
INFORMATION NOTE

The Adoption of the Build-Operate-Transfer Model and its Variants in Developing Transport Infrastructures in Selected Places

1. Background

1.1 The Panel on Transport of the Legislative Council requested the Research and Library Services Division to conduct a research on the operation of toll roads, bridges and tunnels in selected places. In addition, the Panel would like to know whether or not the Build-Operate-Transfer (BOT) model, which is the model of financing and developing four major toll tunnels in Hong Kong, is also widely adopted in the financing and operation of toll roads in other places. This information note explores the adoption of the BOT model and its variations in three places, namely the United States (US), the United Kingdom (UK) and Australia.

2. The United States

2.1 Between the late 18th century and the mid-19th century, a large portion of the road system in the US was developed by profit-making private toll road companies. However, tight regulations caused many of these roads unprofitable.¹ Since then, most of the roads have been financed by the federal and the state governments.

2.2 In 1956, Congress passed the Federal-Aid Highway Act (the 1956 Act), providing funding for the construction of the Interstate and Defense Highway System from fuel taxes and federal excise taxes on motor vehicles and parts. Since the charging of tolls on the interstate system was expressly forbidden except for the toll expressways already in operation at the time the 1956 Act was enacted, BOT and other types of private sector financing became impossible without toll revenue.

2.3 The interest in private toll roads revived in the mid-1980s when the fuel taxes increases were not sufficient to offset the inflation impact on the cost of building and maintaining highways. The state and local governments had to find new sources of funding. The Intermodal Surface Transportation Efficiency Act of 1991 was enacted by Congress to allow the states to use federal funds to match private capital in private toll road projects under some forms of franchise².

¹ Poole (1996). Most of the investors were local people who would receive benefits other than tolls, such as land-value increases, from the improved transportation provided by the toll roads.

² Interstates highways are not permitted to use this provision.

2.4 In the late 1980s and the 1990s, some states enacted either "single project" legislation or legislation authorizing the private sector to build and operate a limited number of pilot infrastructure projects. For instance, the Virginia Highway Corporation Act was enacted in 1988 for a single road, the Dulles Greenway, to be financed, built and operated by the private sector on a BOT basis and regulated as a public utility. Another example is California's Assembly Bill 680, enacted by the state legislature in 1989, which authorizes the California Department of Transportation to enter into agreements with private companies to build and operate up to four toll transportation facilities on a Build-Transfer-Operate (BTO)³ basis. The States of Washington, Arizona and Minnesota also enacted similar legislation during that period. However, these early ventures for public-private partnerships in transportation projects have limited success. For example, regarding the four BTO projects in California, only the 91 Express Lanes is in operation and another one is under construction, while the other two have failed.

2.5 Currently, around 20 states have enacted statutes that enable the use of various public-private partnership approaches for the development of transportation infrastructure to varying degrees.⁴ For instance, Virginia enacted the Public-Private Transportation Act (PPTA) in 1995, granting public authorities the power to allow private entities to construct, improve, maintain and operate transportation facilities. It is the intent of PPTA to encourage public-private ventures for transportation facilities which may result in the availability of facilities in a more timely or less costly fashion and have the greatest possible flexibility in contracting between public and private entities. The public authorities may also either solicit or accept unsolicited proposals from private sources.

2.6 Whilst most of these statutes, such as PPTA, no longer restrict the scope of transportation projects that are authorized to use public-private partnership, including the BOT model, some states continue to limit private participation to selected projects or require specific legislation for the development of projects using tolls or other forms of direct user charges. Nevertheless, even in states with those changes in legislation, some proposed projects have been rejected due to political opposition to the introduction of toll charging.

³ Under a BTO contract, the private consortium finances and builds the infrastructure facility. It transfers the facility to the government after the completion of construction rather than at the end of the franchise agreement. The private consortium then leases it back from the government and operates it. The BTO model has been adopted for the development of the 91 Express Lanes in the US to provide additional protection to the private sector from tort liability during operation, as the state government is protected from tort claims on public property.

⁴ Federal Highway Administration of the United States (2005a). This information is based on a survey completed by the law firm of Nossaman Guthner Knox Elliott LLP in February 2004.

2.7 From 1985 to 2004, most of the toll road projects in the US involved Design-Build (DB) contracts. DB contracts do not involve private financing.⁵ The private company is responsible for both the design and building of the infrastructure for a fixed sum of money paid by the government or a public authority. Among all non-toll and toll roads, bridges and tunnels constructed during the period of 1985-2004, DB projects accounted for 40%, BOT and concession projects accounted for 18%⁶, and the remaining projects adopted other forms of privately-financed and publicly-financed development models.

3. The United Kingdom

3.1 The UK's motorway network was developed largely in the 1960s and the 1970s with public money, and commuters did not have to pay for their usage.⁷ Only a few exceptions were toll roads, bridges or tunnels, but they were all funded by public money.⁸ However, it has been the policy of the UK government that estuarial crossings should be paid for by the users rather than the taxpayers because the users benefit from the exceptional savings in time and money made possible by these expensive facilities.

3.2 The Channel Tunnel, started construction in 1987, was the first privately-funded transport project in the UK, and was considered then as one of the world's largest BOT projects.⁹ It was followed by the Dartford-Thurrock Crossing¹⁰. The Second Severn Crossing was the third transport project which was financed, built and operated by the private sector as a BOT project.¹¹ A more recent example of BOT concessions is the M6 Toll motorway¹² which is the first of a new generation of toll motorways. It opened to traffic in 2003. A new BOT tunnel of the river Tyne is also planned.

⁵ Federal Highway Administration of the United States (2005b).

⁶ Ibid.

⁷ Toll charging was not considered by the UK government for two main reasons. Firstly, there were concerns that the imposition of tolls would have diverted substantial numbers of trips from motorways to parallel roads given the density of development in the UK and the density of the road network. Secondly, the large number of intersections in the road network would have led to high toll collection costs.

⁸ Asian Development Bank (2000) and Poole (1996).

⁹ Poole (1996).

¹⁰ The Dartford-Thurrock Crossing consists of two tunnels and the Queen Elizabeth II Bridge. The two tunnels opened to traffic in 1963 and 1980 respectively, while the Queen Elizabeth II Bridge, which was financed and built by a private consortium in 1988, opened to traffic in 1991.

¹¹ The Second Severn Crossing started construction in 1992 and opened to traffic in 1996. Both the Dartford-Thurrock Crossing and the Second Severn Crossing projects were bespoke concessions, in the sense that the concessionaires, apart from operating and charging tolls for the new transport facilities they financed and built, they took over the operation of the existing Dartford Tunnels and Severn Bridge.

¹² Previously known as Birmingham Northern Relief Road.

3.3 The UK government introduced the Design, Build, Finance and Operate (DBFO) contracts in 1993.¹³ DBFO contracts are similar to BOT concessions in that the private sector assumes the responsibility for building, operating and maintaining roads or specified improvement schemes. However, it is not a concession as the operating company cannot charge users directly. The private company is remunerated by the public authority in the form of shadow tolls based on the number of vehicle kilometres driven on the road. According to the Highways Agency, the shadow toll payment mechanism is adopted because the UK government wishes to foster the development of the toll road operating industry.

3.4 The principal benefit of DBFO contracts lies in the increased value for money through a transfer of risks from the taxpayers to the private sector, such as overrun of construction costs, and the introduction of private-sector innovations and efficiency. The DBFO contracts for road infrastructures have delivered an average value-for-money saving of 15%.

3.5 Since 1996, 11 DBFO contracts have been signed and construction is complete on the first eight.¹⁴ The first eight projects involve the private sector in managing about 5% of the existing Highways Agency network.¹⁵ The Highways Agency is required to conduct a value-for-money comparison between a DBFO contract and conventional contracting before deciding whether a particular road will be built as a DBFO project.

3.6 The Highways Agency expects that around 25% of current and new major road schemes in terms of value will be procured using private finance contracts, including DBFO contracts.

3.7 The Department for Transport of the UK government states that "*the existence of the DBFO policy does not mean that BOT projects would not be pursued in the future, although it must be said that it is unlikely that many new projects would emerge which are suitable for tendering as BOT or toll concessions*".¹⁶

¹³ DBFO contracts were introduced as part of the larger Private Finance Initiative of the UK government to facilitate closer co-operation between the public and private sectors and introduce private sector skills and disciplines into the delivery and management of projects and services traditionally undertaken by the public sector.

¹⁴ Highways Agency (2005a).

¹⁵ Highways Agency (2005b).

¹⁶ Reply from the Department of Transport.

4. Australia

4.1 As Australia is a vast country with a relatively small population, only a small number of roads in Australia would have the traffic volumes to provide sufficient toll revenue for the private sector to finance, build and operate the roads. On the other hand, the federal and state governments find it increasingly difficult to provide adequate funding to maintain existing road networks, let alone provide for new road infrastructures. Government road spending as a proportion of gross domestic product declined from about 9% in the mid-1960s to around 5% in the late 1990s.¹⁷

4.2 Accordingly, the private sector has increasingly been deployed to finance major road projects. Most of the privately-financed road projects have adopted a variation of the BOT model, the Build-Own-Operate-Transfer (BOOT) model¹⁸, for instance, the Eastern Distributor in Sydney.

4.3 The federal government launched the integrated National Land Transport Plan, AusLink, in 2004, which set out AUS\$12.5 billion (HK\$71.6 billion) over five years in land transport spending. The Australian government expects that AusLink will facilitate greater private sector investment in projects that are commercially viable and where risk can effectively and reasonably be transferred to the private sector, thereby freeing up public funds for other land transport investment.¹⁹ A variety of public-private partnerships will be deployed under AusLink, with no particular type of contract preferred.²⁰ An example of such private sector investment is the Westlink M7. It is Australia's biggest urban road project, costing AUS\$1.5 billion (HK\$8.6 billion), of which most of the cost is being met by the private sector under a BOOT scheme and a user-paid toll.²¹ The Minister for Local Government, Territories and Roads of Australia has revealed that there is no way that this project could have been funded and constructed in a short timeframe²² without private sector involvement.²³

4.4 The Minister for Transport and Regional Services of Australia has also made it clear that there is a need to look at other flexible financing arrangements.²⁴ Apart from the BOOT model by which privately financed roads are supported by toll revenue, options such as shadow tolls should be considered.

¹⁷ Anderson (1999).

¹⁸ Under a BOOT contract, the private consortium finances and builds the infrastructure facility. The private consortium owns it under a lease arrangement, operates the facility and transfers the facility to the government at the end of the concession.

¹⁹ Lloyd (2005).

²⁰ Reply from the Department of Transport and Regional Services of the Australian government.

²¹ The Commonwealth Government provided AUS\$356.0 million (HK\$2.0 billion) for the AUS\$1.5 billion (HK\$8.6 billion) project, whilst the remainder of the project is financed by a private consortium.

²² Major construction of the Westlink M7 started in 2003 and the motorway is expected to open to traffic by the end of 2006.

²³ Lloyd (2005).

²⁴ Anderson (1999).

4.5 At the state level, in New South Wales (NSW), the NSW Infrastructure Council was established in 2001. It is a consultative body consisting of the state premier and five other ministers, and 12 infrastructure industry chief executives and union representatives. The Council has no executive authority but provides high-level advice to the state government on policy and development priorities in the delivery of infrastructure, as well as facilitating shared learning between government and the private sector players about best practice in relation to privately financed projects. At the end of 2001, the NSW Government released its policy on privately financed infrastructure projects called *Working with Government Policy for Privately Financed Projects*. The policy establishes a specialist Private Projects Branch under the NSW Treasury to assist agencies with Privately Financed Project proposals and provide government advice to the private sector by drawing on expertise from across the public sector. In Victoria, a similar structure called Partnerships Victoria Unit operates from within the Department of Treasury and Finance.

4.6 The Partnerships Victoria policy, introduced in 2000, provides the framework for the provision of public infrastructure and related ancillary services, including transport infrastructure, through public-private partnerships. Since 2002-03, Partnerships Victoria projects have accounted for approximately 10% of the annual public asset investment.²⁵ Out of the 14 contracted Partnerships Victoria projects, only two are transport related projects. They are the EastLink project which involves the building of a user-paid toll road and the redevelopment of the Southern Cross Station²⁶. Both are BOOT projects. Prior to the introduction of the Partnerships Victoria, the only privately-financed road facility is CityLink, which was contracted in 1995 as a BOOT project and funded by tolls.

4.7 As at late 2001, Queensland, South Australia and Tasmania had released Public Private Partnership policies. South Australia has established a dedicated Project Analysis Branch within its Treasury, which operates as a consultative body to agencies seeking to engage with the private sector in infrastructure development and the delivery of public services to the community. While some major transport infrastructure projects have been either short-listed or identified in the annual budgets of these states, only a limited number have actually progressed at this stage under the Public Private Partnership policy framework.

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²⁵ Reply from the Partnerships Victoria Unit, Department of Treasury and Finance.

²⁶ The state government makes an ongoing service payment (based on availability and quality of service) to the private consortium which finances, builds and maintains the facility.

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