

Private toll roads: lessons from Latin America

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Abstract. This paper examines the gap between expected outcomes and the actual results in Latin America following two decades of experience in implementing private toll road programs. It also analyses the evolution of the most relevant features of road concession programs. The paper shows that some Latin American governments have been quite successful in building private toll roads. In these countries, toll concession contracts allocated traffic risk, to a greater or lesser extent, to the concessionaire. However, some concession programs have progressively evolved towards implementing contractual mechanisms that mitigate traffic risk either through contingent public guarantees or through flexible-term concessions.

Keywords: Roads, Concession, Public private partnership, BOT.

1. Introduction

Over the past two decades, both developed and emerging countries have increasingly turned to private toll roads to meet their transport infrastructure needs. In the early 1990s, many countries began to offer motorway concessions to private investors, most notably in Latin America and Central and Eastern Europe. In the late 1990s and 2000s, the innovation spread to countries in Asia, North America and Western Europe. In the late 2000s, the global financial crisis hindered the completion of new projects, especially those requiring private sector investment. Most countries, however, still consider public private partnerships to be a key instrument for provision of transport infrastructure in the coming years.

Among emerging countries, the two pioneer regions in launching private toll road programs were Latin America and Central and Eastern Europe. Of these, Latin America was the first middle-and-low income region to grant private toll road concessions, and is also the region where they have expanded the most. The most important concession programs in the area are in Mexico, Chile, Colombia and Brazil.

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2. Evolution of private toll road programs in Latin America

2.1. Mexico

The first Mexican toll road program has been largely examined in the literature, among others by Carpintero and Gomez-Ibañez (2011), Rogozinski and Tovar (1998), Ruster (1997) and Gomez-Ibañez and Meyer (1993). From 1989 to 1994, the government granted 52 concessions for building and operating 5,500 km of motorways. A few years later, in 1997, the government took over 23 concessions (around 2,500 km).

The main reasons for the program's failure were: *i*) the poor quality of the design, cost and traffic projections supplied by the administration; *ii*) the reliance on concession term as the main awarding criteria, thereby encouraging bids with very short terms and very high tolls offered, by consortiums interested mainly in the business of building the motorway; *iii*) the contractors taking advantage of the system both by underbidding and by exaggerating the sweat equity they were contributing.

Mexico launched a new program in 2003, correcting the main failures of the previous program. The program included not only real toll roads but also concessions with shadow tolls and availability payments. For the real toll concessions, the administration: *i*) prepared a full design project and provided it to the bidders; *ii*) managed the land acquisition; *iii*) set the maximum average toll, thereby inducing affordable tolls; *iv*) set the concession term, up to the legally permissible maximum allowed of 30 years; *v*) could make an initial public contribution, to boost the profitability of the concession high enough to attract the private sector; *vi*) offered to the bidders the possibility of requesting a public contribution to guarantee the service debt; and *vii*) awarded the concession to the bidder requesting the minimum public contribution, calculated as the sum of two mentioned contributions. As of 2011, the government had awarded 18 concessions, totalling 1,306 km., of which 13 out (1,001 km) were already in operation while the others were under construction (SCT, 2011).

In addition to the real toll concessions, the Mexican program included motorway concessions based on a combination of shadow tolls and availability payments. The concessionaire was placed in charge of maintaining and operating the road, and carrying out some upgrading works. In these concessions, the administration prepared only a preliminary design. The concessions were awarded to the bidder requesting the lowest tariff. As of late 2011, the government had awarded seven concessions, of which four were already in operation (244 km) while the others were under construction (SCT, 2011).

In 2006, the Mexican government started to re-offer several of the early concessions that had been taken over by the State in the 1990s, grouping them into packages of several motorways. The concessionaire was to be in charge of maintaining and operating the road, carrying out limited upgrading works, and building some new sections. The government would award the concessions to the bidders offering the highest upfront fee to the state. The first of these concessions was awarded in 2008. The new concessionaire received the right to operate 558 kilometres of existing roads but was also obligated to build and operate additional sections totalling 92 kilometres. The government awarded the package to a consortium formed by ICA (a large Mexican construction company) and Goldman Sachs for Ps 44.05 billion (at that time USD 4.1 billion), a much higher price than the government had anticipated. The government was fortunate to offer this package one year before the global financial crisis.

In 2008 the government cancelled the tender for a new package of roads because the bids came in far below expectations. The package was subsequently split in two smaller packages, called Pacific North and Pacific South. Pacific North was awarded in 2009 to IDEAL (a Mexican construction company) for Ps 3.2 billion (at that time USD 246 million). A third package, denominated Northeast, was offered in 2010 but was also cancelled due to disappointingly low bidding.

2.2. Colombia

Between 1994 and 1997, the Colombian government launched a first program, and granted 11 concessions for building and operating 1,595 km of roads. The government's lack of experience and its rush to implement the program led to disastrous results. Seven out of 13 projects were not awarded by auction, but were assigned through direct negotiations after no bidders had presented themselves at the auction. All projects experienced significant delays in construction, and the administration was forced to spend high sums because of minimum income guarantees, as well as construction and land acquisition cost overruns. In 2000, for example, the amount paid by the government was equivalent to 0.017% of GDP (Benavides 2008). On average, traffic was 40% lower and costs were 40% higher than forecast. The tenders were awarded according to a multi-variable formula with contradictory aspects which was easily manipulated by opportunistic bidders. The contracts were subsequently renegotiated several times (Benavides, 2008; Engel, Fischer y Galetovic, 2003).

Between late 1997 and 1999, the government granted a further two motorway concessions totalling 1,506 km (it is denominated the second program). Based on the previous experience, the administration limited the guarantees related to minimum income and cost overruns. It also improved the formula for awarding the tenders, although it was still open to manipulation. One of the two contracts was cancelled because the concessionaire failed to fulfil the obligations. This was a case of opportunistic behaviour by a concessionaire which was overwhelmingly focused on the construction business (Benavides, 2008).

Two years later, the Colombian government launched a third program. Between 2001 and 2004 it granted four motorway concessions, totalling 930 km. In these tenders the formula for awarding the concessions was reduced to one only economic variable, namely forecast income. Problematically, this was calculated without using a discount rate. These four contracts were later renegotiated, and the forecast income increased between 50 and 200 percent. The works to be carried out also changed significantly (Benavides, 2008).

A few years later, between 2006 and 2010, the Colombian government granted a further ten motorway concessions totalling 2,617 km. In these tenders the government continued its attempts to improve the formula for awarding the concessions, adding the public contribution requested by the bidder to the forecast income (still undiscounted). The formula also included a third variable: the number of companies composing the consortium.les and references.

2.3. Chile

Chile has been the most advanced Latin American country in terms of motorway concessions, and one of the most successful in the world. From 1992 to 2010, the government granted 33 motorway concessions, totalling 3,328 km. Over this period, the administration experimented with different mechanisms covering awarding criteria, minimum income guarantees, and means of financing the concessions. After using a complex formula for awarding the first two concessions, the government mostly focused on one variable alone, awarding the concessions to the best economic bid. Chilean motorway concessions were also characterized by financing through bond issues. This strategy was first used in 1998, and was subsequently developed further.

Traffic risk mitigation is arguably the aspect in which the Chilean motorway concessions evolved the most. From the very beginning, most concessions included a minimum income guarantee (MIG) which guaranteed, in present value, 70 percent of the investment cost plus the total maintenance and operation costs estimated by the administration. If the concessionaire decided to take the MIG guarantee, however, it had the obligation to share part of the revenues obtained whenever real traffic was higher than expected (Vassallo, 2006).

A further step in traffic risk mitigation took place in 1998, when the Chilean government introduced a novel procurement procedure. It used as an awarding criterion the sum of total revenues to be obtained by the project. Thus, the concession would end when the discounted flow of revenues reached the amount offered by the winner. In this sense, the mechanism was not only a procurement procedure, but a way of mitigating traffic risk. It was used again in three more concessions some years later (Vassallo and Izquierdo, 2010).

In 2000, the government allowed renegotiation of all previously granted concessions, mainly due to the recession experienced by the Chilean economy from 1998 to 2002, which produced a substantial decrease in traffic in all motorway concessions. Another reason was the need for additional investment in many of the motorway concessions. The mechanism selected, called the 'Revenue Distribution Mechanism', guaranteed that a pre-fixed amount of revenues (in present value) would be received by the concessionaire. Thus the duration of the renegotiated concession shifted from being fixed to being variable. In exchange for the guarantee of extra revenues the government required the concessionaire to carry out initial investments, which were calculated by the government as the difference between the present value of the revenues guaranteed and the present value of the revenues expected (Vassallo, 2006).

2.4. Brazil

Brazil has widely developed toll road programs, both at Federal and State level, and overall has the biggest toll road program in the world. As of 2011, there were 54 motorway concessions in Brazil, totalling

13,100 km. From 1994 to 1997, the Federal government granted five motorway concessions for 854 km of roads. After ten years and many studies, in 2007 the government granted seven more concessions totalling 2,600 km. The experience obtained allowed the Brazilian administration to increase the efficiency of the procurement process and the quality of the contracts in the second program. A few Brazilian States also launched private toll road programs, most notably Sao Paulo, Paraná and Rio Grande do Sul, all of them between 1997 and 2000. Only the State of Sao Paulo launched a second program, in 2007.

As of 2011, none of the concessions of the first federal Brazilian program had been renegotiated. These contracts, however, include a clause which allow toll increases based on additional investments required by the government. And some observers claim that this mechanism has been abused to provide relief to concessionaires suffering from traffic shortfalls. It is hard to judge the extent to which this claim is true, although it is striking that between contract signing date and 2008 (an average period of 13 years) the tariff in real terms increased in four of the five concessions by 185%, 36%, 16% and 8%. In the fifth concession the tariff was reduced in real terms by 9% (Veron and Cellier, 2010).

The experiences of the previous program were taken into account when preparing the second round of federal concessions in 2007. The main changes were: *i*) the engineering works were less detailed than in the first program (Caracciolo, 2009); *ii*) the Amplified Consumer Price Index (IPCA) was selected as the index to adjust the toll rates (the formula of previous adjustment was based on the weighted variation of the relative indices to the main components of costs, such as pavement index, index of special structures and index of consultant services) (Caracciolo, 2009); *iii*) The risk transfer was better defined in the contracts (Caracciolo, 2009); *iv*) The contracts had quality standards to be achieved instead of quantities to be measured. As of 2011, it was still too early to know the results of this second program – the seven motorways were under construction or in early operation.

Another important step in the development of road concessions in Brazil was the passing of the Public Private Partnership law in 2004. It overcame a limitation of the previous legislation, enabling governments to offer a unitary fee to the private sector when projects are not financially sustainable (Grilo et al, 2005; Furtado, 2007). As of 2011, only one Federal project had been implemented through the PPP law. At the State level, however, the application of this law was more common, and several projects were implemented (Vassallo and Izquierdo, 2010).

3. Conclusions

Latin America turned to private toll road concessions in the 1990s and 2000s to meet transport infrastructure needs, with varying outcomes. In this region, several countries were able to implement extensive programs such as Mexico, Colombia, Chile and Brazil. Still, these programs often suffered from problems such as poor concession design, inaccurate forecasts or opportunistic bidding. These problems were evident for example in the first Mexican program of 1989-1994, or in the Colombian concessions of 1994-1997. Improvements in later tender rounds and stronger legislation led to better outcomes across the region.

The experience in Latin America emphasizes the importance of dealing adequately with traffic risk. For example, the renegotiations in Chile in 2000 highlighted the vulnerability of concession contracts to economic downturns. Overly optimistic forecasts, such as in Colombia or in Brazil, also show the relevance of traffic risk. In most cases, the public administration responsible for overseeing the concession program learned and improved its ability to mitigate traffic risk through better contract design. The trends towards flexible-term concessions and availability payments replacing tolls also indicate a growing sensitivity to mitigating traffic risk, focusing on performance instead of demand.

Private sector investment in transport infrastructure continues to be very attractive for the governments of both developed and emerging countries. The case of Latin America shows the potential of private toll motorways. In almost all of the programs, the final outcome did not fully meet initial expectations. Nonetheless, the countries in this region have demonstrated an ability to learn and improve concession structures in subsequent rounds of tenders.

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