linking an existing, untolled 126 km of motorway in Hungary with 60 km in Austria, to complete Budapest-Vienna link (M1).
- 14 km spur towards Bratislava (M15), one carriageway to be completed by December 1997, the second by December 2002.
- M1 opened at the beginning of 1996 as the first tolled motorway in the former Eastern Europe.

Implementation Process

- Long term motorway development plan approved by Hungarian Government in 1991. M1/M15 identified as suitable for limited recourse project financing.
- 5 consortia shortlisted in 1992, 4 bids submitted.
- 2 preferred tenderers selected in Nov 92, winner selected in Feb 93.
- Contract signed in April 93, financial closing in December 93.

Government Contribution

- Preliminary design, building permits, environmental clearance.
- Land (about 5 percent of project cost).
- Undertaking of no tolls on existing 126 km of motorway prior to 2005.
- Acceptance of phased approach, eg, M15 second carriageway.
- Some restrictions of HGV movements on parallel road.

Concession Terms

- Total project cost was ECU 329 million (US$325 million): construction costs = 67 percent, concession company's costs = 18 percent, capitalized interest = 15 percent.
- Concession terms required equity to be at least 20 percent of project cost.
- All commercial, operational and financial risks borne by concessionaire and debt providers. No state guarantee for traffic or cash-flow levels.
- 15 percent of profits to be paid to Government's Road Fund.

Outturn

- Observed traffic volumes of around 7,000 vpd, one third below forecasts.
- Very little use of M1 by trucks.

- Initial tolls set at Forint 900 (=US$6.S or US$0.15/km) for cars and 3 times that for HGV. High tolls by international standards.
- High Tolls challenged in Hungarian courts. Challenge upheld on the grounds that the tolls are too high relative to the value of the services rendered.
- Tolls unchanged, but Forint 350 out of 900 to be repaid to those who take the concession company to court.
- Possibility of M1 project having to be re-financed - it is technically bankrupt.

Reasons for Poor Outturn

- Project design. Short tolled section of motorway between two untolled sections can easily be avoided.
- Traffic modelling errors.
- Over-optimistic forecasts - of Hungarian income growth, Austrian export traffic, Western tourism traffic.
- Adverse response of truck and coach operators to tolls and to concession company.
- Rigid pricing policy, unsuccessful marketing, poor image of concession company.

Lessons Learned

- Allocation of all traffic linked commercial risks to private sector a major error.
- Substantial government contribution (of up to 50 percent of project costs) required to make toll motorway projects bankable in emerging countries in Eastern Europe.

CASE STUDY: *M5 MOTORWAY, HUNGARY*

The Project

- Phase 1: Upgrading and tolling existing 26 km dual 2 lane motorway. Building second carriageway for 30 km ‘half motorway’. 40 km of new dual 2 lane motorway.
- Phases 2+3: Building 60 km of new dual 2 lane motorway.
- Phase 1 sub-divided, opened in stages between January 1997 and summer 1998.

Implementation Process

- Followed M1/M15.
- Invitation to pre-qualify issued in April 1992. 3 responses, all shortlisted.
- 2 bids submitted in June 1993, preferred tenderer selected in Feb 94.

Government Contribution

- Preliminary design, building permits, environmental clearance.
- Land.
- Existing 26 km of motorway and 30 km of half motorway.
- Acceptance of phased approach, allowing deferred construction of Phases 2 and 3.
- Two new feeder roads to motorway.
- Standby operational support for period 1998-2004 - a cash flow deficiency guarantee. This became necessary following discouraging traffic forecasts from an independent traffic study commissioned by the lenders.
- Some restrictions of HGV movements on parallel road.

Concession Terms

- 35 year concession period.
- Total project cost was ECU 370 million (US$440 million): construction costs = 68 percent, concession company's costs = 13 percent, capitalized inherent = 19 percent.
- Investors' equity = 26 percent of construction cost.
- 29 percent of profits paid into Government's Road Fund.

Outturn

- Observed traffic volume through main toll plaza of around 7,600 vpd in first year, 85 percent of forecast.
- Concessionaire's financial position secured by decreasing interest rates, active marketing policy, operating cost savings and standby facility.
- Public and political concern at diversion of traffic, particularly HGVs, from former untolled motorway to parallel road through local settlements.
- Government discussing discounted toll schemes with concessionaire to encourage more use of M5 and protect local settlements.
- Tolls, lower than M1 tolls, accepted by courts as reasonable.
- Concessionaire and lenders considering Phases 2 and 3.

Lessons Learned

- Government contribution and direct financial support required in former Eastern Europe to make public/private partnership motorway projects work.
- Partial traffic or revenue guarantees might be needed to provide comfort to private investors and lenders.

- Value of independent traffic/revenue forecasts, guided by potential lenders, which led to re-phasing of project, restructuring of project finances, and provision of standby facility.

CASE STUDY: *POLAND*

Government Ambitio

- 2,600 km of toll motorway financed, constructed and operated by private sector.
- Total cost of US$8 billion-US$15 billion.

Agreements

- Concession signed with Autostrada Wielkopolska for A2 east-west motorway between Polish/German border and Lódz in Central Poland.
- Concession agreement expected with Gdansk Transport Company for northern part of Al north-south motorway.
- 30 year right to tolls collected in return for building roads with private finance.
- Government role limited to land acquisition and providing credit guarantees for up to half of total cost.

Current Problems

- Independent traffic forecasts indicate 7,000-9,000 vpd using a toll motorway, compared with previous forecasts, undertaken for concessionaires, of 12,000-15,000.
- Exclusive use of private sector funding not compatible with new traffic/revenue forecasts.

Ways Forward

- Either, Government financial support in public/private partnership, with income from a special fund financed from road tax and excise receipts or from future aid,
- Or, concessions withdrawn/abandoned.
- Motorway development program uncertain.

F. United Kingdom

The UK's motorway network was developed largely in the 1960s and 1970s with few exceptions as an untolled, publicly-financed motorway network. While parts of Continental Europe, notably France, Italy and Spain, were developing tolled motorway networks employing private sector funding, tolls were considered and not pursued in the UK for the following principal reasons:

- The density of development in the UK and the density of the road network led to concerns that the imposition of tolls would divert substantial numbers of trips from motorways to parallel roads, giving a reduction in efficiency and leaving the motorways underused.

- The density of the road network and hence the large number of intersections on the motorway network would have led to high toll collection costs.

There, exceptions to the general rule of an untolled motorway network are, estuarial crossings, the Birmingham Northern Relief Road, and, of greatest interest, the recent DBFO Road program.

Estuarial Crossings

Major estuarial crossings were tolled on the grounds that they were expensive pieces of infrastructure to build and they provided users with substantial savings through the avoidance of long, circuitous journeys via the nearest upstream crossing. By the late 1980s, there were 11 tolled estuarial crossings, funded by the public sector through grant and loans. The total debt in the early 1980s exceeded £400 million and annual interest payments were not being covered by net revenues. Interest was being capitalized and was unlikely to be fully paid.

Second Dartford Crossing. The private sector became involved in the funding of the road network when the Dartford River Crossing Ltd. (with Trafalgar House, now Kvaerner, as a major partner) funded, almost exclusively through debt not equity, and built the Queen Elizabeth II Bridge at Dartford. Dartford River Crossing's concession allowed them to collect the toll revenues from the existing tunnels and the new bridge for a period up to the full repayment of the debt. The new bridge opened in October 1991 and the debt is expected to be repaid in the year 2000. At that point, under the legislation now in place, the crossings will revert to the public sector, tolls will continue for a year to develop a fund for maintenance, then tolls will be withdrawn.

Second Severn Crossing. This is conceptually similar to the Second Dartford Crossing. Severn River Crossing Ltd has bought the concession to operate the existing bridge and toll both bridges for a period of 30 years.

Other than these estuarial crossings, the only attempt at a tolled section of motorway in the UK to date has been the Birmingham Northern Relief Road.

Birmingham Northern Relief Road

The Birmingham Northern Relief Road was planned in the 1980s as a relief road for one of the more congested sections of the UK's motorway network in the conurbation of Birmingham, which has a population of around 2 million. The proposed Birmingham Northern Relief Road was around 40 km long, it was considered at Public Inquiry in 1988 and was intended to be the first

road in the UK subject to a competition for private sector design, construction, finance and operation.

Following pre-qualification, three groups were invited to submit bids for the concession by October 1990. In August 1991 a Memorandum of Understanding was signed with the successful bidder, Midland Expressway Ltd (MEL).

MEL reviewed the alignment and junction arrangements of the preferred route from the 1988 Inquiry and proposed changes. Consultation on these changes with local authorities, government departments and the public was required to satisfy the government that the proposals could pass through the statutory planning process. Some substantial changes were made to the proposals as a result of the consultation process. The new preferred scheme was then resubmitted to the planning process in 1992. 6 years later it is still subject to appeal.

It is reminiscent of Catch 22. Innovative ideas are required from the private sector. If these affect scheme designs, requiring a change in published orders or new orders, schemes have to go back through the planning process. But it is the public sector that is best equipped to take schemes through the planning process, and the private sector would prefer not to get involved until all such procedures are completed. How then can a private sector contribution to scheme design be obtained?

Design-Build-Finance-Operate (DBFO) Schemes

The DBFO process was announced in December 1993, and the first four contracts were let in 1996. Now eight contracts have been let, in two tranches, and some £1 billion of finance raised. Under these contracts, private sector concessionaires build, operate and maintain sections of trunk roads or motorways over 30 years. In return, the concessionaires are paid by the government according to the number of vehicle kilometers driven on the road. Road users will not pay directly for using the road. This payment mechanism has come to be described as ‘shadow tolls’.

1. Objectives

The intentions of the government, represented by the Highways Agency (HA), in letting the contracts, were:

- New roads to be designed and constructed, and the new and existing roads to be maintained and operated safely and satisfactorily so as to minimize any adverse impact on the environment.
- Test the enthusiasm of the market for such contracts across a range of scheme types.
- Assist in the establishment of a road operating industry within the private sector.
- Promote innovation.
- Maximize value for money through the use of a competitive process and by allocating risks between the public and private sectors in the most appropriate manner.

In the remainder of this section we comment on:

- The shadow toll payment mechanism.

- The variety of projects being implemented under DBFO.
- The risks, particularly traffic risk, borne by the concessionaire.
- The DBFO bidding process, which has been thoroughly audited and praised by the National Audit Office.
- The use of public sector comparators in that process.
- Whether the intentions of establishing a road operating industry and promoting innovation are being realized.

2. Shadow Toll Payment Mechanism

The shadow toll payments are made by the government to the concessionaire on the basis of the vehicle kilometers traveled on the defined section of road by vehicles in two categories - heavy goods vehicles and other vehicles. Bidders had to put forward their required payment per vehicle km:

- By the two vehicle categories.
- In each of four bands (payment for the first x million vehicle km, the next y million, etc).
- With a zero payment specified for band 4, i.e., vehicle km in excess of the upper bound of band 3 which was specified by the bidder.

A key evaluation criterion was the HA's estimation of the required payments to each bidder using the HA's traffic forecasts and each bidder's proposed payments schedule.

a. Variety of DBFO Projects

The initial DBFO projects have varied in their size and in their nature, in the balance between initial construction and on-going maintenance. For the first four schemes, the present values of expected payments range from £62 million-£232 million (US$100 million-US$372 million): the length of new road construction varies from 3 km to 52 km. The initial four schemes were all inter-urban schemes. As experience of the DBFO process is gained, consideration is being given to DBFO projects in urban or pen-urban areas and to DBFO projects which have no new construction but consist solely of maintain-finance-operate contracts.

b. Risk Transfer

Traffic risk was largely passed to the selected bidder. The zero payment for traffic in excess of defined volumes limited the government's exposure. But the nature of shadow tolls and the DBFO schemes limits the traffic risk to the concessionaire:

- There are no user tolls or payments, which removes a major component of the traffic/ revenue risk for a conventional tolled expressway.
- DBFO schemes to date have more often been the on-line improvement of an existing section of the trunk road/motorway network than the development of new routes, which reduces the modelling/forecasting risk.

- Nevertheless, the payment to the concessionaire is related to the traffic volume, which contributed to the DBFO projects satisfying the UK Treasury and European Union rules on the transfer of risk to the private sector as a necessary PFI condition.

For the initial DBFO projects, the public sector bore the planning risk, since all the projects had been taken through statutory planning stages as public sector projects. The following risks were shared between the public and private sectors:

- Traffic risk. As discussed, the private sector bears the downside risk and the public sector bears the capped upside risk.

- Protester action. On some projects it is borne by the concessionaire, on others it is shared.

- Force Majeure. Most force majeure risks lie with the public sector, but equity holders are not compensated if termination occurs as a result of a force majeure event.

The concessionaire bears the following risks:

- Design and construction.

- Latent/inherent defects which arise during 30 year concession period.

- Delivery/timing, unless due to government-required changes, in which case compensation may be payable.

- Operation and maintenance.

- Indemnity/insurance.

- Legislative, except where the law is discriminatory against operators or DBFO roads. Concessionaires would be compensated, for example, if real tolls were introduced causing traffic volumes to fall.

c. DBFO Bidding Process

The public sector had taken the DBFO schemes through statutory planning stages. The interest of the market in the DBFO schemes was stimulated through a consultation process and market sounding exercise, conducted by the HA's professional advisors who were appointed in good time at the start of the DBFO process. The road construction industry's interest was also stimulated since it was made clear that new roads would be DBFO-funded, there would be no publicly-funded road schemes. Four bidders were invited to bid for each of the four schemes in the initial tranche; no bidder was invited for more than two schemes. A model contract was drawn up to which bidders could respond. There was a clear set of evaluation criteria, with the payment level and banding process described earlier at its heart. Best and final offers were sought from the shortlisted bidders and competitive pressure was maintained through continued negotiation with two bidders for each scheme right up to contract award. An ex-post survey revealed that bidders were broadly satisfied with the process.

On the first tranche of four schemes, the HA spent £8.3 million (US$13.3 million) on its advisors - financial, legal and technical. The bidders estimated their costs as:

- Prequalification - up to £0.1 million (US$ 0.16 million).

- Shortlisted Bidder - £1 million-£2 million (US$1 .6 million-US$3.2 million).

- Reserve or Winning Bidder - £1 million-£4 million (US$1.6 million-US$6.4 million)

d. Use of Public Sector Comparators

Figure A2.3 shows, for each of the first four DBFO schemes, three sets of values, all expressed as NPVs discounted at 8 percent per annum:

- Shortlisted bids. The NPV of expected payments calculated for the individual bids on each project.

- NPV of expected payments. The NPVs of expected payments to the Winning Bidders on each project, expressed as a best estimate and as a range dependent on traffic flow.

- Public sector comparators. Two estimates, one by the Highways Agency and one by its technical advisors, of the costs to the Agency of acquiring the project as a conventional public sector project.

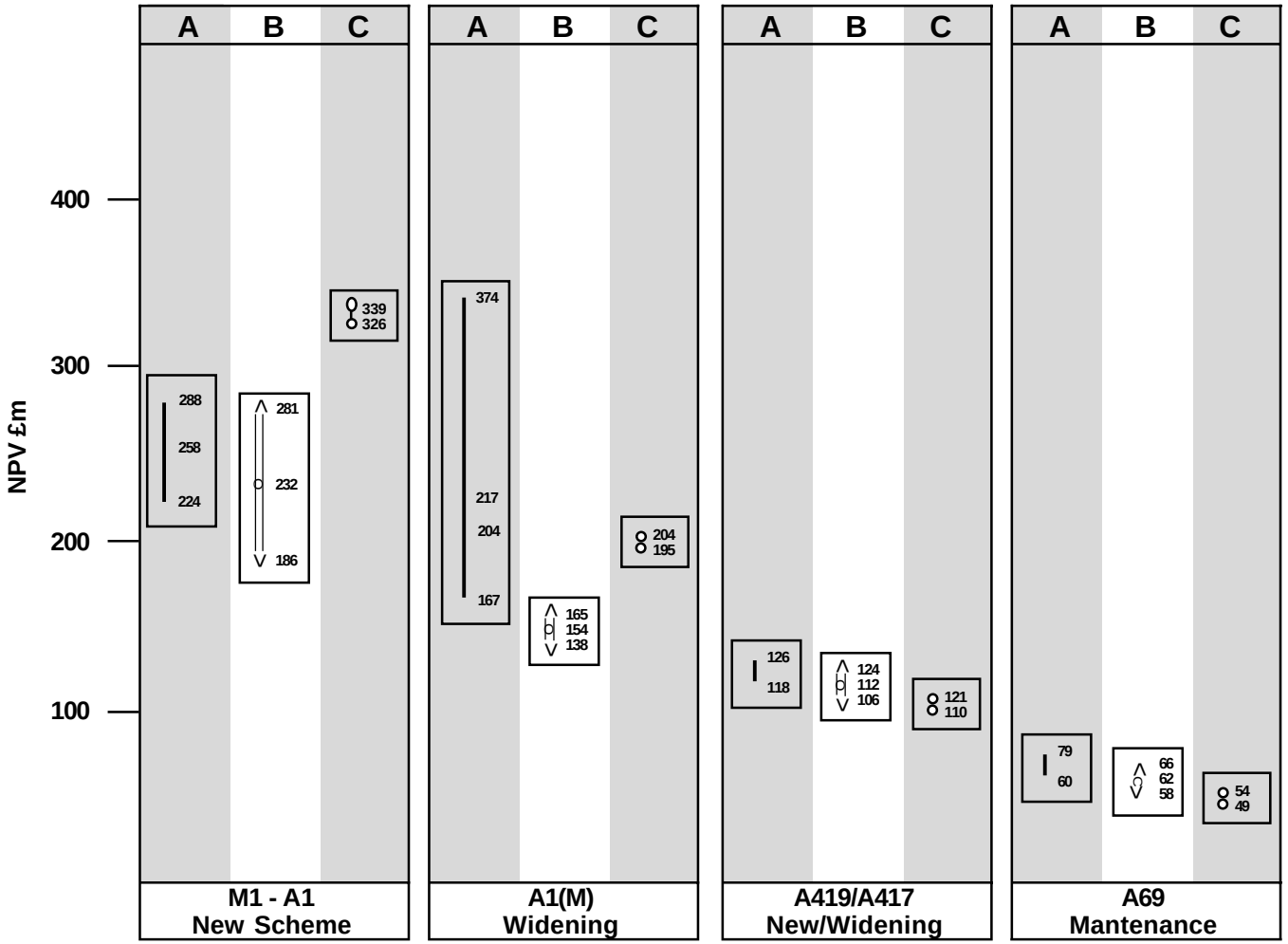
Typically, the public sector comparator has a higher value than the NPV of expected payments, leading to the conclusion that the involvement of the private sector has given value for money, producing considerable savings to the public purse. The greatest savings apparently relate to the A1-M1 project where the best estimate of expected payments (£232 million) falls substantially below the two public sector comparators (£326 million and £339 million). It is not clear why this project should apparently cost so much less than the public sector comparators, though it is believed that it has been subject to heavy 'value engineering'. There remains a concern that, despite project designs and standards being tightly specified by the public sector, and construction and maintenance closely monitored, an inferior product will be delivered that will ultimately rebound on the public sector.

e. Establishment of Road Operating Industry and Innovation

Traditionally in the UK, there have been separate organizations specializing in road construction (normally in the private sector) and maintenance (historically in the public sector but increasingly being privatized). Overlap between these two is beginning, with major contractors developing their road maintenance sections or acquiring maintenance organizations. The consideration being given to maintain-finance-operate projects will encourage this process. It is significant, however, that the initial DBFO companies, all led by construction companies, all negotiated the right to sell their equity after five years, suggesting that, as yet, the construction companies are not wholly committed to a long term involvement in road operation and maintenance.

There has, so far, been limited innovation. Project plans and the orders following public inquiries constrained designs. Non-conforming bids were made to the Agency who gave details to the other bidders, allowing them to bid on the same basis. If innovative thinking results in a change to core technical requirements, which should in any event be kept to a minimum, it is preferable for the change to be made where its cost or value is still subject to competitive pressure.

Figure A2.3: Performance of UK DBFO Projects



Expected payment to Bidders:

A = Short listed bids
B = Winning Bidder (best estimate and range depending on traffic)

C = Public Sector Comparator (2 estimates)

All NPVs calculated with 8% discount rate

G. France, Italy, Spain

There are strong similarities in the experience of these three countries which were at the forefront of the development of toll motorway networks and involving the private sector in their development. The principal similarities are:

- Each country has a substantial toll motorway network.
- The impetus in each case came in the 1950s and 1960s in response to a number of factors (reconstruction following the Second World War, response to rapidly increasing vehicle ownership and the development of infrastructure to support developing industrial and tourism activity).
- In each country both the public and the private sectors have been involved in the financing of the toll motorway network.
- The involvement of the public sector in the ownership of the motorway networks in each case had to be strengthened as private sector concessionaires experienced financial difficulty, particularly following the energy crisis in the early 1970s.
- Now the toll motorway networks in these three countries are owned in varying degrees by the public and private sectors, with considerable government financial support and profit controls on the private sector operations.

Table A2.3 summarizes the toll motorway experience in these three countries.

1. France

There is a toll motorway network of approximately 5,000 km mainly developed in the 1 960s and 1 970s. The first concessions were awarded in the period 1956-1963 to five Societes d'Economie Mixte (SEMs) which are commercially structured, state owned bodies, a mix of national and local government ownership. In 1969, four private sector concession companies were founded. Economic problems following the energy crisis in the early 1 970s caused financial difficulties for these companies and in 1982 the government bought them, with the exception of Cofiroute, and converted them into SEMs. An 'equalization' policy was introduced, with a public entity Autoroutes de France, created to manage surpluses and deficits, and ensure balanced financial operations. Currently, Cofiroute, the one remaining concessionaire not wholly publiclyowned, owns around 15 percent of the toll motorway network.

Table A2.3: Toll Motorway Experience in France, Italy, and Spain

Network Characteristics	France	Italy	Spain
Route-kms	5,000	5,000	1,900
% of Total Motorway Network	72	81	80
% Privately-owned	15 - Cofiroute	2	85
History	• 1956-63: Concessions to SEMs • 1969: 4 Private Sector Concession Companies • 1982: Concession Companies other than Cofiroute bought by government and converted to SEMs. Equalization policy	• 1960s/70s - majority of toll network built • Autostrade S.p.A. set up to manage 45% of motorway network, but share grew as Autostrade took over loss-making roads.	• mid 1960s/early 1970s Concessions let • 1983/84 state buys 3 (out of 13) concession companies
State Involvement in Financing	• Repayable advances • Equity (State to hold a majority of equity) • Loan guarantees	• Capital subsidies • Loan guarantees	• Government stipulations on funding sources • Exchange rate support • Government guarantees for foreign borrowing • Interest free loans when traffic target not met • Tax benefits to concession companies
Profit Control	• 7% limit on dividends • Excess profits to Autoroutes de France	• Limit on dividends of 8% of share capital • Excess profits to Central Guarantee Fund	• Profit limited to 10-15% of equity • Excess profits to companies' Special Reserve

The state has been heavily involved in financing the construction of the toll motorway network. Construction was financed largely by long term loans, with State support in the form of repayable advances, loan guarantees and equity (the State was to hold a majority of the equity). The SEMs in the 1 960s received advances nominally repayable over a long period, to cover 30 percent - 40 percent of their construction costs and to cover unforeseen annual deficits. In the1970s, indexed but non-interest bearing advances of around 20 percent - 25 percent of construction costs were made to public and private sector companies. State guarantees of up to 70 percent of loan financing were provided to both public and private sector companies.

The SEMs now operate under a profit control regime that allows them to distribute dividends of up to 7 percent, with excess profits being paid to Autoroutes de France for use in the equalization operation.

2. Italy

Italy has some 5,000 km of toll motorway mainly built in the late 1960s and early 1970s. By far the single largest concessionaire is Autostrade S.p.A. whose parent company is the State-controlled State Institute of Industrial Reconstruction. Autostrade was set up to manage some 45 percent of the Italian motorway network. By contrast, many of the other motorway concessions were awarded to companies which held only a single concession. Often the award was made on the basis of negotiation with a preferred bidder rather than as a result of competitive tender. Autostrade's share of the motorway network has grown as it has taken over loss making roads in return for an extension to its concession.

State involvement in the financing of motorways has included capital subsidies, variously reported as less than 10 percent of the sum invested in the period to 1986 and typically 10 percent - 30 percent of construction costs, and loan guarantees. All of Autostrade's loans are guaranteed by the State Institute of Industrial Reconstruction.

ANAS, the autonomous national highway agency, approves the financial plans and monitors the annual accounts of the toll road companies. Dividends are limited by law to 8 percent of share capital. Excess profits are paid into a Central Guarantee Fund to provide collateral for loans.

3. Spain

Spain has a toll motorway network of around 1,900 km begun in the 1960s. By 1972, concessions totaling 1,000 km had been granted. The adverse effects of the energy crisis and economic problems in the 1970s were met by the renegotiation of concession terms and by the State taking over three (out of 13) companies granted concessions.

All of the companies whose concessions were granted by the national government (9 out of the 13) enjoy special tax benefits which reduce certain taxes and duties by up to 95 percent.

The Government laid down stipulations for the financing of toll roads. In order to limit the use of local debt, minimum amounts of foreign debt and equity were specified. There are variations among concessions, but typically 45 percent of construction costs must be funded with foreign debt and 10 percent - 25 percent with equity. In return, Government supports the concessionaires' overseas borrowings through exchange rate assurance, whereby the Government undertakes to provide the foreign exchange to service foreign debt at the rate of exchange ruling at the time the loan was entered into.

In addition, Government guarantees a limited amount of foreign borrowing, for a fee, and provides some subsidies. It has made interest-free loans to one private sector concessionaire in years when traffic levels have fallen below a stipulated target. Advances have been made to public sector companies to cover operating deficits.

Concessionaires must each establish a Special Reserve into which they make an allocation of funds when net profit is greater than 10 percent - 15 percent of equity. There are restrictions on the use of the reserve. Payments into and out of the reserve tend to restrict dividends to 6 percent - 15 percent of paid-up capital.

H. United States

Tolling or private sector provision of roads has been out of favor in the US from the early 1950s when the Inter State Highway system was instigated. However, since the late 1980s the whole issue has been revived, and by the early 1 990s several concession agreements had been signed. All concessions have been awarded at the state level.

1. California

The State of California has been leading this renaissance, with the first BOT road projects in the country. All of the roads revert to Caltrans (the state DOT on substantial completion) and in most cases are operated through the Transportation Corridor Agencies (TCA) founded in 1986. The concession legislation was passed in July 1989 to allow the four new concession agreements.

SR 91 opened in December 1995 and was the first privately funded electronically tolled project in the US. There are four new express lanes, 16km long, in the median of an existing state road. The road is operated by California Private Transportation Company, under a 35-year concession. There was a competitive bidding process, which called for ideas for private roads and selected those deemed technically and financially the most viable. The concession was signed at the end of 1991 but financial closure only came at the beginning of 1993. In part, the process took a considerable time, because the Government had adopted a flexible approach to project award, in which the preferred bidder and Government negotiated the final elements of the concession (with the runner-up bidders held in reserve) over a period of months. This form of contract award was selected on the basis that it provided the government with the benefits of both innovative project design and risk sharing schemes.

The concessionaire and state signed the concession agreement on the understanding that the outcome of the environmental review process might conclude that the no build option was preferable. Caltrans has agreed not to issue any competing concession (within a defined zone around the project), that it will not develop anything itself, and that it will use its best efforts to ensure that no other agencies develop any such facilities. The concessionaire has rights to ancillary real estate development, though if they use the air space they have to pay $1 per annum rent for the first 35 years and after than a “fair market lease rate”.

There are several performance incentive clauses in the concession agreement — including the number of vehicles using the facility, the number of accidents on the road and the magnitude of the operations and maintenance costs. The incentive is paid in the form of increases in the permitted annual return on investment.

The project cost US$126 million (US$7.9 million per kilometer). US$107 million of debt was raised, giving a debt equity ratio of 85/15. Equity participation, through California Private Transportation Company, came from Cofiroute, a French toll road operating company. US$7 million in subordinated debt was provided by Orange County (the local authority in the region).

On opening, tolls varied with the time of day and day of week, between $0.25 and $2.50 for the full length of the road. There is no toll rate regulation, though there is a maximum 17 percent ceiling on the return to total capital (debt and equity combined). No tolls are charged for cars carrying three or more people. Tolls are paid using a FasTrak in-vehicle tag, which are now also used on all of the TCA roads to ensure that all users in Southern California only require a single tag in their vehicle. Traffic rose from around 8,000 vehicles on an average weekday in January 1996, to around 25,000 by the end of the year.

2. Other Schemes

US State Departments of Transportation have long issued bonds with which to fund roads and bridges (around US$40 million since 1950). The TCA approach allows such bonds to be issued on a non recourse basis and to secure them solely on the basis of the toll revenues.

Two TCAs have been created in Orange County, California with the express purpose of "Providing significant relief to Orange County's gridlock". The TCAs are the San Joaquin Hills Transportation Corridor and the Foothill and Eastern Transportation Corridor.

Construction began in September 1993 and the San Joaquin Hills Corridor was fully opened in November 1996, four months ahead of schedule. It is 15 km long (with three lanes in each direction and a wide median allowing for future HOV or public transport lanes) and runs parallel to Interstate 5. A turnkey (design/build) approach was used and the road is operated and maintained by the TCA.

The construction cost US$834 million, not including right of way, finance or administrative costs which were funded from development impact fees, state general funds and the gas tax. In March 1993, the TCA raised US$1 .2 billion in tax exempt, non recourse toll revenue bonds.

FasTrak tags can be used and the toll is distance based and for the full length of the corridor (for a car or motorcycle) is US$2. This is estimated to save 20 minutes from the Interstate 5 route. There are five vehicle classes.

Foothill and Eastern Transportation Corridor is in fact two schemes, which were cofinanced under two bond issues, which were not backed by any Government body and are funded simply from the toll revenues, development fees and interest earnings:

- In 1993, US$78.6 million of fixed and variable rate, non recourse, toll revenue bonds was sold to finance the completion of the first section of Foothill-North (1.4 miles). The design and environmental costs of the other parts of the Foothill corridor and for all of the Eastern corridor (other funds for construction came from the state and from development impact fees.

- Similar bonds were sold in June 1995 to raise a further US$1.5 billion. These bonds, together with some more state and developer funding and the remains of he 1993 issue, paid for the Eastern corridor and completion of the Northern Foothills corridor, as well as the design of the southern part of the Foothills corridor.

The toll for the Northern Section of the Foothills corridor (7.5 miles) is US$1 for cars and motorbikes. These are lower if only part of the corridor is used, varying from 25 to 75 cents depending on distance. There are 7 classes of vehicle.

Basic tolls for the Eastern Corridor will average 19 cents to 25 cents per mile. The project is expected to be complete by December 1999, when it will be 24 miles long and consist of two lanes in each direction. Traffic is expected to increase and plans have been made for 3-4 lanes in each direction. The total design and construction cost of the corridor, and 4.6 miles of the Foothill corridor, is US$743.2 million. A turnkey (design/build) structure has been used for construction.

I. Australasia

1. Australia

There has been some experience with BOT style investments in Australia - see Table A2.4. Mostly urban projects, these have included the Sydney Harbour tunnel, the M2, M4, and M5 motorways. Melbourne City Link is currently under construction, and completion is expected in 1999. The total cost of these projects is more than A$3.5 billion (with the Melbourne City Link estimated to require around A$1 .8 billion of this over five years.) This can be compared with total annual expenditure of A$1 billion on all roads in the state of Victoria.

Government involvement in these projects has been substantial in some cases —involving the transfer of land, provision of financing and underwriting of revenue.

Four major Australian Banks (National Australia Bank, Commonwealth Bank of Australia, ANZ Bank and Westpac Banking) have been involved in providing the finance and in underwriting projects. International involvement has commenced with the Melbourne project.

The New South Wales Auditor-General has prepared reports considering the performance of all of the Sydney projects. These reports raised particular concerns about the nature of the road network within which the BOT project operates and the implications of this for risk sharing between Government and concessionaires. However, offsetting this has been the considerable competition for the projects, which is believed to have lowered costs and fostered innovation. Similarly the use of the private sector has encouraged swifter construction — the M4 was completed nine months ahead of schedule and the M5 was completed in 2 rather than 4 years.

Risks for the private sector have been ameliorated through Material Adverse Effect clauses in the BOT contracts. These typically provide for a menu of responses that escalate from toll changes to concession extensions to direct government financial compensation. However there are some protections for government in these clauses — for example, the Material Adverse Effect clauses of the City Link project do not require the government to compensate the developer if a competing heavy rail link is built. On the Melbourne City Link the government has also taken on environmental risks, in that the concessionaire will be compensated if any unidentified pollution or land contamination is discovered.

Table A2.4: Australia: BOT Expressways

Project	Status	Cost	Length	Description
Sydney Harbour Tunnel	Construction began 1988, opened August 1992	• Construction cost A$760million • Interest free subordinated loan from Road and Traffic Authority (RTA) of $223 million (repayable 2022)	4 lanes 2.3km north-south of harbor	• Concession to 2022 • Kumagai Gumi and Transfield as Sydney Harbour Tunnel Company • Toll capped by bridge toll in 1987 at $1 and linked to CPI increases. On opening toll level increase to $2, an increase greater than underlying inflation • RTA agreed an ensured revenue stream to Tunnel Co. for 30 years (Using bridge and tunnel receipts) • Free lease of harbor floor for duration of project
M4	Expressions of interest called 1988. Construction period agreed for Jun 1990 to February 1993, but opened in May 1992	Construction costs A$l00million (1998 prices) Total capitalized project cost estimated at $246 million (1988 prices)	Widening of two sections of motorway and provision of new six lane section Single toll plaza in eastern section (initially planned for western but deemed not financially viable)	• Concession to 2010 • Statewide Roads (SWR) • RTA paid for upgrade to access road • $1 toll for cars $3 for trucks. Increased with inflation in 50cent increments • SWP pays rent for land $22million before commencement and $24million May 1991 • Jan 1997 NSW government introduced cash back scheme reimbursing motorists for tolls (est. cost $74 million)
M5	Three stage construction. Stage one opened early Oct 1992, not Feb 1995.	• Construction cost Eastern and middle sections $295million • RTA $35 million loan • RTA $10 million “construction payment” cover additional works • Western section $65million construction with $50million RTA loan. RTA gets 70% of any “savings” in construction costs	Links western Sydney to inner city. Toll plaza in middle section between city and suburbs.	• 30 year concession • RTA acquired land $22million and Interlink make rental payment from opening • Tolls pegged first three years then escalate at CPI. As with M4 NSW government has introduced cash back arrangement

Table A2.4: Australia: BOT Expressways (continued)

Project	Status	Cost	Length	Description
M2		$600million capita cost ($30 million sponsor equity rest debt	• 4 lane expressway, 2 lane busway, combined bicycle and breakdown lane • one set of twin tunnels • a number of bridges, overpasses and underpasses. Suburban	Hills Motorway
Melbourne City Link	Western section completion expected April 1999 Southern section completion expected December 1999	• Capital Cost estimated at $1.8billion • $266 million of state works financed by state	• Links central Melbourne's freeways • 22 km road, tunnel and bridge works • Two sections Western. 13km new and upgraded. • Southern section, 8km New tunnels and some upgrading • Also some state works	• Transurban and CHART shortlisted 1994. 1995 Transurban named preferred bidder. • Transurban = Transfield and Obayashi • 34 concession • Transroute international also involved • Annual concession fees for state support in form of land and works • Electronic tolling • Jan 1995 to 15 years from completion max toll escalates at 4.5% or CPI whichever higher. 15 year to end max. toll escalate quarterly with CPI

Some financial innovations have been introduced in the City Link project, where revenues greater than financial projections will be shared with the state.

The transaction costs of these projects can also be high. For example 22 separate contractual documents were required for the M2 project, for which A$21 0 million of private equity was raised at a cost of A$16 million. These costs included underwriting costs, legal costs and the cost of financial advice.

Some reductions in economic benefit have been perceived, as a result of contract structures. For example, on the MS project, four proposed interchanges have not been built, in order to ensure that toll plazas cannot be avoided and will not be built until after the financial requirements have been met. In addition, network costs are high — in Sydney there are three different types of tolling technology.

Since 1990, RTA of New South Wales has been trying alternative arrangements to meet its mission statement - “To manage road related transport infrastructure to provide safe and efficient access to the road network for the people of New South Wales”.

Initially it contracted out for maintenance management and some maintenance delivery on two networks in Sydney. These were not performance-based contracts since the authority took the view that:

- The risks of performance based contracts were too high when there was no proven private sector expertise in road maintenance.
- There was no sufficiently good register of existing asset condition on which to base the contracts.

RTA staff continued to deliver maintenance on one of the two networks, thereby providing easy comparison of quality and price. Contracts were signed for two years.

The management contracts were structured on a “Code of Practice”. This determined the technical specifications and the intervention standards required of the managers.

The concerns of the RTA going into the contracts were all satisfied including:

- The emergency response capability of the contractor.
- The quality of the maintenance work.
- The network management processes used by the maintenance manager (which in fact were deemed to have improved on those of the RTA and have been adopted by them).
- Ongoing maintenance of the assets and level of service over the life of the contracts.
- The cost of the maintenance work. This was around 16 percent lower than cost of RTA maintenance initially, though over the course of the contract the RTA costs fell by 22 percent.

In 1993, the RTA determined to re-bid the contracts for a further 2 years. Several bids were received, though the incumbents were all successful in retaining their contracts. The average prices fell again, and were 25 percent lower than on the first contracts.

By 1994, RTA confidence had grown such that it decided to embark on a performance based form of contract. Its objectives were defined as:

- Improving the condition of its road assets and/or reducing total recurrent maintenance costs.
- Enhancing and developing skills in the road industry for effective management and delivery of road asset maintenance.
- Equitably allocating risk between the RTA and contractors.
- Developing and implementing a simply, effective contract which was precise, manageable and allowed “partnering”.
- Developing and encouraging appropriate innovating road maintenance practice.

The RTA wanted to see innovation in the bids and therefore specified little in the call for “concept proposals” except:

- The geographic extent (450km) of the network to be maintained under the contract. The network was selected on the basis of allowing an acceptable cash flow which would also minimize management and investment costs, and ensure a suitable distribution of construction type, age, condition, and usage to minimize the risk exposure of the contractor.
- The duration (between 5 and 15 years).
- The current RTA maintenance budget for the network.
- That a quality assurance form of contract was required.

The RTA also gave all interested parties details of the information that would be available to short-listed bidders.

Four bidders were then invited to submit contract proposals and were given 10 months in which to develop these. The minimum conditions that the RTA specified were only:

- Insurance requirements.
- Provisions for safety and security access to the network.
- Statutory reporting requirements.

All of the bids were reviewed by a panel from RTA which was supported by a consultant from an international management consulting firm. The bids were reviewed on the basis of:

- Commercial benefits for the RTA and government
- The level of asset and environmental protection provided.

- The incident management system.
- The technical advantages of the system proposed.
- The extent of resource transfer from the RTA to the contractor. Prior to the commencement the process, staff and unions had been informed of the RTA's proposal, and it had been agreed that the contract would contain clauses dealing with the transfer of appropriate staff and their conditions of employment under the new contractor.
- The technical and financial capability of the contractor.

Transfield-Maintenance was selected as the preferred bidder and negotiated with the government over seven months to arrive at a contract, which will be in place for 10 years.

The Conditions of the Contract are key to its structure as is the notion of "Fitness for Purpose". Within the conditions of contract is the technical specification of maintenance standards required. There are 51 asset classes, each defined and standards are set for:

- The maintenance rationale.
- The inspection plan.
- The level of service required — which includes the limits of the contractors responsibility, a quality management system, contract management and reporting and procedures for change.
- The intervention standards — which are a safety net to the fitness for purpose standard and specify response times depending on defect severity.
- Any local variations.

Since developing these standards for the performance contract RTA, have come to use them as guidelines for all of its operation.

The contractor is awarded a base monthly fee for the contract (amounting to A$102 million over 10 years). This is paid on the base inventory of assets. Several commercial schedules were also developed to allow for payment and penalties to be levied. These involve:

- Rates for inventory adjustment.
- Pavement model activity rates — the contract assumes maximum growth factors for traffic and these are reviewed annually.
- Traffic signal upgrade rates.
- Lane occupancy fees.
- Response time non-conformance deductions.
- Management non-conformance deductions.
- Cost adjustments.

- An inventory adjustment threshold schedule — if new assets are added to the inventory it is the contracts duty to maintain them fit for purpose without payment, until the yearly inventory review when the base payments will be adjusted to allow for the addition.

- Review schedules.

The contract defines routine and major maintenance work for all of the asset types — making determinations on the basis of cost effectiveness. Work which is less likely to be required, but is high in cost, tended not to be included in the routine maintenance work — in order to ensure that the costs of the Transfield contract were not pushed up unreasonably.

As well as the basic maintenance services, Transfield is obliged to provide the following provisional services:

- Restoration of excavation work by others.

- Repair of damage to the road from over dimensioned vehicles operating under license.

- Damage from motor vehicle accidents.

- Vandalism, other than graffiti.

- Force majeure damage — defined as events with a lower than one in ten year probability of occurrence.

- Repetitive traffic signal errors.

Since these events are not in the control of either party, Transfield is obliged to provide the services and then to invoice RTA directly. Additional services which become necessary during the course of the contract, but which neither side had foreseen, may be undertaken by Transfield if they are less than A$60,000 in value. Where the works will cost between A$60,000 and A$300,000 then RTA may ask Transfield to undertake the work, may call for bids or use RTA staff directly. Over A$300,000 RTA must either call for bids or use RTA staff.

There is a fully developed Quality Assurance regime including plans for:

- Quality.
- Contract management.
- Environmental management.
- Incident response.
- Community relations.
- Asset management.
- Occupational, health, safety and rehabilitation.

Fitness for purpose is measured against level of service provided on each asset. This is measured against such indicators as average roughness per link (for pavement) and condition indices for bridges. In order to measure these, Transfield is required to collect various data for the RTA on the asset inventory and condition, traffic volumes, truck weights and maintenance amounts and locations.

RTA and Transfield have entered into a “partnering” arrangement. Both sides seek to address issues at the lowest possible managerial level and to address them swiftly. RTA has one manager of the contract (spending approximately 50 percent of his time) and one full time supervisor.

2. New Zealand

The New Zealand Government has privatized many of the managerial functions under its auspices. This has been a strategic decision to develop the private sector within the country and to reduce public sector involvement and has covered all sectors, including transport. Hence there is now only a very small staff within the Ministry of Transport. The ministry relies on two larger bodies to manage its work — Transit (which plans, maintains and manages the network) and Transfund (which controls the funds).

There are 90,000 km of roads in New Zealand, in which the Government makes an annual investment of NZ$0.4 billion per year. Transit manages the state highway network of 10,300 kms. Approximately half of its expenditure goes towards construction and emergency works, 16 percent to preventive maintenance and 35 percent to routine maintenance.

a. Maintenance Management Contracts

Transit undertakes little of the construction or maintenance work in-house. There are instead, 24 professional management contracts, with a maximum contract period of 3 years. These management contractors oversee the physical work done by the maintenance contractors (for which there are 220 contracts). The maintenance contractors are typically paid on unit rates for the completion of work and the managers through a lump sum payment on completion of the service. The savings from this contracting-out saved Transit around 17 percent of the total cost. However, the system was perceived to have some disadvantages:

- The short contracts meant that maintenance work was undertaken to last for three years — no consideration was given to life costs.
- Several contractors did not perform to time and budget which meant expensive litigation.
- There has been an adversarial relationship between government, management contractors and maintenance suppliers.

As a result, Transit has begun a trial program of performance-specified maintenance contracts combining the physical works and the professional management services. The payment for these contracts is on output specifications with the contractors determining how the work is undertaken. Lump-sum payments are made at the end of 10 years, if the required condition has been delivered. Contractors are required to develop their own quality management systems to demonstrate that they are complying with the contract. It is hoped that the trial will:

- Remove administrative costs in servicing the periodic contracts.
- Encourage physical contractors and the managers to work as a team.
- Force the contractor to consider a longer horizon and thereby produce higher quality work.

- Promote innovation.

The trial is to be staged, over two networks (representing approximately 10 percent of the New Zealand road network and NZ$9 million per year). The first tender is due to be let in December 1998, through a competitive bidding procedure, in which there will be a quality/price trade off. Conforming bids must be submitted but bidders may also submit alternatives.

There has been some concern from the existing local contractors that international contractors will be attracted and that the small contractors may lose out because of the size of the contracts. There is also some concern that the contractors will not be able to perform the self-monitoring role.

b. BOT Projects

There are no BOT road projects in New Zealand. Two potential BOT projects are Second Harbour Crossing and South Eastern Arterial Route Scheme in Auckland.

However a BOT project would require legal changes to allow the private sector to charge and collect tolls.

c. Corporatization

Currently New Zealand is considering corporatization of their road network, following **a** report from the "Roading Advisory Group" published in November 1997. The Roading Advisory Group saw the concerns with the existing road system management as:

- The lack of a direct relationship between road pricing and use — pricing is currently through a fuel tax (9.5c of which goes directly into a road fund the rest to the exchequer), vehicle registration charges, and road user charges levied on larger vehicles according to weight and usage.

- The lack of a direct relationship between road providers and users.

- The lack of commercial incentives to invest in road infrastructure.

However the Government objective that the highways must remain in public ownership has been taken into account and hence the recommended corporatization of the road network by transferring the assets held by Transit and the local authorities into the hands of road companies which "should be financially viable". The road companies would own corridors or defined networks, for which they would be fully responsible — in terms of maintenance, safety, environmental management, user relations, and pricing. Each user would be required to pay the actual cost of their use of the road system, and the road companies would be fully responsible for price setting and would charge directly for road use at the local level.

J. South Africa

There are 7,000 km of road in the South African national road network, and some 660 km of that are presently tolled, at 18 toll plazas. BOT projects have not been the normal "modus operandi" until the last few years — instead most roads were operated for the Government under management contracts (with fixed terms of between 3 and 5 years).

However, the current policy is for all new toll road projects to be undertaken under the BOT mechanism and to be fully privately funded over 30 years.

1. N4 Motorway

The N4 project is a cross border, concessioned toll road, from Maputo in Mozambique to Witbank in South Africa, and is the first BOT road for either country. There is an existing road for 390 km, which will be upgraded substantially and a further 50 km must be built. The existing traffic on the road is fairly low, but expected to increase with the upgrading. There will be no parallel free road — in most places, although there has been some political backlash, particularly in middle class towns in South Africa, where protests have forced local politicians to offer improved facilities on the adjacent roads.

Having called for bids in 1995, and short-listed three consortia in 1996, the concession agreement was signed in May 1997 with the TRAC consortium which includes the Bouygues group and two local contractors. Both countries signed the 30-year concession agreement, which added legal complexity because of their different national legislation. With Bouygues' encouragement, the Hungarian M5 concession model, was used as the basis of the N4 agreement. This means that some of the complexities of the Hungarian model (some of which were necessary only because of the specifics of Hungarian legal practices) have been duplicated.

The TRAC consortium has agreed a fixed price, fixed time design and construction contract with SSB, a joint venture of Bouygues, Basil Read and Stock Roads (all part of TRAC). Construction has been phased over 3.5 years and began in January 1998.

Financial closure was reached within seven months of signing the concession agreement. Debt of US$308 million has been raised. US$68 million of equity will be drawn down over the life of the project to maintain a 80:20 debt/equity ratio. Up to 40 percent of the equity is held by the sponsors. Development Bank of South Africa was one of the chief arrangers of the financing. Some of the upside potential has been shared with the two governments.

There are 5 toll plazas along the road, three in RSA and two in Mozambique but none at the border. The RSA plazas are expected to open within 18 months of the start of the contract but the others not until the end of the construction period. The location of each plaza has caused political concern. In Mozambique one toll plaza is located to capture commuting traffic into Maputo. In South Africa, as already mentioned, there has been some political intervention by the mining communities of Witbank and Middleburg, just outside Pretoria, which resulted in the upgrading of the parallel "free" road.

There are level of service criteria in the concession agreement, and future expansions are envisaged if traffic grows. TRAC has certain pre-emptive rights over services alongside the road.

The N4 is one of several initiatives being undertaken in the corridor, including an upgrade of the rail link from the border to the port. The development of the corridor is being promoted by both countries through the Maputo Corridor Company, and supported by the South African Development Bank.

2. Other Concessions under Development

Two other road BOT projects are currently under development in South Africa:

- The N3 Heidelberg - Cedara (part of the road between Johannesburg and Durban). 110 km of new road is required and 60 km of upgrading from a single to a dual carriageway. Bids have been submitted.

- The N4 West Platinum Toll Road from Pretoria to the RSNBotswana border which will be 380 km long. The shortlist has been prepared and the preferred tenderer is to be selected in November 1998. The road is the last link in the East-West international highway linking Walvis Bay in Namibia with Maputo in Mozambique.

3. Operators

The South African firm, Intertoll, has become a major international toll road operator, having started in RSA in 1 984 to undertake management contracts for the DOT. In 1992, the company started to diversify and took on its first concession project in Hungary in 1993 (the M5). It has since entered into joint venture agreements