ASSESSING THE POTENTIAL FOR PUBLIC - PRIVATE PARTNERSHIPS FOR CIVIL INFRASTRUCTURE IN LATIN AMERICA

by

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ABSTRACT

Developing countries throughout the world have accumulated a diverse base of experience with respect to the institutional, regulatory, and financial aspects of building and operating toll road systems.

Intending to complete the construction of trunk road networks rapidly, many developing Latin-American countries have already introduced toll road systems. Arguably, however, many of these countries do not yet have clear or comprehensive visions and strategies for the future development and management of their toll road networks. It would therefore be valuable for the policymakers of these countries to learn the lessons derived from the successes and failures of toll road development in other countries in order to formulate appropriate institutional and regulatory frameworks suited to their needs.

Each of the selected economies has its own unique institutional and regulatory frameworks reflecting the social, economic, and political environment, which in turn influences the form of toll road investment decisions by the public and private sectors. In this study, both successful and unsuccessful experiences have been interpreted in this context, with the attempt to draw lessons that can be adopted in other countries.

The objective of this thesis is, therefore, to analyze some issues and challenges related to private toll road developments in Latin American countries, and explore new schemes to mitigate some problems that often appear in road concessions. The research is illustrated with the regulations and experiences of four Latin American countries.

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Chapter I INTRODUCTION

Over the past decade growing demand for infrastructure has driven the private provision of roads, power, telecommunications, water and sanitation, and other public services in developing countries. Governments short of resources have sought alternative methods of financing transport improvements without affecting their fiscal situation. Charging tolls, too, has become an attractive option for managing traffic on increasingly congested roads.

Although the benefits of involving the private sector in building and operating toll roads are apparent, some countries have faced difficulties in managing the processes involved. Like any private infrastructure project, toll roads require sound partnerships between the public and private sectors. A fair allocation of responsibilities and a fair distribution of risks are key elements in any such partnership.

Developing countries all over the world have accumulated a varied base of experience with respect to the institutional, regulatory, and financial aspects of building and operating toll road systems.[1] Intending to complete the construction of trunk road networks rapidly, many developing Latin-American countries have already introduced toll road systems. Arguably, however, many of these countries do not yet have clear or comprehensive visions and strategies for the future development and management of their toll road networks. It would therefore be valuable for the policymakers of these countries to learn the lessons derived from the successes and failures of toll road development in other countries in order to formulate appropriate institutional and regulatory frameworks suited to their needs.

This thesis will review some Toll Road Experience in Selected Countries, focusing on four economies,[2] and intends to be the first crucial component of extracting lessons from past

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[1] In this document, the terms "toll road" and "toll highway" typically refer to highways for which tolls are charged. While in general highways for which tolls are charged tend to be high-standard, high-speed, multi-lane, controlled-access roads (alternately referred to as expressways, motorways, or even freeways), in some instances the toll roads investigated in this thesis may be of significantly lesser design standards, and not entirely access controlled either.

[2] The four economies include: Argentina, Chile, Colombia and Mexico.

projects. This thesis will provide opportunities for individuals and organizations involved in toll road development to discuss the future progress of their systems and obtain clear guidance from the experience of other countries. The findings provide lessons that are relevant to policymakers in Latin America and elsewhere as well as to those Canadian companies that may be seeking opportunities for public private partnerships in Latin America.

The work is based largely on a literature review. The majority of the information was obtained through internet-based and library research, as well as by contacting relevant toll road institutions in the above-mentioned countries via email/or facsimile. Multilateral organizations, such as, the World Bank, the Inter-American Development Bank and the International Monetary fund, among others, provided an invaluable contribution to this work. Some information was taken from trade press, complemented by personal knowledge and published data from each one of the countries.

Information on toll road development was compiled for each of the selected economies, being most intense in Colombia and Chile. This thesis summarizes the major finding of work conducted between June 2001 and February 2002. The time was spent collecting toll road related reference materials from various sources and preparing the analysis of Latin-American experience with toll road development. Detailed profiles of toll road development and related issues in each of the economies analyzed are presented in Chapters 2 to 5.

The thesis is structured as follows:

For each one of the chapters a Country background is provided, describing the current economical and political environment, as this has a bearing on whether or not firms would want to invest in these countries. In the case of Argentina, a more profound economic overview is presented due to the significant changes introduced in the Argentine financial market in the last months, as a result of the new regulations released by the Government, which will be the cause of the upcoming renegotiations in the concession contracts signed to date.

Following the country background, each chapter deals with general issues of toll roads, such as, objectives and potential consequences of tolling; network and planning issues;

legal and regulatory framework; concession contracts; government support; setting and adjusting toll rates; financing structure and sources, and conclusions and lessons learned for each one of the countries.

Table 1.1 presents six indicators of toll road development in the four selected economies, including the length of paved roads, gross domestic product per capita, auto ownership, among others. While some countries have historically avoided charging tolls for public roads, in the present environment of fiscal restraint nearly all have turned to tolls as a preferred means for financing highway infrastructure investment.

All of the Latin American countries reviewed in this study have been actively engaged in concessioning road infrastructure projects to the private sector. Since the early 1990s the government of *Argentina* has granted private firms the right to collect tolls on some of the country's main highways in return for the duty to carry out a program of maintenance, rehabilitation, and construction.

Chile has also been actively engaged in concessioning road improvement projects to the private sector, and it has over 1,900 kilometres of roads already in operation. The Government of *Colombia* has awarded more than a dozen concession contracts for rehabilitation and construction of highways, and is currently targeting the modernization of about 4,000 km of national highways. Lastly, after several decades of limited results building state-run tolled and free highways, *Mexico* embarked upon one of the world's most extensive privately-concessioned toll road programs in 1989. After completing approximately 5,500 km of new highways in only five years, financial instability due to unexpectedly high construction costs and low traffic, coupled with the December 1994 devaluation of the peso, brought the concession program to a standstill in 1995. A comprehensive restructuring of the program in 1997 cost the Mexican Government US$8 billion.

Each of the selected economies has its own unique institutional and regulatory frameworks reflecting the social, economic, and political environment, which in turn influences the form of toll road investment decisions by the public and private sectors. In this study, both successful and unsuccessful experiences have been interpreted in this context, with the attempt to draw lessons that can be adopted in other countries.

The countries with successful toll road network development usually have a well-established strategic planning framework whereas less successful countries exhibit weakness in this area. In *Mexico*, for instance, various sections of the current toll road program were conceived in isolation and not derived from a long-term strategic interregional network development plan, and accordingly they were not well coordinated with plans for capacity expansion of non-toll highways. A strategic planning framework incorporating network analysis is important to optimize the benefits and minimize costs of toll road development. Components of such planning should include: (i) refining the strategic road network and the most appropriate alignments of the key links; (ii) firming up the appropriate timing of construction of individual links based on corridor studies; and (iii) establishing clear economic and financial viability.

Toll roads may be developed and operated by (i) a government agency, (ii) a public corporation, (iii) a private sector concession, and (iv) a public-private (also known as private-public) partnership (PPP). The existing arrangement of operating entities in each case study stems from particular political and historical backgrounds, and each approach presents certain advantages and disadvantages. The challenge here is how to offset the disadvantages inherent in each form of operating entity.

Summarizing, the objective of this thesis is to analyze some issues and challenges related to private toll road developments in Latin American countries, and explore new schemes to mitigate some problems that often appear in road concessions. The research is illustrated with the regulations of four countries, Argentina, Chile, Colombia and Mexico.

Chapter II ARGENTINA

2.1. COUNTRY BACKGROUND

2.1.1. Fact sheet

- ✓ POPULATION: 37m(a) (2000)
- ✓ POPULATION GROWTH: 1.3% per year (1996-2000)
- ✓ LAND AREA: 2.7m sq km
- ✓ FISCAL YEAR: Starts January 1st
- ✓ CURRENCY: Ps1: US$1 (2000, year-end); Official: Ps1.4: US$1 (January 26th 2002); Floating: Ps1.70: US$1 (January 26th 2002)
- ✓ GDP: Ps285bn (2000); US$285bn (2000, market exchange rate); US$391.6bn (2000, at PPP)
- ✓ GDP GROWTH: 2.7% (1996-2000, av); -0.8% (2000)
- ✓ GDP PER HEAD: US$7,695(a) (2000, market exchange rate); US$10,574(a) (2000, at PPP)
- ✓ INFLATION: -0.1% (1996-2000, av); -0.7% (2000, year-end)

2.1.2. Background

Protectionist and populist economic policies in the post-war era led to economic stagnation and hyperinflation in the 1980s. Carlos Menem of the Partido Justicialista (PJ, known as the Peronists), who was elected president in 1989, abandoned the party's statist ideology in favour of market economics and liberalization, resulting in a period of rapid growth. Mr Menem's failure to deepen fiscal and structural reform in his second term (1995-99) left the economy vulnerable to a series of external shocks in 1997-99. Fernando de la Rua's centre-left government was unable to halt the economic decline and collapsed after two years in December 2001 amid violent protests. Eduardo Duhalde, a Peronist, was elected president by Congress at the start of 2002.

2.1.3. Political structure

A strong presidential system is checked by a bicameral Congress comprising a 257-member Chamber of Deputies, representatives of which are elected for four-year terms, and a 72-member directly elected Senate. The president serves a four-year term. Mr Duhalde will serve out the remainder of Mr de la Rua's term until December 2003 and has promised not to stand for re- election. The Peronists control the Senate and have a

majority in the Chamber of Deputies. In addition, they control the important governorships and 17 of the 24 electoral districts into which the country is divided.

2.1.4. Policy issues

Following the abandonment of the Convertibility Plan that the currency board introduced in 1991, the new government has to establish a new framework for economic policymaking. Heterodox measures such as a dual exchange rate and price controls have been introduced as transitional measures to ease the move from convertibility. The government eventually intends to institute a floating exchange-rate regime, probably supported by a formal inflation targeting framework for monetary policy. The short-term priority is to formulate a budget that satisfies the IMF, releasing official financing to recapitalize the stricken financial sector. The government will also need the support of the Fund to start negotiating a debt restructuring deal with its creditors following the declaration of a payments moratorium at the start of 2002.

2.1.5. Foreign trade

The trade surplus widened and the current-account deficit narrowed in 2001 in response to depressed domestic demand and the lack of financing.

Major exports 2000	**% of total**
Manufactures	31.0
Processed agricultural products	30.1
Primary products	20.6
Fuels	18.3
Major imports 2000	**% of total**
Intermediate goods	33.4
Capital goods	23.5
Consumer goods	18.2
Capital goods parts & accessories	17.2
Leading markets 2000	**% of total**
Mercosur	32.0
EU	17.5
NAFTA	14.2
Leading suppliers 2000	**% of total**
Mercosur	28.6
EU	22.9
NAFTA	22.4

2.1.6. Taxation

The value-added tax (VAT) rate is 21%. Exports are exempted from VAT. Corporate and individual income tax rates are both 35%. A tax on financial transactions instituted in April 2001 as an emergency fiscal measure will remain in force until the end of 2002. No dividend tax is levied, but withholding taxes are charged on interest, royalties, services and operating leases. Improving tax collection is a government priority.

2.2. ECONOMIC OVERVIEW

ARGENTINA was one of Latin America's fastest-growing economies in the 1990s—and one of its leading free-market reformers. Its growth was underpinned by a currency board, in which the peso was pegged by law at parity to the dollar. But since 1998, after capital began to flee from emerging economies, Argentina has been trapped in recession. To make matters worse, the currencies of its main trading partners have weakened sharply against the dollar. Without growth, Argentina's otherwise manageable public debt of $132 billion has become unpayable, and its modest fiscal deficit (mainly derived from the transitional cost of pension reform) unaffordable.

Argentina experienced slow economic growth from the 1940s until the start of the Convertibility Plan in 1991. By the mid-1970s long-term growth declined noticeably, and in the last half of the 1980s, Argentina suffered its longest period of stagnation in the century. Savings and investment rates fell precipitously from the mid-1970s until 1991. Argentines, responding to the unstable macroeconomic environment, increasingly saved and invested abroad. Labour productivity fell and poverty worsened.

This economic performance caused chronic public sector deficits and prevalent inflation. After the return to constitutional democracy in 1983, public demands to control inflation were translated into four successive stabilization programs. All failed to eradicate inflation, and each ended in a more prevailing inflation than the one preceding it. The main reason for these failures was the inability of the stabilization programs to restore rapidly and permanently the structural deficit of the public sector.

Since the start of the Convertibility Plan in 1991, the Argentine economy has been transformed through the establishment of a currency arrangement as part of an extensive set of reforms that altered the monetary system, improved fiscal and tax policies, liberalized trade, and reformed the public sector including a rapid privatization program. All of this was intended to overturn the long-term trend of slow growth, state domination, low domestic savings, weak investment, high volatility, and chronic inflation that the country had suffered for the previous 25 years. When hyperinflation broke out in 1989, the rate of poverty in the country had climbed to over 40 percent of the population.

The results of the Government's reform program were dramatic when started. Argentina experienced strong economic growth in the 1990s, with the size of the economy expanding from an estimated $ 141 billion in 1990 to $ 298 billion in 1998. Instead of experiencing hyperinflation, Argentina has now one of the world's lowest rates of inflation. The Federal Government's fiscal deficit receded from an average of about 6-8 percent of GDP for most of the 1980s to 1.4 percent in 1998. The 1999 recession, however, led to a sudden increase in the federal deficit to 2.6 percent of GDP (excluding privatization revenues). Foreign debt is moderate as a share of GDP, equivalent to 51 percent; however, the country's export base is small so that total external debt represents more than four times the annual base of exports of goods and services.

After years of inflation, the domestic capital market remains thin and the rate of monetization low for a country of Argentina's income level. Public domestic debt, thus, remains small, and the Government and major industries continue to depend on the international capital markets for term financing while the lack of domestic credit constitutes a serious bottleneck for small and medium industries. This situation leaves the Argentine economy vulnerable to external shocks. Although the government has moved aggressively to lower total debt and debt service with a debt restructuring plan in 1993, and increased the maturities of the public share of external debt to about 9.7 years on average, the large amount of external indebtedness and dependence on external capital flows to finance increased investment levels have left the economy exposed.

The first test of Argentina's commitment to economic reform came in 1995 after the devaluation of the Mexican peso. The economy shrank by 2.8 percent in 1995, but following the worst of this crisis, the Argentine economy returned to the strong,

investment-led growth path that it had experienced during the early 1990s. Real GDP growth was 5.5 percent in 1996 and an impressive 8.1 percent in 1997. Over this period, the Government continued its efforts to improve financial system regulation and supervision, and it made progress in reducing the federal government deficit (largely driven by the transition costs of national pension reform). Support from the World Bank, IDB and IMF were critical in helping Argentina to recover and to implement this continuing program of reform as well as initiate a number of important targeted social programs.

Argentina is now confronting the second test of its program. After growth of 3.9 percent in 1998, the economy suffered a contraction of 3.1 percent in 1999. The recession began in the fourth quarter of 1998, following the Russian crisis and subsequent turbulence in international financial markets. These financial factors initiated the recession, but then the Brazilian devaluation (Argentina's largest trading partner), falling commodity prices and unfavorable weather conditions for the agricultural sector contributed to the downturn. In the second half of 1999, uncertainty over the presidential elections further complicated the panorama.

Argentina's commitment to prudent macroeconomic management and the discipline inherent in its currency board arrangement generated confidence in the country's ability to withstand external shocks. Argentina was among the first emerging market economies to regain access to international capital markets in late October 1998, following the Russian crisis. In 1999, within weeks of the Brazilian devaluation, the Government regained access to international capital markets.

At the end of 1999, the economy began to gradually recover from the recession. In the first quarter of 2000, GDP grew by a mere 0.9 percent (year-on-year). Industrial production rose by 2.7 percent and 1.7 percent (year-on-year) in the first and second quarters of the year; however, this is due to a bump up at the end of 1999, and further growth has stagnated since then. Unemployment rose somewhat from 13.7 percent in October 1999 to 15.4 percent in May, 2000. In general, access to financial markets has been relatively good, but with a high degree of volatility in spreads. Average spread on foreign bond issues have fallen about 1 percentage point in the first half of 2000, relative to average spreads during 1999, and maturities have lengthened considerably. Exports

have been performing extremely well, growing by almost 14 percent, year-on-year, in the first six months of 2000.

Confidence in the banking system remains strong. The system has maintained its deposit base in both pesos and dollars, exhibiting some growth in the first half of the year (7 percent). (In contrast, during the tequila crisis, 18 percent of deposits were withdrawn from the system and a significant number of banks were forced to close, restructure and merger.) However, credit growth to the private sector has been slightly negative, as banks have taken a cautious stance. The cutting off of domestic firms from credit has imposed a very strong limitation on new investment and a burden on firms attempting to adjust to the change in markets as a result of the devaluation of the Brazilian real. In recent months, moreover, tightening interest policy in the United States, as well as some uncertainty generated by the sluggish recovery, caused another rise in spreads on Argentine foreign debt and a spike in domestic interest rates. As of end-July, international reserves had increased by about 1 percent compared to the end of 1999, although there has been some re-composition from cash reserves of the Central Bank ($26.1 billion) towards liquidity reserves of private banks held overseas ($6.5 billion).

With its credit exhausted, in June 2001 former President Fernando de la Rua and Domingo Cavallo, his economy minister, adopted a drastic austerity plan aimed at cutting spending to match (declining) tax revenues. But the policy did not work. Argentina's plight was drastic. Recession turned to slump—the economy shrank at an annualized rate of as much as 12% in the third quarter of 2001.

That Argentina had staved off default and devaluation for so long was a tribute to the strength of the currency board and of the (largely foreign-owned) banking system. But the time gained brought no prospect of relief.

The new Argentinean government has now devalued its currency by at least 30% and ended the fixed link with the dollar. This will boost exports and help restore Argentina's foreign currency earnings which may ultimately be needed to pay off its huge foreign debts. That is because exports will become cheaper in comparison to the Argentinean peso. However, it will hurt businesses which have invested in Argentina by making their investments in the country less valuable, and their profits smaller. Also, it will be bad news for those people in Argentina who have borrowed money in dollars and are paid in

pesos - for example, some small businesses and many with mortgages. They would then have to pay back their debts in a currency that was worth less than before, so the real value of their debts will increase and that could be expensive for the government. On the other hand, devaluing the peso could boost inflation, as imported goods will become much more expensive.

Economic data

	1997	1998	1999	2000
GDP per head (USD)	8,214	8,280	7,747	7,640
GDP (% real change pa)	8.11	3.85	-3.4	-0.1
Government consumption (% of GDP)	12.06	12.5	13.74	13.5
Budget balance (% of GDP)	-1.57	-1.4	-2.6	-2.5
Consumer prices (% change pa; av)	0.5	0.89	-1.17	-0.94
Public debt (% of GDP)	34.52	37.58	43.03	43.7
Labour costs per hour (USD)	3.4	3.4	3.38	3.35
Recorded unemployment (%)	13.85	11.8	13.03	14.3
Current-account balance/GDP	-4.27	-4.88	-4.34	-3.2
Foreign-exchange reserves (m$)	22,320	24,752	26,252	25,147

2.3. OVERVIEW OF THE CONCESSION PROGRAMME

2.3. Motorways

2.3.1. Introduction

Argentina's rapid move toward an open, internationally oriented economy based on free markets was reflected in the nation's push toward the modernization of its transportation network. In an effort to promote additional future activity while developing the capacity to handle the influx of the trade it was getting, Argentina privatized its transportation monopoly and largely deregulated investment in this sector. The country's vital transport links -seaways, roadways, railways, and airways- were restructured and updated.

Of all of the South American countries, Argentina has the most extensive air navigation, railway, and communications infrastructure. However, many of these systems were built decades ago and maintenance had been squeezed by both the shortage of government funding and the high cost of public sector construction and maintenance—construction costs averaged about twice what might be considered reasonable. The major problem that many of these systems have faced is that they have been owned and operated by the government. Management decisions were often made based solely on politics, government priorities, expediency, mismanagement and corruption. By the late 1980s, the operating subsidies required to keep these services running at even a marginal level had climbed into the millions annually. Restrictions on imports, technology transfer, and foreign investment further contributed to the decline of the Argentine infrastructure.

As a result, when Argentina undertook reform of the roads sector, its primary objectives were reconstruction and maintenance of existing roads and reduction of the public finance required by the sector. Involving the private sector in exchange for the right to charge users tolls was seen as a way to both shift the financial burden to users and maintain roads more efficiently.

The general privatization strategy was to convert viable roads into build-operate-transfer (BOT) concessions awarded through competitive bidding. Most of the traffic is concentrated near major nodes, such as Buenos Aires and to a lesser extent Rosario and Córdoba. Thus, the concession program has so far focused on the multilane roads and freeways serving these cities, along with other intercity and major city access roads.

In 1989 Argentina began to privatize its infrastructure industries, beginning with its telephone system. Next came some of the railroads. In the mid-1990s, the government concentrated on the roads and highways, and in 1994 the first private concessions were offered to operate terminals at the port of Buenos Aires. Together with privatization the government made efforts at deregulating these sectors.

Buenos Aires offers something of a showcase of urban transport infrastructure concessions, with a variety of rail and motorway projects undertaken over the past decade. There is no other single city in the world where so many transport infrastructure concessions have been implemented and are operating (some of them for more than

five years). The move towards concessions grew from government fiscal crises and declining service quality.

The use of concessions has resulted in significant infrastructure enhancements and expansions such as upgrading the subway and about 840 km of suburban railways in the metropolitan region, as part of packages that included some US$1.37 billion in investments, and upgrading and expanding over 300 km of motorways, leveraging over US$1 billion in private sector investments.

Transit systems and roads are priorities on the government's list of projects needing funding and promotion. Several projects currently under construction are expected to enhance interregional trade within the next decade.

2.3.2. Legal Framework

The stagnation period occurred at the end of the 80's in Argentina led to the redistribution of the government funds, eliminating the specific funding in which the Road's maintenance was included. Although during the last decade these specific resources had suffered undergoing diminutions, the total lack of funds was very soon evident. This situation and the economy emergency in which Argentina was going through, created a series of reforms in the regulatory system that later would lead to the whole privatization scheme in Argentina.

1. Laws of the Reformation of the State and Economic Emergency

In 1989, a State Reform Law (23.696) declared certain state enterprises eligible for privatization. In addition to increasing the efficiency of services provided by state owned companies, privatizations were also introduced to reduce outstanding debt (by applying cash proceeds and through the selective use of debt-equity conversions), increase reserves and increase tax revenues from new owners of the companies created.

The process of reformation of the State that was started in Argentina by the passing of the statute 23.696, resulted in the State reviewing its functions in relation to the satisfaction of public interests. Thus, the rendering of public services was entrusted, by

means of concessions or licenses, to public parties. The Provinces also followed this tendency.

The transfer of economic activities to the private sector were kept within constitutional limits, and reserved to the state the direct responsibility of public functions which are unable to be delegated, and indirect responsibility in matters of transferred public services.

The law at issue declared the financial economic situation of the national public administration, both centralized and decentralized, to be in a state of emergency. That declaration included other organizations in which the state, or any of its bodies, held total or majority control in capital investment or corporate decisions.

2.3.3. Concessioning Process

Argentina's move towards road concessions had its roots in 1967 legislation allowing toll financing of new bridges, tunnels and highways to be carried out by the National Highway Department. In the face of strong opposition to these tolls by users, the program proved a failure, forcing the government to revert to traditional public works financing schemes. In 1976, another toll road push was undertaken, this time with efforts to explicitly include the private sector. Five of the six projects proposed under this initiative were for the Buenos Aires metropolitan area, but none were ultimately successful private sector enterprises. Two of these concessions were bought by the city government due to lower than forecast traffic volumes, a third – the 9 de Julio Motorway was revoked and partially completed by the city, a fourth was built completely by the public sector, and a fifth – the Buenos Aires - La Plata (BALP) Motorway – was delayed for many years due to lack of public financing[3]. The City Government signed a new contract for the completion of the 9 de Julio Motorway with the original concessionaire in 1993.

An estimated 87 percent of passenger and 85 percent of domestic freight traffic is carried by road. Approximately 500,000 km of roads cross Argentina. At last reckoning,

[3] The BALP motorway was to be financed by a combination of Provincial, National and private funds.

Argentina had about 38,000 km of national highways (partially privatized), 177,000 km of provincial highways and 285,000 of secondary roads; of the national network, 28,000 km are paved, 6,300 are gravel, and the remaining 3,700 are improved or unimproved dirt roads. Argentina's portion of the Pan-American Highway consists of four main roads. The Dirección Nacional de Vialidad (National Highway Board, or DNV), in conjunction with the Secretaría de Obras Públicas (Public Works), administers the national road system and is charged with shifting the construction and maintenance of the roads to provincial governments and private sector firms.

The most highly traveled sections of more than 30 national highways have become privately operated toll roads. Beginning in 1990, the government granted concessions to major Argentine construction firms for maintenance of highways in the country's interior in return for the right to charge tolls. Firms such as Roggio, Techint, Sade, Sideco, and a score of others have since taken over more than 9,300 km (5,800 mi) of inland highways. Although improvements on these highways have come slowly, they are gradually taking shape. Private investments in the period 1992-1997 were about US$2.4 billion.

In the past years, the Argentine government put out an international call for bids on the construction, improvement, maintenance, and administration of four main access routes to Buenos Aires. Different private consortiums involving both local and national firms are now running these routes. These concessions allow these companies to operate the roads on a concession basis and collect tolls from the highway users. The four projects represent an estimated US$2 billion in investments. As of August 1997, much of these improvements were made and all of the roads had additional lanes. These major access roads tend to be traveled heavily by commuters and vacationing suburbanites and are the central arteries into Buenos Aires.

Apart from these privately operated toll roads, the government received a loan from IDB to aid in additional improvements. Traffic managers have stressed that while truckers have to swallow hard when paying these tolls, the pre-existing road conditions actually made operations much more costly. Today, truckers can maintain their vehicles at much more reasonable cost and move goods more efficiently. Moreover, with the major highways in the hands of private contractors, the government has been able to apply road taxes where needed most: to repair secondary routes, pave dirt roads, and construct new roads.

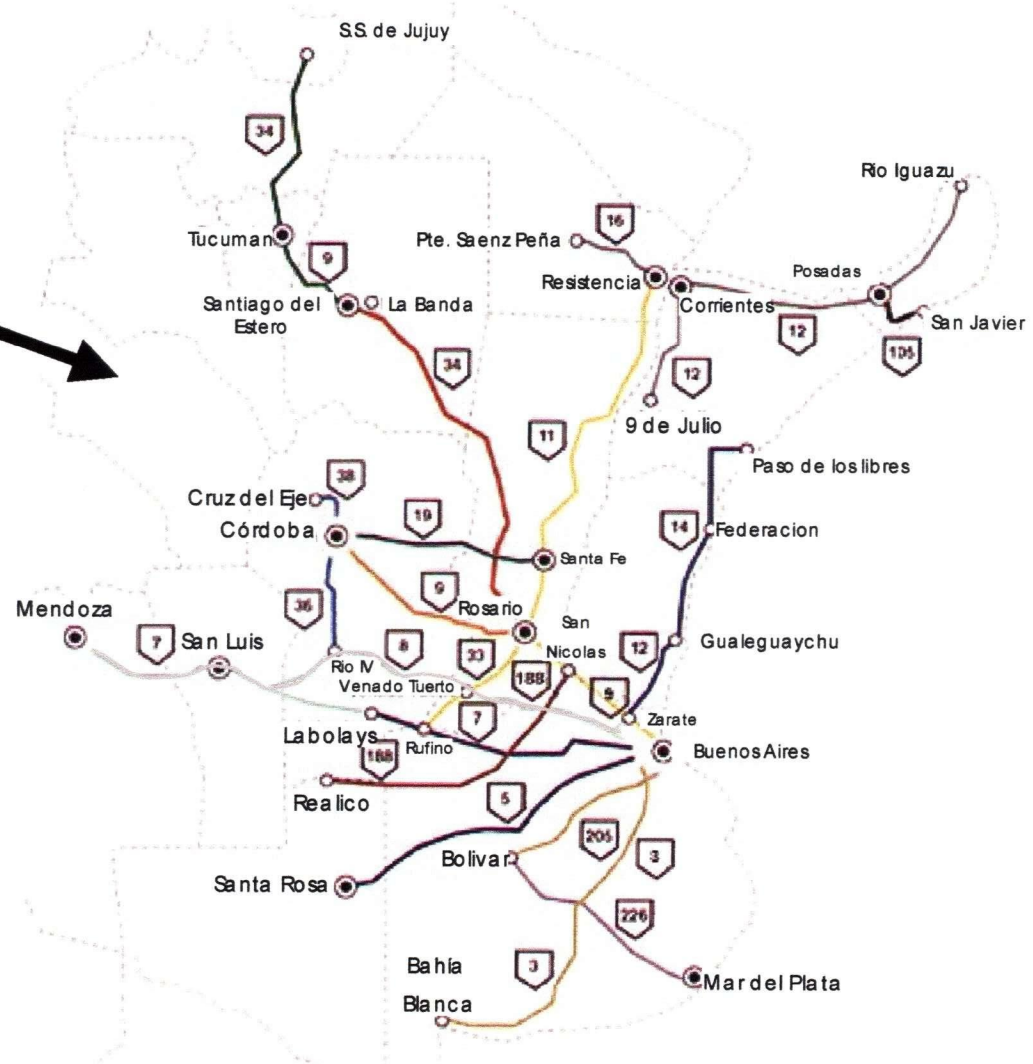
In addition to improving road conditions, the Argentine trucking industry has received several additional incentives during recent years. These include the deregulation of freight insurance and the reduction or elimination of taxes on the import of transportation-related products-vehicles, parts, tires, and fuel. A few standards for the trucking industry have also been introduced, including a requirement that operating commercial freight vehicles must be less than 10 years old. The industry has also been opened to competition from foreign trucking firms, with the condition that the foreign-operated vehicles must be registered in Argentina.

2.3.3.1. *First generation of concessions— Intercity roads* (See Figure 2.1)

In the first wave of privatization, the government concessioned about a third of the intercity highway system, offering twelve 12-year concessions in 1989 and awarding them in early 1990. The segments had traffic averaging at least 2,000 to 2,500 vehicles a day, a level considered viable for private concessions. In return for the right to collect tolls, the concessionaires were required to undertake a program of maintenance, rehabilitation, and capacity improvements. Built into the concessions was a toll structure subject to price cap regulation. It set a uniform value per kilometer for each class of vehicle and was consistent across all concessions. The maximum toll was five times the basic toll and was to be determined by vehicle size, number of axles, and distance traveled between toll booths. To protect concessionaire revenues against inflation, tolls were to be up-dated using a formula giving roughly equal weight to the cost of living index, the wholesale price index, and the value of the U.S. dollar. But the government provided no revenue guarantees to the concessionaires.

The service levels, defined so as to recover past service levels, were measured by an index of road serviceability (the state of the pavement) ranging from 1 to 10. Targets were set for three periods: during the first three years, the objective was to reach an index of about 6.4; in the following seven-year period, the index was to improve to 8; and during the last two years of the concession, it could not fall below 7.5. The concessionaires' obligations included undertaking certain investments before starting to collect tolls, such as correcting the most serious deficiencies in the pavement and in vertical signalling, and undertaking other investments during the term of the concession

Figure No.2.1 – Intercity Road Concessions in Argentina



to achieve the serviceability targets. Although the bidding documents did not specify the size of the investments required to reach the serviceability targets, it was estimated that at least 50 percent of the network would have to be repaved during the first three years, with another full re-pavement during the remaining nine years of the concession. The concessionaires were also initially obligated to pay a fee (canon) to the state for the use of the road infrastructure during the life of the concession and to take legal responsibility for any accidents resulting from poor road conditions.

The intercity road concessions were awarded in twelve simultaneous bidding contests. The bidding was competitive, with 147 bids submitted. The concessions were awarded to thirteen consortia formed by forty-six private companies. These thirteen consortia were to pay canon totalling US$890 million (1990 dollars). While the canon was the key criterion in the bid selection, there were many other criteria, including technical qualifications and timing of investment.

The intercity road concessions had been in operation for only five months in February 1991 when the government decided to suspend the contracts and renegotiate them. Several developments led to this decision. First, indexation increased the basic toll by more than 50 percent. Second, many concessionaires started to collect tolls before undertaking the required investments. Third, tollbooths were located either at a relatively short distance from one another or near urban centers in order to capture suburban trips -lack of access alternatives created captive traffic. These three developments prompted public protest and strong pressure to reduce the tolls. In addition, the government's emergency ruling to attach the new peso made the contracts' tariff escalation clause illegal.

The renegotiations resulted in a major overhaul in the design of the concessions. Tolls were reduced by more than 50 percent. To compensate the concessionaires, the canon was eliminated, and the government also granted concessionaires a total annual subsidy of US$57 million. The subsidy, to be distributed among concessionaires according to the size of their value added tax (VAT) contributions, amounts to a shadow toll because VAT contributions are directly related to traffic levels. The location of tollbooths and the commitments and schedules for road works were also renegotiated.

2.3.3.2. Second generation of concessions—Access roads to Buenos Aires

By the end of the 1980s, the government fiscal crisis and the deteriorating state of road infrastructure led to a new initiative, which would allow for the concession of new and existing road infrastructure. As a response, a group of Argentine construction firms submitted a proposal to the government for the construction, extension, rehabilitation, and maintenance of a network of motorway accesses to the city [4]. The government awarded the group the concession without any competitive bidding, but the award was cancelled due to public opposition both to the toll roads program and the lack of toll-free alternatives.

In 1992, the government initiated a second wave of concessions, for the maintenance, operation, and improvement of three strategic access highways radiating from Buenos Aires. A fourth concession with no right to collect tolls was negotiated with a construction company that had been building a road under a public contract for many years. The Ministry of the Economy and Public Works and Services (MEySOP) then established a special concessions unit, unbundled the projects in the access network proposal, added the BALP Motorway, and opened up another bidding process. Except for the BALP, the projects to be concessioned – the Northern Access, Ricchieri Motorway, and the Western Access – each incorporated existing highways.

The government, benefiting from its experience with the intercity concessions, designed simple, straightforward concession terms and bidding criteria for the Buenos Aires access roads (Table 2.1.). Bidders received a comprehensive concession contract detailing the amount and schedule of required investments, the required service level, and the risk-sharing arrangements between the government and the concessionaire. The contract allocated the bulk of the project risk to the private concessionaire by precluding any revenue or traffic guarantees or any other guarantee or financial support from the government. In addition, the contract assigned to the concessionaire the responsibility for risks associated with pending land expropriations. And it required the concessionaire to build parallel untolled access roads, mainly collector streets. The bidding criteria were reduced to one variable: the lowest toll offered.

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[4] The BALP motorway was not included as it was still under its 1981 concession, although not complete.

Table 2.1. – MAIN FEATURES OF THE CONCESSIONS FOR THE BUENOS AIRES ACCESS ROADS	
Length	Twenty-two years and eight months
Ownership	The state retains ownership of the road infrastructure
Operation and Maintenance	All new construction, rehabilitation, improvement, and maintenance are performed by the concessionaire, which is legally responsible for any accident caused by poor road conditions.
Pricing	The basic toll is bid by the concessionaire and is subject to indexation based of the U.S. consumer price index.
Investment Obligations	The concessionaire is obligated to carry out specific works throughout the life of the concession. At the end of the concession, the concessionaire must transfer the roads in perfect maintenance condition.
Financial Performance	The concessionaire derives revenues from tolls and from commercial exploitation of service areas as authorized by the regulator, *Organo de Control de Concesiones*. The government does not guarantee minimum traffic levels and provides no other guarantees.

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

The Northern Access has proven to be the most successful in terms of meeting demand expectations; indeed in terms of paying traffic the highway is the largest operating toll road in the country, with 334,000 paying vehicle equivalents per day in December 1998. The use of automated toll collection (ATC) technology is currently estimated at 35%, but the system is not compatible with others being used in Metropolitan Buenos Aires[5]. The concessionaire has been also implementing variable message signs as part of an intelligent transportation system (ITS) program. Another innovation of the Northern

[5] Except Camino del Buen Ayre – a link between the Northern and Western Accesses.

Access has been the recent receipt of US$40 million in prepaid royalties for commercial use of service areas. Of the other concessions under the national government jurisdiction in Buenos Aires, operational experiences have been less successful. Traffic volumes on the Western Access and BALP are lower than bid estimates, by 10% and 40% respectively.

2.3.4. The concessions program

The results of the concessions so far have been mixed. All were hit by the "Tequila effect" recession that started in early 1995. The concessions for urban access roads provided some badly needed increases in urban highway capacity that the government otherwise might not have built. But achieving all the objectives is taking longer than expected. Construction for two of the four concessions was delayed by legal problems with land expropriation and with relocation of the people that lived in the area needed for the construction. Because of the delay, the concessionaires were unable to start collecting their tolls. The other two concessionaires could collect only part of their tolls because not all their facilities were in place. Moreover, in three of the four concessions, only 25 to 60 percent of required investments have been made; in the fourth, investment was accelerated.

Under the intercity highway concessions, road use has more than quadrupled between 1991 and 1996—raising toll revenues from almost US$60 million in 1991 to a projected US$258 million in 1996. However, most of this increase occurred before 1995—since then the recession has kept traffic and revenues fairly flat. The maintenance of the intercity highway system, including the concessioned portions, has improved significantly. The share of paved roads in bad condition declined from about 30 percent in 1989, to 25 percent in 1993, and it has continued falling. And maintenance of the concessioned network is no longer a major drain on government budgets -though government subsidies have increased from US$23 million in 1991 to more than US$65 million in 1996- in part because of the government's reluctance to allow toll increases.

But on the negative side, investment is behind schedule because the renegotiations reduced the concessionaires' potential returns. Although the intercity concession program estimated that at least 50 percent of the road network had to be repaved during the first three years of the concessions, actual repaving has fallen short of this

mark. Still unclear, however, is the efficiency of construction and maintenance. The government has collected no information to show whether the private sector is maintaining the roads at a lower cost than the public sector did—or whether is doing better for the same cost.

2.3.5. Renegotiations

Discussions to modify the road concessions commenced shortly after the contract initiation and the concession contracts were modified in several small steps.

For both the Western Access and the Ricchieri Motorway, the negotiations stemmed from delays due to expropriations (in the case of the Western Access, a toll increase was also allowed due to delay-related cost increases). Although some degree of flexibility has been critical given the unpredictability of land acquisition and resettlement issues, the government has mitigated business risk, which may send signals to concessionaires causing them to underbid. Indeed, the already awarded concession contract, for the President Perón ring road, explicitly contemplates renegotiations and toll adjustments. This clear offsetting of risk may have led to the winning concessionaire submitting a toll bid nearly 40% below the government maximum.

2.4. Railroads

2.4.1. Introduction

Originally built between the 1860s and the 1930s-primarily by British and French investors-the Argentine rail system is one of the most extensive in the world. Until the early 1970s, the country could boast that all its cities of a population of 10,000 or more (with the exception of Ushuaia in Tierra del Fuego) were served by rail. Since then, population growth and the deterioration of the rail system have made the system obsolete. Like its highways, much of Argentina's 35,000 km (21,875 mi) of railroads tend to branch out from Buenos Aires into the country's interior. More than a decade ago, the railroads were in even worse shape than the highways. Six independent state-owned companies operated various inland, intercity, and metropolitan passenger and freight services, each

running up an annual deficit of several million dollars that the federal government was obliged to cover.

Since 1992 all but one of Argentina's railways have been privatized, resulting in a radical restructuring and bringing in more than US$1.5 billion in foreign investment for the freight network plus a similar amount for the passenger lines. The half-dozen independent, formerly state-owned railroads, each having trackage of at least 2,500 km (1,600 mi), were combined with the Buenos Aires urban rail system comprising subway and commuter lines. An existing 385 km (240 mi) passenger corridor that carries more than 1.8 million passengers annually runs between Buenos Aires and Mar del Plata.

During the privatization process, several major problems had to be overcome. Track gauges varied among the different independent operations-at least four gauges (1.435 m standard, 1.676 m broad, 1.000 m narrow, and 0.750 m narrow) are in use-preventing the sharing of track and equipment. An even greater management problem was poor service on most lines converging on a single hub: Buenos Aires. Transition of the labor force also proved to be an immense undertaking. Most of the railway lines have been so poorly maintained that service had become sporadic and undependable, causing the railroads to lose substantial business to the trucking industry. Privatization could only be accomplished by reshaping the railway system.

In the course of this reshaping, the government implemented a series of concessions, or franchises. Rather than following one pre-established model, planners decided to consider the practical operating differences among the three distinct economic and social regions being served. As a consequence, Argentina now features six separate but interrelated units, comprising approximately 25,920 km (16,200 mi) of track. Together they transport approximately 17 million tons of freight per year, with freight moving an average of 501 km (313 mi). Additionally, some 7,680 km (4,800 mi) of track deemed unessential to the concessions was offered to the provincial governments, with the understanding that track segments not accepted would be abandoned. In turn, the concessionaires accepted the risk that they might not be able to improve the volume of freight traffic without rationalizing (and expanding) the systems on their own.

When privatizing rail passenger service, planners, taking the experience elsewhere in Latin America, recognized that the social obligation had to be met by the use of some

sort of subsidy. Three passenger rail network franchises were created: intercity passenger services; passenger service in the Buenos Aires-Mar del Plata corridor; and the commuter and subway services in the metropolitan Buenos Aires area. In creating these franchises, the government formed a new agency-Ferrocarriles Metropolitanos (FEMESA, or MetRail)-which presides over the commuter lines. Under the arrangement to be used, the government retains ownership of the right-of-way, equipment, stations, and other facilities. However, all property not required for direct operation of the services, including downtown terminals, has been separately franchised to real estate developers, who provide the government with a source of financing for the metropolitan service subsidies.

The passenger loads on the commuter railroads out of Buenos Aires are immense by US standards. During 1996, it served almost 417 million people. The Sarmiento Line-with a 38 km (24 mi) route and 15 stations-serves more than 90 million passengers annually. As one might imagine, use before privatization declined due to cramped and uncomfortable service, while fare evasion had increased markedly. To make matters worse, the nation's taxpayers were footing the bill for operating the system, and the line has been operating at an annual deficit of approximately US$200 million during recent years. Privatization is already showing improvements in the services provided.

The first freight railroad that has been fully privatized, the Ferro Expreso Pampeano, bypasses Buenos Aires altogether. This line links the northern Paraná River port of Rosario with the main Patagonian coastal port of Bahía Blanca. It runs north-south some 320 km (200 mi) west of Buenos Aires and operates connecting branch lines throughout the Pampas region. Its approximately 4,800 km (3,000 mi) of track are primarily dedicated to the movement of grain exports. The first operational change that this franchise put into play was a switch from radio and fax communication to satellite linkup between Bahía Blanca and Buenos Aires. The satellite network deals mainly with shipment tracking and market and financial data: the business of clients, including tonnage moved and types of commodity and share of market by the railroad.

Ferrosur Roca is now recognized as one of the pivotal railroads in Argentina's new network, and has been already privatized. Like its predecessor-called the "Roca"-it is identified with two major connecting trunklines. One is the direct 615 km (385 mi) route linking Buenos Aires with Bahía Blanca; the other connects Bahía Blanca with Zapala in the Andes via the Río Negro Valley. Cement, agricultural products, minerals, and

petroleum provide this 3,680 km (2,300 mi) broad gauge system with a solid, steady base of freight revenue. Although the seasonality of the cement business brings the greatest volumes in September and October, a number of businesses on the line provide balanced traffic during the rest of the year. Higher volumes of grains maturing between December and June add a year-round mix, as does the steady flow of minerals to the industrial areas of La Plata and Bahía Blanca from the western region of Neuquén.

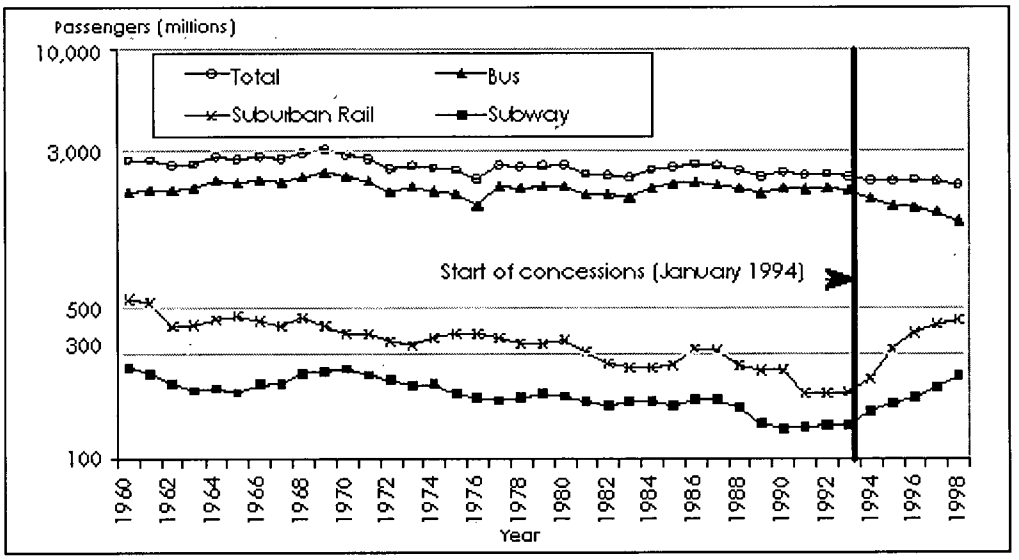
The franchise companies face a major challenge in upgrading and maintaining trackage, the condition of which continues to be somewhat poor and inconsistent throughout the country. A lack of adequate maintenance over a protracted period has led to various infrastructural problems. Another problem is the rapid rate at which right-of-way and track becomes overgrown on the grassy plains. While these problems are being addressed on all track sections, priority is being given to the areas used by light tonnage trains (50 tons per car) that operate at relatively low speeds (32 kph or 20 mph). Private operators intend to expand the system to provide links that come closer to its customers in more remote regions of the network. For example, within the next 10 years, the capacity of the Buenos Aires subway and commuter lines is expected to double.

Besides infrastructure enhancements, the railroad industry is trying to improve its relationship with ports and to persuade traders that rails can serve them as well as trucks.

2.4.2. Concessioning Process

The concession process was initiated with the State Reform and Public Enterprise Restructuring Law of 1989, which aimed to reduce the public deficit, privatize state enterprises and revitalize the economy. Since the 1950s, the suburban railways had been run by Ferrocarriles Argentinos (FA), the state-owned national railway which by the end of the 1980s was the single largest drain on the national treasury, consuming an estimated US$800 million to US$1.4 billion annually. Almost 20% of this amount went towards covering the operating deficit for Buenos Aires suburban rail services. In addition, the subway required an estimated US$40 million per year in operating subsidies. This financial and service crisis precipitated a sharp decline in patronage; both subway and suburban rail use decreased throughout the 1980s and early 1990s leading to privatization in 1993-94 (see Figure 2.2).

Figure 2.2. Public Transport Volumes in Buenos Aires Metropolitan Area



Source: FIEL (1999)

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

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

documents also included expectations regarding service aspects such as station cleanliness, maintenance, and personnel behavior.

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

The bidding process used a "two envelope" approach: the first envelope contained information on the concessionaire (financial, business and technical capacity); the second envelope contained a business proposal and a financial proposal (amount of operating subsidy/payment and costs of investments) [6]. Although the investments to be carried out were specified by the state, the bidders identified the schedule of investments to be made[7], with the constraint that no more than 12.5% of total proposed investments could be undertaken in a given year. Bidders also included their own demand forecasts, projected revenues (including from publicity and renting locales), and costs of operation. Winning bids were chosen according to the lowest present value of the sum of the monthly payments required of the government.

Eight different consortia presented bids. Seven of them made bids for more than one line, and four consortia eventually won the seven concessions[8]. Interestingly, bus companies form part of each rail consortium. The government had pre- established that there could not be only one operator for the entire system and that consortia needed to include foreign operating companies to prequalify. In the end the selected concessionaires included the following companies as minority partners: Burlington Northern (US); Transurb Consult (Belgium); Japan Railways Technical Services; and Bay

[6] There was also the option to submit an "optional offer" envelope two, outlining a concessionaire-proposed alternative investment plan; no bidder exercised this option

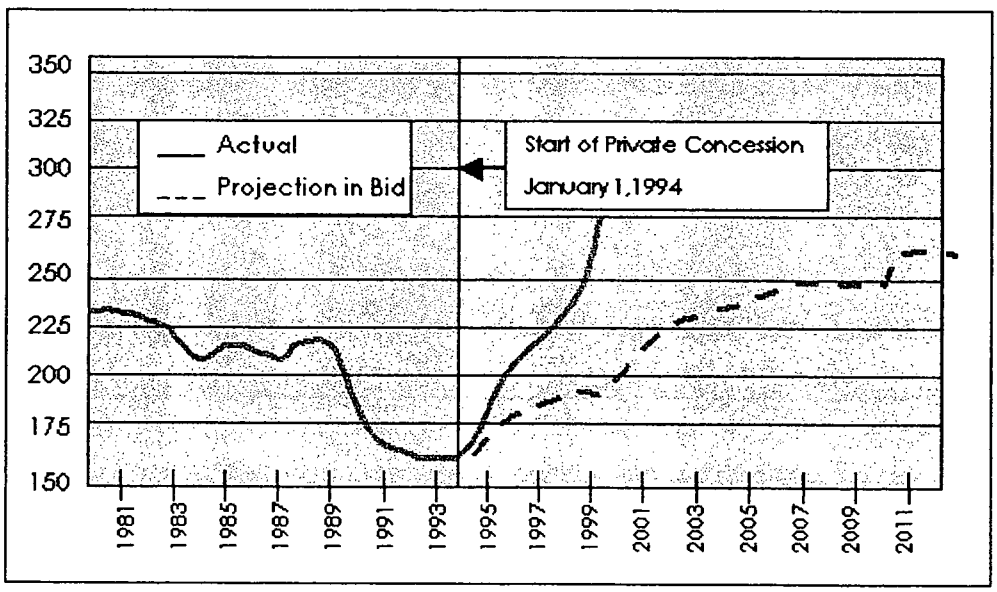
[7] Except in the case of the subway, for which the investment schedule was also specified.

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

Area Rapid Transit District (San Francisco, USA). The contracts left open the possibility for minor modifications to achieve notable service improvements, taking account of equipment conditions and changes in demand levels.

Increased Passenger Volumes: From a service level and ridership perspective, the railway concessions have proved an undeniable success to-date. Initial ridership increases during the first three to four months of concessions ranged from 12% (San Martín) to 102% (Belgrano Sur), owing in part to improved controls that reduced fare evasion which had reached about 35% of all trips during state operations. These initial improvements continued, providing strong evidence that new users have been attracted to the system; by the end of 1998 ridership increases over 1993 levels ranged from 52% (Urquiza) to 802% (Belgrano Sur). In five of the eight lines, actual ridership levels have been higher than those predicted in the concessionaires' original bids, with the subway showing the most dramatic difference (see Figure 2.3.).

Figure 2.3. Passenger Volumes for Subway Concession (In millions/Year)



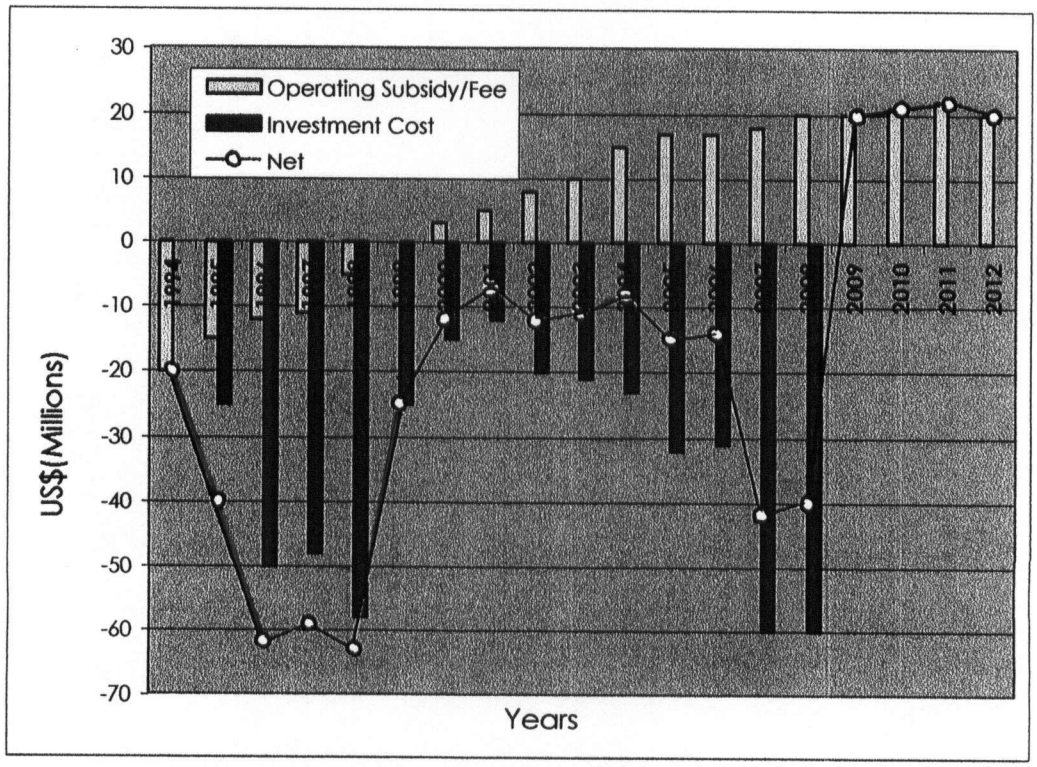
Source: (1) World Bank Data; (2) Secretaria de Transporte, 1999

Passenger-kilometers have increased by 150%, while train car-kilometers have increased by 50%. For suburban rail, absolute punctuality (on-time trains as a proportion of the total number of scheduled trains) was estimated at 96% in 1997 in comparison to 77% in 1993

and 83% in 1986. For the subway, average headways have declined from 4 minutes 18 seconds in 1993 to 3 minutes 20 seconds in 1997.

Reduced Government Subsidies: Regarding effects on government coffers, state subsidies for operations have declined to approximately one-third of their 1980s levels. In terms of subsidy per paying passenger, the rates have declined from US$0.74 (1993) to US$0.20 (1997). For the subway, the estimated US$40 million annual subsidy has declined steadily over the first years of operation; starting in 1999, the concessionaire is now paying an operating fee to the government (see Figure 2.4). Furthermore, Metrovías has undertaken a US$20 million station rehabilitation scheme, improving retail and service spaces in some 50 stations for commercial lease. In terms of fares, the overall average suburban rail fare has increased (in real terms) by 9% since 1993, in part due to service quality increases and in part due to inflation correction. For the subway, fares have increased from US$0.45 to US$0.60 per trip (as of mid-1999).

Figure 2.4 Subway Concession Operating Subsidy/ Payment and Investment Cost



2.4.3. Regulation

In the case of both the motorways and the railways, the concessions preceded the establishment of a regulatory framework. For the railways, the task was initially assigned to the National Railway Restructuring Unit (UCPRF or Unidad Coordinadora del Programa de Reestructuración Ferroviaria). The UCPRF's duties included all aspects of regulation and enforcement related to fulfilling service levels and safety standards, meeting investment and maintenance plans, overseeing fares and fare adjustments, responding to public complaints, and ensuring that subsidy and payment schedules are met (by state and concessionaires). In November 1996 the National Commission for Transport Regulation (CNRT) was created, absorbing the duties of the UCPRF. Regulation to-date has been relatively ad hoc and according to FIEL[9] (1999), enforcement has proven to be laborious and bureaucratic. Regarding fare increases, FIEL criticizes the adjustment mechanism as being poorly defined and not transparent, although there have not been significant disputes.

2.4.4. Renegotiations

Discussions to modify the rail concessions commenced shortly after the contract initiation. These negotiations were formally authorized by a government decree issued in June 1997. The authorization for the railway renegotiations grew from pressures for service expansion, changes in public expectations, the unforeseen need for infrastructure and rolling stock investments and the ensuing need for fare increases to accommodate the higher than expected passenger volumes, and concession term extension. The decree authorized the Transport Secretary (within MEySOP) to specifically renegotiate: scheduled services; investment programs; the concession term; specification of the concessionaires' "operating area" (to improve functionality of stations, entrances, exits); fare structure; state guarantees and payments; allowable financing schemes; and concessionaire membership. In the majority of the cases, the renegotiations are aimed at extending the contracts from 10 to 30 years[10], with the principal goal being to get the concessionaires to embark on more ambitious investment plans. This goal is facilitated by a mechanism which now allows the concessionaires to use the rolling stock (which still belongs to the government) as collateral for raising debt. The revised agreements also contemplate staggered fare increases, allowing the extra

[9] Fundación de Investigaciones Económicas Latinoamericanas, Buenos Aires.
[10] Exception being the subway/Urquiza concession, which is extended from 20 to 24 years.

revenues to be earmarked – together with the operating fees – to investment programs (through a trust fund account)[11]. Despite the importance of the goals behind the renegotiations, several groups voiced criticism and pointed out that a more transparent and competitive process should have been devised either through re-bidding or by allowing the five remaining concession years to first expire.

2.5. THE FUTURE

For future concessions, the challenges are to translate efficiency gains by the concessionaires into savings for road users and to structure the contracts so as to provide the right incentives and to ensure flexibility to adapt to new circumstances. In the current concession schemes, is unclear whether efficiency gains have benefited road users through savings in operating costs or in time.

Another challenge is for the DNV's Organo de Control de Concesiónes, which now relies on the toll operators for traffic and toll revenue information, to improve its capability to audit the results submitted by the concessionaires. This regulatory function will become even more necessary in the future if more flexible contracts are designed that introduce mechanisms for translating efficiency gains into lower tolls or for cross-subsidizing the provincial roads that have less traffic but act as feeders to the intercity links.

2.6. CONCLUSIONS

Three main lessons have come out of the reforms. First, it is important to have simple and transparent criteria for the bidding. In the initial round for the intercity concessions, the bidders had to satisfy a long list of technical and financial criteria, all with different weightings. By contrast, bidding for the Buenos Aires access road concessions used a single criterion, and investment obligations were discussed with potential investors before the bidding documents were finalized. Using a single, unambiguous criterion not only provides transparency in the award process. It also avoids unnecessary complications resulting from tradeoffs between offers on multiple criteria by competing bids.

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

Second, the rules for renegotiating contracts should be spelled out as early and as clearly as possible. Adequate rules were not issued until 1995. These new rules specify the conditions under which changes in some aspects of the contracts are allowable. And they recognize the importance to the concessionaire of ensuring that renegotiation does not alter its financial return when the problems that led to the renegotiation are beyond its control. There have been several cases in which such problems have forced the government to renegotiate the contracts. In one case, pegging the new peso the dollar made the contracts' tariff escalation clauses illegal. Before the new guidelines were adopted, the concessions were renegotiated bilaterally, with each party seeking the best deal it could get. Now, all the allowed options and the terms of eligibility are clearly specified so that all concessionaires are playing by the same rules.

Third, institution building must be taken seriously. Before the concessioning, all the main technical functions (planning, design, maintenance, construction) for the national highway network were the exclusive responsibility of the Dirección Nacional de Vialidad (DNV). The same functions were performed by similar agencies the provincial level. Poor coordination among these agencies led to poor planning and inefficient decisions. The reform transferred the management and control of roads to the provinces. The DNV was to become a national planning and coordinating agency responsible for allocating resources and auditing their use for national highways while also acting as a regulator for these highways. The DNV does not yet fully perform either function. It is not independent, and it is inadequately organized and staffed to effectively supervise the concessionaires. Nor does it require meaningful reporting by the concessionaires. Similar institutional weaknesses occur in supervision of the access roads. The responsible agency, located in the Secretariat of Public Works, does not collect or publish information on a regular basis, and its staff, though very committed, have been neither assigned clear goals nor provided with sufficient resources.

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

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

Although the initial bidding for the concessions was a model of efficiency, the separate and mostly uncoordinated approach among road and rail projects is a testimony to the lack of an overall transportation strategy for the metropolitan level. Furthermore, the absence of a pre-defined regulatory framework has proven troubling as has the (subsequent) post-award negotiations and renegotiations. Beyond setting poor precedents for future concessions, these renegotiations have lacked transparency and have also reduced private sector risk. At the same time, the poorly defined regulatory structure may expose concessionaires to future political and institutional risk, particularly in view of the government changes in early 2002. The lack of a strategic planning approach and a unified regulatory agency for concessions in the metropolitan area may seriously hamper future efforts for integrated transport system development.

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

Case No.1 - *Acceso Norte de Buenos Aires* - The Northern Access -

Original Status

The project is a concession of the International Panamerican Highway in the section going north to the city of Buenos Aires and the 25 kms. detour of the General Paz Avenue. At the time of the concession, the four lane freeway (in some sections it has 6 and even 10 traffic lanes) was in poor condition and dangerous, and had constant traffic jams. The side service roads were interrupted.

The Concession Project

Through Decree of Executive Branch No. 1167/94, published in the Official Bulletin of July 19, 1994, the public works toll concession for the Northern Access Highway was awarded. On August 8, 1994, the Concessionaire took possession of the concession.

The concession embraces the execution of works of construction, remodeling, improvements, repair and enlargement of the Northern Access Highway and General Paz Beltway. The main works comprised in the "First Stage" (before the toll collection is implemented) and "Second Stage" are detailed below. Through Resolution No. 810 of the Ministry of Economy and Public Works and Utilities dated June 21, 1996 the execution of additional works during the "First Stage" was approved and the acceleration of the "Second Stage" works was agreed.

Works on "First Stage"

These works included paving roads, construction of lanes, frontage streets, bridges, footbridges, etc, in the General Paz Beltway and the Northern Access Highway.

Works on "Second Stage"

These works included paving roads, construction of lanes, frontage streets, bridges, footbridges, etc., such as:

- ✓ Repavement of all sections.
- ✓ Branches Tigre, Pilar and Campana (construction of frontage collectors, footbridges, execution of external road sides and third lanes for the Pilar and Campana branches).
- ✓ Construction of interchange General Paz Beltway with Western Access Highway.
- ✓ General Paz Beltway (roadway enlargement, construction of bridges and footbridges, lighting, etc.).
- ✓ Construction of the Multilane Avenue (ex-AU3).
- ✓ Extension of Route No. 197 and Rolón Avenue.

- ✓ Lighting Pilar.
- ✓ Construction of twenty footbridges.
- ✓ Intelligent Highway.
- ✓ Fifth lane between junction Márquez Avenue and Route No. 202.
- ✓ Works on links to the area under concession.

The works must be executed in two stages: the initial operating stage (from September 1, 1996 to December 31, 2000) and the final operating stage.

Likewise, through Resolution No. 861 of that Ministry dated July 5, 1996 and by virtue of the verification carried out by the Organo de Control de Concesiones Viales - O.C.CO.VI. (Ex O.C.R.A.B.A.)- (Highway Concession Administration) that the works of the "First Stage" were in compliance with the clauses of the contract, toll collection was authorized after gradual test opening of toll booths from July 6 to August 31, 1996 and the operation term established in the agreement came into effect on September 1, 1996.

On December 22, 2000 the Government approved an additional amendment to the Concession Contract through the issue of Decree No. 1221/2000.

According to this amendment, Autopistas del Sol S.A. is committed to: a) perform new investments not planned in the Concession Contract and bring forward the execution of other planned work, b) eliminate and/or postpone for an agreed term tariff adjustments on the basis of U.S. consumer price indexes and c) modify the tariff treatment regarding distances and routes of certain types of vehicle. The concession contract is to be renegotiated in its entirety.

Furthermore, Autopistas del Sol S.A. obtained an extension in the term of the concession until December 31, 2020, replacing the previous expiration date which was August 31, 2016 (extendable for 12 months at the option of the Government) and the incorporation of additional tariff charges for specified periods.

ARGENTINE ECONOMIC SITUATION AND ITS IMPACT ON THE CONCESSIONAIRE'S ECONOMIC AND FINANCIAL POSITION

During December 2001, the continuous run on deposits with the financial system and the loss of reserves by the Argentine Central Bank forced the Argentine authorities to implement strict monetary and exchange control measures restricting the free

availability on the part of the public of their funds deposited with banking institutions, measures which affected consumption still further.

As a result of this economic crisis, at the end of December 2001, the elected president handed in his resignation and was succeeded by a provisional president appointed by both Houses of Congress, who resigned a few days after he took office. A new president, Dr. Eduardo Duhalde, was appointed by Congress on January 1, 2002, with a term of office until December 2003. In order to overcome this deep crisis, the new president announced various economic, financial and exchange measures which involved profound changes to the economic model in force until December 31, 2001, one of the milestones of which is the repeal of the Convertibility Law in force since March 1991.

In this connection, on January 6, 2002, the National Congress enacted Law 25561 (on Public Emergency and Exchange System Reform) which empowers the National Executive Branch to approve monetary, financial and exchange measures conducive to overcoming the crisis in the medium term.

On February 3, 2002, the Government announced new economic measures though Decree 214 (Restructuring of the financial system) and Decree 260 (Exchange Regime) issued on February 8, 2002, substantially modifying some of the measures implemented by the Public Emergency Law. These decrees are being complemented by other regulations being issued by the various control agencies, some of which may have been pending at the date on which these financial statements were prepared.

Listed below are some of the measures adopted by the Government that have a direct on the Concession contract and in the concessionaire's economic and financial situation.

Exchange system

On January 6, 2002 a new exchange system was established that created an official and a free exchange market. In principle, export activities, import of goods and certain financial activities that had first been subject to rescheduling to extend the original due dates were to be carried out on the official market. The remaining transactions relating to remittance or collection of foreign currency to or from abroad would be carried out on the free market. The initial exchange rate set for the official market was $ 1.40 per US$ 1. Quotations on the free market will be the outcome of the free floating of the peso. On January 11, 2002 when the exchange market was opened, Banco de la Nación

Argentina published the first quotation for the free market at $ 1.6 per US$ 1 (selling rate) and $ 1.4 per US$ 1 (buying rate). On February 8, 2002 the Government issued Decree 260 (Exchange Regime) establishing a single free exchange market system as from February 11, 2002, through which all transactions involving the exchange of currency are to be traded at a rate of exchange to be freely agreed, observing the requirements to be laid down by the Argentine Central Bank. At present certain transfers abroad of a financial nature require the prior approval of the Central Bank. The loss resulting from the application of the new rate of exchange to the net position of foreign currency assets and liabilities at the date of enactment of the law will be deductible for income tax purposes over the next five fiscal years at an annual rate of 20%.

Deposits placed with financial institutions

Under the terms of Decree 214, as from February 3, 2002 deposits in U.S. dollars or other foreign currencies in financial institutions will be converted to pesos at the exchange rate of $ 1.4 per US$ 1 or its equivalent in such other currency. Furthermore, there are restrictions on the availability of certain balances in current accounts and savings accounts in dollars and fixed term deposits in pesos or dollars, which will be returned to their owners in installments and the amounts and due dates will depend on the balances recorded. As from February 3, 2002 a reference stabilization index (CER) and an interest rate will be applied to these rescheduled deposits. In addition, the owners of these deposits can opt to receive up to US$ 30,000 in Government bonds denominated in U.S. dollars.

Credits and debts not related to the financial system

The obligation to pay sums denominated in dollars or other foreign currency that are not related to the financial system, whatever their origin or nature, were converted to pesos at the exchange rate of $ 1 to US$ 1 or its equivalent in such other foreign currency. A reference stabilization index is to be applied to these balances as from February 3, 2002. If application of this provision were to lead to the resulting value of the item, good or service being higher or lower at the time of payment, either of the parties can request a fair readjustment of the price. If no agreement is reached, the case will be submitted to the Courts.

Foreign currency debts with the financial system

Pursuant to Decree 214, debts in U.S. dollars or other foreign currencies in the financial system will be converted to pesos at the rate of exchange of $ 1 per US$ 1 or its equivalent in another currency. As from February 3, 2002 a reference stabilization index (CER) and an interest rate will be applied to these debts.

Contracts executed with the Public Administration

Adjustment clauses in dollars or other foreign currencies, indexing clauses based on price indexes in force in other countries or any other indexing mechanism included in contracts executed with the Public Administration, including public works and utility contracts, have been rendered null and avoid. Also, it was established that all such contracts were to be individually renegotiated, taking into account the profitability of enterprises, the impact of tariffs on the competitiveness of the economy, the quality of the services and the investment plans envisaged in the contracts.

Within this framework: a) on January 25, 2002, the Concessionaire made a presentation before the Highway Concession Control Authority stating the serious economic, financial and other losses derived from the amendments required to be made to the basic covenants of the Concession Contract by the above-mentioned Public Emergency Law, which affected the licensee, shareholders and creditors, b) it requested that the government authorities call for meetings to discuss the restatement of the contract, pursuant to the Public Emergency Law, c) on January 28, 2002, the Board of Directors of the Concessionaire resolved to create a group of advisors in order to start work on the revision of the Concession Contract and the restructuring of the obligations undertaken with third parties.

On February 12, 2002, Decree 293/2002 established a term of 120 days as from the issuance of this decree for presenting the contract renegotiations proposals.

Chapter III CHILE

3.1. COUNTRY BACKGROUND

3.1.1. Fact sheet

- ✓ POPULATION: 15.3m (2000)
- ✓ POPULATION GROWTH: 1.4% (1996-2000, av)
- ✓ LAND AREA: 756,626 sq km
- ✓ FISCAL YEAR: Starts January 1st
- ✓ CURRENCY (Peso (Ps)): Ps537.9:US$1 (2000, av); Ps676.47:US$1 (August 1st, 2001)
- ✓ GDP: Ps37.8trn (2000); US$70.2bn (2000, at market exchange rate)
- ✓ GDP GROWTH: 4.6% (1996-2000, av); 5.4% (2000)
- ✓ GDP PER HEAD: US$4,620 (2000, at market exchange rate); US$14,155 (2000, at PPP)
- ✓ INFLATION: 5.2% (1996-2000, av); 3.8% (2000, av)

3.1.2. Background

The 1980 constitution called for a referendum in December 1988 in which the military ruler, Augusto Pinochet, failed to obtain the majority that would have enabled him to remain in office for another eight years. A democratic presidential election was held in December 1989 when Patricio Aylwin, the candidate of the centre-left Concertación de Partidos por la Democracia (Concertacion) coalition was elected for four years. Concertacion's Eduardo Frei won a six-year term in December 1993 and on March 11th 2000 handed over power to a third consecutive Concertacion president, Ricardo Lagos, who had won the presidential election at the second round.

3.1.3. Political structure

The political system is presidential, with a bicameral legislature (Senate and Chamber of Deputies). The normal constitutional period for the presidency is six years. The judiciary is independent and monetary policy is in the hands of an autonomous central bank.

3.1.4. Policy issues

A high degree of consensus prevails about the need to maintain a liberal market economy and prudent fiscal and monetary policy. Differences in economic policy tend to be a matter of degree rather than substance, although the left is still inclined towards state intervention at a microeconomic level. The healthcare system has long needed substantial reform and the modernization of the education system is only just beginning. Both tasks are politically complex given the strength of the corporate interests involved. The most heated differences between left and right refer to the labour regime, taxes and some institutional arrangements such as the role and composition of the Consejo de Seguridad Nacional (Cosena, the National Security Council) and the electoral system.

3.1.5. Foreign trade

Chile's single import tariff rate was cut from 9% in 2000 to 8% at the start of 2001 and is scheduled to fall further, to 7% in 2002 and to 6% in 2003. The effective trade-weighted average tariff rate fell from 6.7% in April 2000 to 5.5% in April 2001 owing to the schedule of tariff preferences granted through Chile's bilateral trade accords with Bolivia, Canada, Colombia, Ecuador, Mexico, Peru and Venezuela, and its association agreement with members of the Mercado Comun del Sur (Mercosur, the southern customs union). This effective rate will continue to fall by about 1 percentage point per year until 2003. In 2000 exports totalled about US$18.2bn and imports reached US$16.7bn.

Major exports 2000	**% of total**
Copper	40.5
Fresh fruit	6.2
Salmon	5.1
Major imports 2000	**% of total**
Intermediate goods	60.8
Capital goods	20.5
Consumer goods	18.7
Leading markets 2000	**% of total**
US	17.3
Japan	13.8
UK	5.8
Brazil	5.3
China	5.3
Leading suppliers 2000	**% of total**
US	18.5

Argentina	15.9
Brazil	7.4
China	5.5
Japan	3.9

3.1.6. Taxation

Corporate income tax is 15% on declared profits. Locally incorporated foreign companies under the general tax regime pay 35% tax on distributed income minus the 15% corporate tax credit. Tax on dividends and interest payments to non-banks is charged at 35%. Royalties and fees transferred abroad are subject to a withholding tax of 20%. Value-added tax is levied at 18%.

3.2. ECONOMIC OVERVIEW

Chile is endowed with rich mineral resources relatively close to the sea, which have turned it into the world's leading copper and iodine producer, and a growing source of gold and non-metallic minerals. It abandoned import substitution in favour of free-market policies in the mid-1970s, more than a decade before the rest of Latin America. This unleashed competition and productivity growth and permitted an expansion of the traditional export industries, mostly mining and fishing. It also allowed the development of new sectors, such as cellulose, fruit, salmon, wines and methanol production, and a variety of services, including tourism. This strong and increasingly diversified export sector has been the main engine of growth over the past two decades.

Investment has been strong and of a high quality, but fell sharply in 1999 because of the recession. Gross capital investment in fixed assets reached 26% of GDP at current prices in 1998, falling to 21.9% in 1999 and recovering marginally to 22.3% in 2000. The domestic savings rate rose from 21.2% of GDP at current prices in 1998 to 21.8% in 1999 and 21.9% in 2000. The share of private consumption in GDP rose steadily in the 1990s to a peak of 69.1% in 1998, but it fell to 67.8% (about the same as in 1994) in 1999 and to 67.1% in 2000. Government consumption trended downwards to a low of 7.7% in 1998, rising marginally to 8% in 1999 and declining to 7.8% in 2000.

On the supply side, services are fairly modern and competitive and account for the bulk of GDP, with trade and catering at 16.8% of GDP in 2000, financial services at 13.6%, transport and communications at 9.3% and personal services (including health and education) at 5.7%. Chile is particularly strong in mining, which accounted for 10.1% of GDP in 2000. Agriculture and forestry accounted for 5.9% and fishing for 1.7%. Manufacturing's share of GDP has been on a downward trend, falling from 17% in 1993 to 14.5% in 2000.

Economic activity is heavily concentrated in the central region. The Santiago metropolitan region accounted for 37.4% of the population and 47.2% of GDP in 1998, and the Valparaiso region for 10.1% of the population and 9.3% of GDP. Centralizing trends appear to have stopped, as a result of the mining boom in the north and the economic dynamism achieved in the extreme south by salmon breeding, tourism and large-scale methanol production. Tourism and export agriculture are strong engines of growth in the centre-north, while forestry, tourism, fruit production and traditional agriculture are important to the centre-south regions.

The economy will slow dramatically in 2001-02 owing to global weakness and regional economic turbulence, but will recover by a robust 5% in 2003. Inflation is expected to stay within the Central Bank's target range in the forecast period. The external accounts will ease significantly in 2003 as export revenue accelerates on the back of recovering copper prices.

Main economic indicators, 2000	
Real GDP growth (%)	5.4
GDP per head (US$)	4,613(a)
Consumer price inflation (year-end; %)	4.5
Current-account balance (US$ m)	-989
Exports of goods fob (US$ m)	18,158
Imports of goods fob (US$ m)	16,722
Total external debt (US$ bn)	36.8(a)
Population (m)	15.3(a)
(a) EIU estimate.	
Sources: Banco Central de Chile.	

Comparative economic indicators, 2000			
	Chile	Argentina	Mexico
GDP (US$ bn)	70.2	276.9	560.9
GDP per head (US$)	4,613(a)	7,505(a)	5,761(a)
GDP per head (US$ at PPP)	14,144(a)	10,589(a)	10,159(a)
Consumer price inflation (av; %)	4.5	-0.9	9.5
Current-account balance (US$ bn)	-1.0	-9.2(a)	-17.7(a)
% of GDP	-1.4	-3.3(a)	-3.2(a)
Exports of goods fob (US$ bn)	18.2	26.4	166.4
Imports of goods fob (US$ bn)	-16.7	-23.8(a)	-174.4
External debt (US$ bn)	36.8(a)	152.9(a)	171.9(a)
Debt-service ratio, paid (%)	23.8(a)	81.2(a)	23.0(a)

3.3. OVERVIEW OF THE CONCESSION PROGRAMME

3.3.1. Introduction

Chile experienced rapid economic growth in the early nineties. Demand for basic infrastructure services grow as the economic expanded, exceeding the supply capacity of existing assets and creating a major deficit in transportation infrastructure.

The need to increase investment in infrastructure became evident. However, the required resource if they were to come from the public purse would naturally crowd out other public expenditure programmes, especially social welfare spending. Therefore, in the early 90's a policy decision was taken to introduce private capital in the transport infrastructure sector, covering roads and highways, bridges, tunnels and airports. The chosen mechanism was a concession scheme, whereby a private firm would finance and build a given project and then operate the infrastructure for a set number of years. The concessionaire would recover its investment by the collection of tolls from users.

The concession programme would thus alleviate the budgetary restrictions of the government, allowing more public resources to be devoted to social spending. However, introducing private capital in the infrastructure sector does not eliminate the need for government intervention. There is an important role for the State to design, monitor and regulate the contracts for the duration of the concessions. In Chile, these activities have been the responsibility of the Ministry of Public Works (MOP).

The Chilean experience is interesting for several reasons. First, for its size and scope; over 2,000 kilometres of roads have been concessioned for a value of US$3.3 billion. If airport projects are considered, the value of the total infrastructure concessioned is over US$3.6 billion. Furthermore, the programme will generate, in present value terms, net revenues amounting to between US$130 million to US$150 million for government coffers. These figures ignore, however, the potential liabilities assumed by the State in relation to the granting of minimum income guarantees.

The programme in Chile has been mostly successful. Although it is too early to know for sure, the projects that are already in service have not confronted any major obstacles in terms of traffic levels, construction delays, cost overruns or other problems. This is not to say that problems have not been encountered. In fact, government minimum income guarantees for low traffic levels have been triggered in the case of one concession. In other cases, conflicts have arisen regarding compensations for geological costs and expropriation delays, *ex-post* changes to projects, and excessive government demands for additional investments. The tendering of one recent concession failed to attract bidders. However, for the most part these problems have been successfully dealt with by the mechanisms established in the concession contracts and the concessions law, and have not stalled nor compromised the concession programme as a whole.

Even in early 1999, in spite of the international financial turmoil, one consortium was able to place dollar denominated bonds in the North American market for a nominal value of US$213 million. Also, in 1999, another company issued peso inflation linked bonds equivalent to US$150 in the domestic pensions fund market. These figures imply that the programme still generates confidence among investors.

Part of this success may be due to the stable macroeconomic situation of the last few years. However, it is fair to say that part of the success of the programme is also due to its design and implementation which, it may be added, benefited from the lessons learned from Mexico and other international experiences.

Third, the programme has been the motivation and testing ground for some interesting innovations in tendering mechanisms used to award projects.

3.3.2. Legal Framework

Article 52 of Law 15840 of 1964, as amended by Law 19474 of 1996, and DFL 206 of 1960, as amended by DS MOP 294 of 1984, provide legal authority for the contracting and concessions activities of the Ministry of Public Works as expressed most recently in Article 87 of DFL MOP 850 of December 1997.

The legislation and decrees authorize the ministry to award public works contracts by national and international competitive bidding, including temporary concessions for development, operation, and maintenance of public works. They also set the duration of such concessions, which are not to exceed 50 years.

DFL MOP 591 of 1982, amended by DS MOP 217 of 1983 and summarized in DFL 164 of 1991, "Normas relativas a la ejecución, reparación, conservación y explotación de obras públicas fiscales por el sistema de concesión," and in DS MOP 900 of 1996, sets general standards for the execution, operation, and maintenance of public works, as well as for bids for public works contracts under Law 15,840 of 1964 and DFL 206 of 1960.

DS MOP 240 of 1991, "Reglamento de la ley de concesiones," provides norms for the implementation of Law 19252 of 1993 amends DFL 164 of 1991.

Law 19460 of 1996, "Modificaciones a la ley de concesiones contenidas en el DFL 164 de 1991," amends DFL 164 of 1991 (concessions), Decree 824 of 1974 (income), Decree 825 of 1974 (VAT), Article 84 of DFL 252 of 1960, and the general banking law.

DS MOP 956 of 1997, "Reglamento de las normas relativas a la ejecución, reparación o conservación de obras públicas fiscales por el sistema de concesión," sets standards for the execution, operation, and maintenance of public works under the concession scheme established in Article 87 of DS MOP 294 of 1984 and in DFL 164, as amended by Law 19252 of 1993 (specifies some process rules for ensuring concession conditions to private investor) and Law 19460 of 1996.

Unlike other countries, in Chile, alternative freeways are not required for toll roads to be built and -for the most part- existing projects do not have convenient free alternative

routes. Many of the concession projects have been extensions and improvements to currently tolled roads and in certain cases a decrease in the level of tolls too. In the case of previously un-tolled roads, users can compare the new charges with the traditional tolled public roads. These reasons may explain in part why public opposition to a private toll road programme without freeway alternatives has been minimal in Chile.

That is not to say that there have been no legal challenges to the policy. The legal arguments are based on two rights guaranteed by the Constitution: the right to free movement within the national territory and the right to the use of private property. The first right may be considered violated when there is a tolled route without free alternatives. The second right may be limited when the only access to a certain property is by means of a toll road.

In this respect, it is interesting to examine the results of a legal report from March 1994[12], the generality of the arguments make them relevant to other countries.

Regarding the principle of free transit, the report asserts that a toll only affects the cost, not the liberty to exercise the right to movement within the national territory. A fare or toll, as such, is only one component of the total cost of transport in motorized vehicles, just as fuel taxes or licences would be (to mention other costs of which the State is the beneficiary). The Constitution does not assure the right to gratuitously exercise the rights that are guaranteed. Therefore, no conflict was found between the right to free movement and the establishment of tolls without free alternatives.

In addition, it is not clear that a toll to fund a better, faster and safer road increases the overall cost of a trip. Savings in time, maintenance and accidents may well compensate for the extra costs imposed by the charge.

Regarding property rights, the Constitution also states that the law can establish limitations and obligations on property rights when this is in the general interests of the nation, national security, public health or the environment. Thus, a toll can be interpreted as an obligation allowed for by law, which affects those who travel by road, for the general interest and collective social good of having an appropriate road infrastructure.

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[12] Judicial Report by Attorney Monica Madarriaga, commissioned by MOP

3.3.3. Concessioning Process

The main privatization program introduced in Chile during the *Concertacion* administrations was the franchising of highways. Traditionally, roads have been viewed as public goods to be provided by the state. But it was evident by the time the *Concertacion* took office that highway construction in Chile had not kept pace with overall economic growth, and that existing roads had become patently deficient: many were too small and very congested, and their overall quality was low.

For instance, between 1980 and 1994 the stock of motor vehicles doubled, while the rate at which roads were being paved decreased from 350 kilometres per year between 1955 and 1970 period to only 150 kilometres per year during the following two decades. Between 1986 and 1993 the kilometres of paved (concrete and asphalt) roads grew by 25.8%, well below demand growth. Furthermore, 45% of paved roads were in "regular" or "poor" conditions in 1993. It is therefore not surprising that average traffic speeds decreased substantially over the last decades. The average speed of a vehicle in Santiago decreased from 37.4 km/hr in 1977 to 24.6 km/hr in 1991.

In order to overcome this deficit in transportation infrastructure, since 1993, the Chilean government began divesting Chile's main highways, which are now built, financed and operated by private firms. In exchange, these firms have the right to collect tolls for a limited term, typically between 20 and 30 years.

3.3.3.1 Tendering procedures

There are several stages in the tendering process. First, the project must be defined. Prior to 1994, projects were tendered without full engineering studies and technical designs. Bidders were required to undertake these studies as part of their technical proposals. This approach has the virtue of speeding government delays over the preparation of studies not holding back the concession programme and may create an opportunity for private firms to be innovative in designs and technical solutions. However, it has the drawback that bidders must invest a considerable amount of resources in preparing their bids. Besides the social waste created by the duplication of studies, the high cost involved reduces the number of firms that participate in each tendering process.

Furthermore, it has now become evident that tendering projects without thorough preparation is an invitation to future conflicts, both with the concessionaire as well as the affected community. Many additional investments and design changes have been required in these earlier projects as a result of insufficient design preparation and lack of consultation.

In an effort to induce more competition and reduce the probability of upcoming conflicts, since 1994 each concession has been tendered with detailed design and engineering studies. Besides reducing the ambiguities related to the project definition, these studies allow MOP to estimate the investment, maintenance and operation costs of the project. The resulting 'Official Cost Estimate' is included in the bidding documents and is a crucial parameter for determining several variables of the contract. However, it must be emphasised that the real cost of the project is borne by the concessionaire and may well differ from this official estimate. Except for expropriation delays and in the case of a tunnel concession geological risk, the concessionaire bears the full construction cost risk.

Projects can also be proposed by the private sector. An interested party can present the relevant studies to MOP, who then evaluates the social convenience of the project. If the Ministry agrees to tender a concession, the firm that originated the project is given an advantage in the bid evaluation stage. Alternatively, MOP may compensate the firm for the costs of the studies undertaken. To date, one concession, the access road to Santiago's international airport, was an idea originally formulated by the private sector.

Once the project is defined, a pre-qualifying round for bidders is held to screen for financial and technical capacity. The authorities actively encourage the participation of foreign as well as domestic firms. Tenders are then requested from pre-qualified firms.

Tenders must include a technical as well as an economic bid. Technical Bids are opened first and evaluated by the Technical Bid Evaluation Commission. This commission disqualifies those bids not satisfying the minimum technical requirements established in the tendering documents. After the Evaluation Commission announces the results of the technical round, it opens the Economic Bids of those firms that were successful in passing the technical stage. The concession is awarded to the bidder who tenders the most

advantageous Economic Offer, in accordance with criteria set forth in the tender documents.

The winning consortium must form a company whose sole purpose is to construct and operate the concession. This company can only operate one concession, and its exclusive economic activity must be the concession. If a consortium wins more than one project, it must create several concession companies. As will be seen further below, isolating the concession firm in this way can be useful to avoid certain problems that can sometimes plague the bidding process for a franchise. It is also a pre-requisite for project finance or security purposes.

There are restrictions on the capital structure of the concession companies. Sponsors (the members of the consortium) must provide for the equity capital of the concession company for an amount equal to at least 30% of the estimated official cost of the project. The rest can be credits provided by domestic as well as international financial institutions.

On average, the duration of the initial design and awarding stage has been 16 months (Coordinación General de Concesiones, 1998).

3.3.3.2 Tendering variables and Mechanisms

The potential variables that determine the Economic Offer, which are used to award the concession, can be any one or combination of the following variables:

- ✓ Tariff level;
- ✓ Subsidy required from the State;
- ✓ Duration of the concession;
- ✓ Income guarantee requested from the State;
- ✓ Revenue offered to the State for existing infrastructure;
- ✓ Total income from the concession;
- ✓ Degree of risk commitment that the bidder assumes during the construction stage;
- ✓ Quality of the technical offer;
- ✓ Revenues offered to the State, or reductions in tariffs offered to users, when the profits of the concessionaire reach a pre-established level;

The first concession to be tendered (El Melon Tunnel) was awarded using a weighted average of seven variables, including the toll level and payments offered to the State. In

the end, these last two variables were the crucial factors in determining the outcome of the bidding process. The winning consortium offered a high toll level (set at the upper bound of the allowed range) and a high payment to the government. With hindsight, there is little doubt that this tendering mechanism was not appropriate. Besides the complexity of this scheme, the resulting high tolls generated an important traffic diversion to the free alternative road over the mountain where the tunnel was situated. This served to lower the revenues of the concessionaire and resulted in an inefficient allocation of traffic between the tunnel and the mountain road.

The concessionaire has subsequently lowered tolls in order to increase traffic through the tunnel. However, to date, traffic allocation is still inefficient and negotiations are currently underway to reduce payments to the State in exchange for even lower tolls.

After the El Melon Tunnel, the tendering mechanism for subsequent concessions was changed. It is now based on a scheme whereby bidders first compete based on the lowest toll offered. However, tolls are restricted to within a band set by MOP. This band is set with reference to the possible impacts of toll levels on traffic diversion, the economy of the project and -in the case of the main Pan American highway (Route 5) concession- the level of tolls in adjacent concession segments.

Ties at the floor or ceiling of the allowed band are resolved based on a second variable. In some early cases, this second variable was the length of the concession. The advantage of this scheme is that it gives MOP more control to set tolls. Therefore, potential inefficient traffic diversions associated with high levels of this variable are avoided. Conversely, low toll levels may also be undesirable if there are congestion problems on the highway.

As the programme continued, the authorities became concerned about the financial viability of firms that bid too low (that is the minimum tariff and a short concession period). Calculations by MOP showed that the winning bids in several concessions implied a high risk of future financial instability for the franchise holder.

There are several reasons why firms may pursue such an apparent loss-making strategy. First, when several projects are going to be concessioned, firms may be interested in

giving a signal of low cost or aggressive behaviour to other bidders in order to discourage some competitors from participating in future contests.

Second, when construction firms are the principal consortium partner, the chief interest in the project may derive from the ensuing construction contracts rather than the subsequent operation of the concession. In this context, they may bid below costs in order to secure the construction contracts, disregarding the long-term financial viability of the concession, possibly because they can later pass on these costs to other consortium partner or creditors.

Third, firms may behave opportunistically. They bid low, and once they win the franchise, pressure the regulator to renegotiate the conditions of the contract. This strategy would not work if the government could commit to not renegotiate later. However, this is nearly impossible for governments to do. If the concession runs into financial problems in the future due, for example, to low revenue flows, the government will find it difficult to let the concession fail. There are political problems associated with this event, and there are also the costs and delays in re-tendering the project. Therefore, bidding low and renegotiating afterwards may be a viable strategy for a potential concessionaire (a phenomenon called "low balling").

Finally, one cannot rule out optimization mistakes on the part of bidders, possibly related to uncertainty (winner's curse), or the complexity of tendering mechanisms. As a reaction to the low bidding problem, MOP changed the tendering mechanism slightly, starting with the Route 5 Temuco-Rio Bueno project. This change may prove to be an effective method of avoiding the negative effects of unrealistic bids. The method works as follows: The toll band is set as before. The floor of the ban is set sufficiently high to guarantee a certain revenue stream to the concessionaire. In addition, the duration of the contract is also fixed in the tendering documents.

Recalling that the concession company is a single-purpose firm that has to be capitalized by the sponsoring firms, setting this minimum toll level and the duration of the contract effectively puts a floor on the expected earnings of the company. Therefore, the risk of future financial distress for the concession firms that would force the government to renegotiate the contract is minimised.

If two or more firms bid the minimum value, the winner is chosen as the consortium of sponsors that offers the highest transfer directly to the government. Because this transfer does not affect the income or capital structure of the concession firm, sponsors can bid as much as they like without jeopardising the financial stability of the concession. If investors make a mistake and bid too much, the consequent loss will show up in the sponsor's financial returns, not the concession company.

This transfer mechanism from sponsors has served to generate close to US$150 million in the 4 concessions where it has been used. The proceeds are deposited in an Infrastructure fund which is then used to cross-subsidise other projects or pay for minimum income guarantees.

Finally, two projects (one unsuccessfully) have been tendered using a Least Present Value of Revenue mechanism (LPVR). With this mechanism the bidding variable-instead of toll levels or some other conventional variable-is the present value of revenue throughout the life of the concession that firms are willing to accept to undertake the project. This present value of total revenues uses a discount rate fixed in the bidding documents[13]. The firm that bids the lowest present value of revenue wins. The duration of the concession is then flexible and depends on the effective traffic levels encountered.

Once the concessionaire has received-in present value terms-the amount that he bid, the concession ends and the infrastructure reverts to public ownership. If real traffic levels are lower than expected, the duration of the concession is extended automatically, while if traffic is higher than expected the opposite occurs. Therefore, income uncertainty due to traffic variations is to a large extent eliminated for the concessionaire.

Besides reducing income uncertainty, the LPVR auction has other advantages. It reduces the problems and potential conflicts related to the early termination of a concession. In a thirty year contract, it is difficult to predict what will happen far into the future. In many cases, excessive traffic growth or other events call for an expansion of the original project. In spite of the special provision for these events included in some contracts, it would be optimal to cancel the original contract and re-tender the concession with the extended projects, rather than negotiate the additional investments with the existing

[13] The discount rate should be a good estimate of the cost of funds faced by franchise holders and could be variable (such as LIBOR plus some fixed risk premium).

concessionaire. However, the difficulty lies in calculating the compensation that must be given to the concessionaire in order to terminate the contract.

The forgone future income stream must be estimated, giving rise to potentially contentious and protracted conflicts and legal battles. The LPVR auction reduces this problem substantially by just giving the concessionaire the difference between what he originally bid and what he has earned already. This may increase the credibility of a government threat to terminate the contract if the concessionaire attempts to opportunistically renegotiate the contract, thereby reducing the potential problems related to "low balling."

More generally, the LPVR auction generates a public signal of the value that the concessionaire places on the contract. This facilitates the monitoring by third parties of *ex-post* negotiations and possible compensations to the concessionaire, making the process more accountable and transparent.

Another important characteristic of the LPVR mechanism is that tolls can be adjusted without having to negotiate new terms with the concessionaire. If tolls are deemed too high or low, the authorities could change them without affecting the concessionaire's expected income stream and without engaging in a potentially protracted negotiation process.

The LPVR mechanism also has its drawbacks. It may lower the incentive of concessionaires to make demand enhancing investments, such as quality improvements. The increase in demand from these expenditures results in an earlier termination for the contract, with little benefit to the concessionaire. However, there are other remedies for this problem (see Tirole (1997)). Perhaps a more important difficulty is that the LPVR auction does not resolve possible cash flow problems that a concessionaire may face when traffic levels drops.

3.3.3.3. Construction and operation stage

Once the project has been awarded and the relevant documents signed and formalised, the construction stage begins. The concessionaire must post a guarantee

bond at the beginning of this stage, which the government can make effective if the conditions of the contract are not met. The value of the initial bond is set in the tendering document, but usually varies between 2%-5% of the official cost estimate for each project. Once a significant amount of the construction has been undertaken (usually 40%), the value of the guarantee bond is lowered.

Right of way acquisitions are paid for by the concessionaire. The estimated value of these acquisitions is set in the bidding documents. Delays and cost over-run risks are borne by the State. The concessionaire is compensated for delays by a matching extension in the duration of the concession. There is also a compensation for the extra construction costs borne by the concessionaire as a result of delays in land expropriations (idle machinery, fixed costs, etc.). If right of way acquisitions turn out to be more expensive than originally planned, the State must provide the extra resources.

Right of way acquisition delays and cost over-runs have been the norm in the Chilean (as well as most other) concession programmes. Some practical difficulties have also been encountered in estimating the fair compensation that should be given to the concessionaire for the added construction costs due to these delays.

Once the infrastructure is in operation, the concessionaire must replace the construction guarantee bond with an operation guarantee bond, which must be valid (or periodically renewed) until one year after the concession ends. The value of the operational guarantee is in the same range as the construction guarantee.

Besides these guarantees, the concessionaire is subject to numerous other penalties and fines including the possible termination of the concession for failures to meet the safety, operational and quality standards set in the contract. A list of the faults that the concessionaire may incur and the corresponding financial penalties are set out in the bidding documents.

3.3.3.4 Toll indexing and safety premium

Tolls are differentiated by type of vehicle. The concessionaire is free to lower tolls provided that he does not price discriminate against users in the same category. The categories are:

- ✓ Motorcycles;
- ✓ Cars, vans and pick-up trucks;
- ✓ Cars, vans and pick-up trucks with attachments;
- ✓ 2 axle buses;
- ✓ 2 axle trucks;
- ✓ Buses with more than 2 axles; trucks with more than 2 axles.

Tolls are correspondingly higher for vehicles with 2 or more axles. Two axle vehicles pay a maximum of 1.8 times the normal car toll, while larger vehicles pay 3.2 times. Under certain conditions, namely when traffic diversion is not a problem, this charging structure is appropriate for an efficient pricing structure since it is known that the deterioration of a highway is exponentially related to axle weight[14]. However, differentiating tolls by vehicle type may increase tolling costs for the operator.

Tolls are adjusted yearly for inflation or when accumulated monthly inflation surpasses a pre-established level, usually 15%. There is also a premium tariff increase for the concessionaire when road safety improves. Many concessions also have a peak pricing mechanism whereby tariffs are raised during peak demand periods.

3.3.3.5 Duration of the concession

The concession period varies from project to project. Some -in particular the airport infrastructure concessions- can be as short as 10 to 12 years (including the construction stage). The usual duration of the major highway concessions is 22 to 25 years, with the longest being 28 years (including the construction stage).

Not all concessions have a fixed period duration. In early 1998 the Santiago-Valparaíso-Viña del Mar inter-city highway project (Route 68) was tendered using the Least Present Value of Revenue auction. The bidder who offered the lowest revenue (in present value terms) in exchange for constructing, operating and maintaining the infrastructure won the competition. Initial tariffs were set in the contract and can later be modified by the

[14] This is based on the research of the American Association of State Highway Officials (AASHO)

government. The concession will terminate when enough traffic has used the infrastructure so that the concessionaire has received the revenue presented in his Economic Offer. Therefore, the exact month when the concession will end is uncertain[15]. Furthermore, the government has the option, after 12 years, of terminating the concession early and compensating the concessionaire according to a pre-established formula.

Another concession was recently tendered using the Least Present Value of Revenue mechanism (Costanera Norte). Unfortunately, only one bid was received for this project and it did not meet the conditions stipulated in the bidding documents. Consequently, this project was not awarded. In spite of this setback, it is probable that in the future, more projects will be tendered using this mechanism, so an increasing proportion of the concessions in Chile will be of variable length.

At the end of the concession period, the infrastructure reverts to public operation. An important issue arises at this stage with respect to the quality of the infrastructure. Although the operator has the obligation to maintain the infrastructure in good quality for the duration of the concession period, it is natural that towards the end of the concession the incentives for such additional expenditures and investments are dulled. Therefore, safeguards must be put in place in the contract in order to guarantee that the infrastructure will revert to the State in good condition.

In Chile this safeguard consists of an additional bond posted two years before the concession ends (that must be valid for at least three years). The value of this bond is similar to, and additional, to the operation stage bond already posted. Furthermore, at least one year before the concession ends, the Fiscal Inspector (the government's representative who monitors and oversee the concession) conducts an audit. He then presents the concessionaire with a list of maintenance and repair work that needs to be undertaken in order for the infrastructure to revert to public operation in the conditions established in the contract.

The concessionaire recovers his investment primarily through the income provided by tolls to users. However, as already mentioned, in some concessions these tolls are insufficient to cover the required investment and are complemented by direct subsidies from the

[15] However, there is a maximum limit of 25 years to the concession.

State. In other cases, toll income more than suffices to finance the project and the concessionaire must make a payment to the State. When applicable, the amounts of these transfers are set before the bidding stage.

3.3.4. **The concessions program to date** (See Figure No. 3.1)

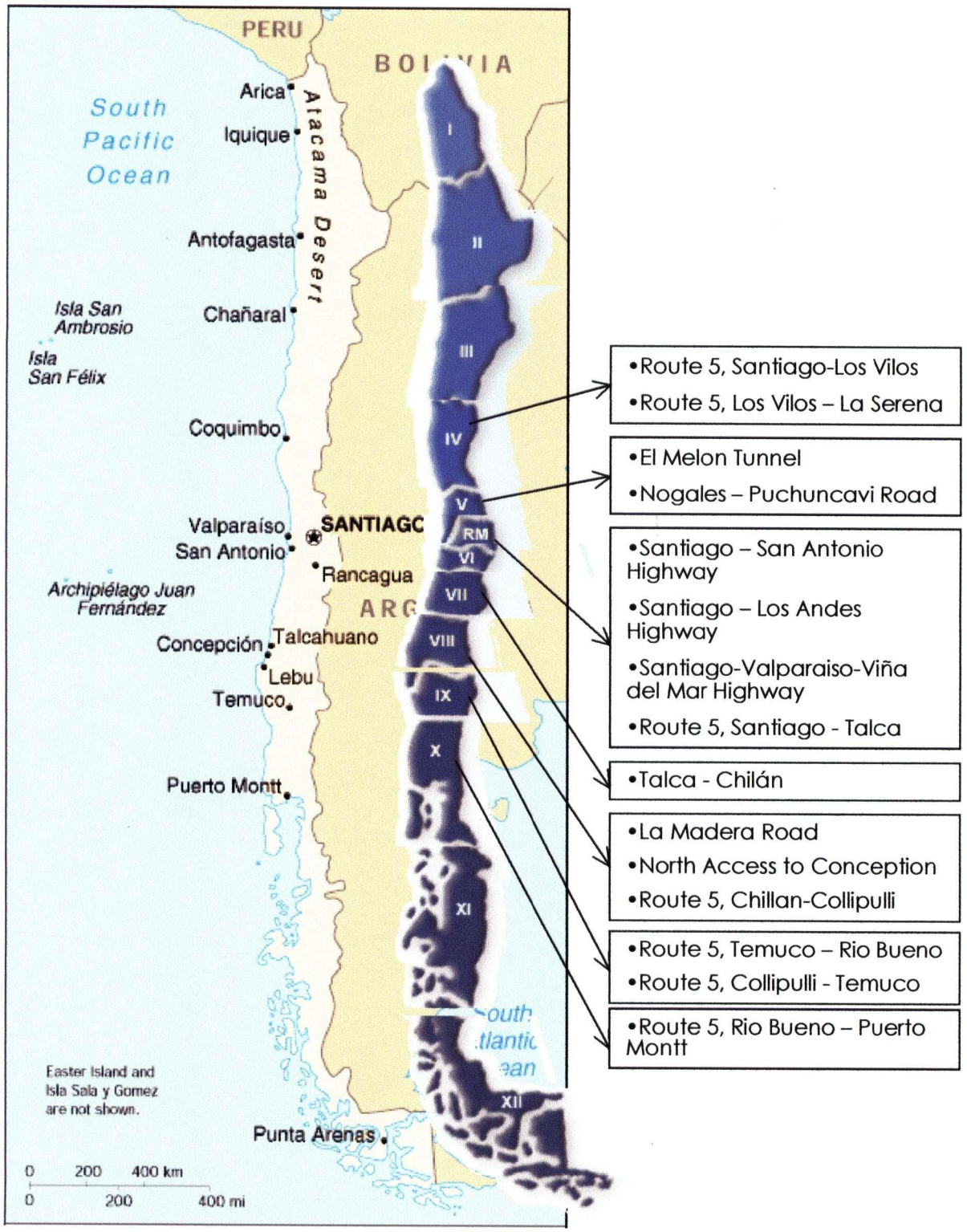
The volume of the concession programme, in terms of investment volumes and kilometres of road, has been the different segments of the main north-south Pan American highway, Route 5 (see Table 3.1.). Of the 2,052 kilometres awarded so far, 75% corresponds to the Route 5 projects. In value, these projects account for 70% of the total volume to be invested.

As can be seen from Table 3.1., only one concession has a variable duration. As mentioned earlier, the Santiago-Valparaíso-Viña del Mar highway is the only project to have been tendered successfully using the Least Present Value of Revenue method. The last segment of the Route 5 highway, Santiago-Talca, was tendered after the Santiago-Valaparaíso-Viña del Mar highway. However, MOP used a fixed period concession mechanism to award this project.

Table 3.2. shows some economic parameters of each concession. Average tolls per kilometre vary between US$0.02 to US$0.03 for Route 5 projects. Other road projects are shorter and generally have a higher toll per kilometre. It can also be seen that the government has used transfers and subsidies extensively. This was necessary in order to produce reasonable and consistent toll rates across concessions. Also, as mentioned earlier, in the most recent concessions, when two or more companies offered the same minimum toll, ties were resolved according to the highest payment offered to the State. In many cases, ties did occur and therefore there are several concessions that were awarded according to this rule. These transfers are paid (by sponsors, not the concession firm) the first year of full operation of the infrastructure and constitute an extra one-time payment to the State, which is then deposited in an Infrastructure Fund.

The aggregate net transfers from the above subsidies and payments are favourable to the State. For example, if one considers only the payments implied by the data in Table 3.2., the net present value (at a 12% discount rate) is close to US$130 million. Furthermore, if one considers the perpetual income and payments from the periodic re-tendering of

Figure No. 3.1 – Road Concessions in Chile



the concessions, then the net present value increases to US$150 million. In this sense, the programme has had a favourable impact on the fiscal balance sheet.

Table 3.1. : Projects Awarded,1992-1998						
Sector	**Project**	**Investment (US$millions)**	**Length (km)**	**Year concession awarded**	**Year expected to be in partial or full operation**	**Duration (years)**
Inter-city	El Melon Tunnel	42	6	1992	In operation	23
	La Madera Road	34	110	1994	In operation	25
	North Access to Concepción	230	89	1994	In operation	28
	Santiago-San Antonio Highway	140	104	1995	In operation	23
	Nogales-Puchuncaví Road	12	27	1995	In operation	22
	Route 5, Talca-Chillán	183	192	1995	In operation	10
	Route 5, Santiago-Los Vilos	272	218	1996	In operation	23
	Santiago-Los Andes Highway	146	96	1996	In operation	28
	Route 5, Los Vilos-La Serena	265	228	1996	In operation	25
	Route 5, Chillán-Collipulli	224	160	1997	In operation	22
	Route 5, Temuco-Rio Bueno	203	172	1997	In operation	25
	Route 5, Rio Bueno-Puerto Montt	210	136	1997	In operation	25
	Route 5, Collipulli-Temuco	241	163	1997	2002	25
	Santiago-Valparaíso-Viña del Mar Highway	400	130	1998	2002	Variable length
	Route 5, Santiago-Talca	750	266	1998	2002	25
	Total	**3352**	**2052**			
Urban	Access to AMB airport	13	2.2	1995	In operation	12
	Total	**13**	**2.2**			
Airports	Diego Aracena, Iquique	6		1996	In operation	12
	El Tepual, Puerto Montt	6		1996	In operation	12
	La Florida, La Serena	3		1997	In operation	10
	El Loa, Calama	3		1997	In operation	12
	AMB, Santiago	220		1997	In operation	15
	Carriel Sur, Concepcion	20		1998	In operation	16
	Total	**258**				
	TOTAL	**3610**	**2054**			

Source: *MOP*

Table 3.2.: Project tolls and other relevant parameters, 1992-1998						
Sector	**Project**	**Estimated average daily traffic 1996** (veh/day)	**Tolls for cars (US$ at tolls and exchange rate of 12/96)**	**Tolls per km. (US¢/km)**	**Transfers to the State (US$ millions) (a)**	**Subsidies from the State (US$millions) (b)**
Inter-city	El Melon Tunnel	6300	8.37	119.52	4.36 per year	
	La Madera Road	1200	4.98	4.15		5.23 total
	North Access to Concepción	3000	4.77	6.35		
	Santiago-San Antonio Highway	6000	2.21	2.13	20 payments of 6.13	
	Nogales-Puchuncaví Road	1000	1.49	5.52		
	Route 5, Talca-Chillán	9000	2.41	2.49	12.45*(1.05)(T-4)	
	Route 5, Santiago-Los Vilos	9200	2.74	2.58	10.90 (T=4) 9.34*(1.05)(T-4) (T>4)	
	Santiago-Los Andes Highway	5200	3.56	4.95	0.62*(1.05)(T-6)	
	Route 5, Los Vilos-La Serena	2500	3.12	2.73		10.90*(1.05)(T-5)
	Route 5, Chillán-Collipulli	5900	2.74	3.18		4.67*(1.05)(T-5)
	Route 5, Temuco-Rio Bueno (c)	3500	2.74	2.75	2.01 (T=5)	7.78*(1.05) (T-5)
	Route 5, Rio Bueno-Puerto Montt (c)	5800	2.74	2.28	8.14 (T=5)	9.34*(1.05) (T-5)
	Route 5, Collipulli-Temuco (d)	5700	2.74	2.89	18.22 (T=5) 3.11*(1.05)(T-5)	
	Santiago-Valparaíso-Viña del Mar	12600	4.27	3.89		
	Highway					
	Route 5, Santiago-Talca (d)	18000	2.73	2.87	124.5 (T=5)	
					10.9*(1.05)(T-5)	
Urban	Access to AMB airport	11700	0.5	29.13		
Airports	Diego Aracena, Iquique	1070	3.41			
	El Tepual, Puerto Montt	1006	6.05			
	La Florida, La Serena	1478	3.13			
	El Loa, Calama	2650	5.62			
	AMB, Santiago	600	1.44 (e)			
	Carriel Sur, Concepcion	3500	7.42 (f)			

Source: MOP

a. The 'T' in some of the transfer/subsidy formulas stands for the concession year. The transfers in this column include those contained in the original tendering documents as part of the profitability enhancement of the concession as originally designed by MOP plus transfers as a result of the bidding competition.
b. The 'T' in some of the transfer/subsidy formulas stands for the concession year.
c. In this concession, subsidies were included in the bidding documents. However, because several firms presented an offer at the minimum toll level, the contract was awarded to the company whose sponsors offered the highest payment to the State. Therefore, this company has subsidies and transfers. However, the subsidies accrue to the concession company, while the transfers must be paid by sponsors directly.
d. In this case there were transfers to the government already built-in to the original design. In addition, the concession was awarded to the company whose sponsors offered the highest payment to the State.
e. Toll at 30/6/97.
f. Toll at 31/8/98

There has been over US$250 million in foreign equity investment related to the programme. Most of this foreign investment has come from Spain and Mexico and most of the successful companies have been Chilean, with the exception of several Spanish and Mexican firms and-in the case of the latest concession tendered-a Brazilian firm. One Canadian firm is also part of the consortium that was recently awarded the AMB Airport concession.

Other international firms that have been involved in one of the unsuccessful bidding consortiums include: Fluor Daniels of the USA, Dragados, FCC, Cubiertas y Entrecanales from Spain, ICA, GMD from Mexico, Transroute, GTM, and Bouygues from France, Strirling from the United Kingdom, and Bilfinger Berger and De Zublin from Germany.

3.3.5. Renegotiations [16]

The international experience shows that fixed-terms contracts are usually renegotiated when concessionaries run into unexpected circumstances or financial trouble. Therefore, a concession contract must be a equilibrium between being credible and flexible, by allowing the concession to be modified if necessary. Additions or modifications to a project may become apparent due to an initially faulty design, unaccounted for social impacts, or other unexpected circumstances; it might be socially desirable to modify or extend the infrastructure from what was originally contained in the concession contract.

[16] Based on Jiles, J. (1998), 'Aspectos Económico Financieros y Microeconómicos del Programa de Concesiones para una Etapa de Consolidación', Ministerio de Obras Públicas, Santiago, October.

A substantial number of contracts have been subject to complementary negotiations due to the need to change the original design or to provide for additional investments. One important cause of this has been the exposure of the demands of the numerous communities affected by a project. Although community participation in the form of public meetings and social, environmental and geographic impact assessments are routinely undertaken by MOP in the project design stage, it is never possible to predict the countless effects that a particular project may impose on neighbouring communities. Issues such as the placement of bus stops, pedestrian crossings, resistance to land expropriations and the effects of a project on the dynamics between hub and satellite towns and cities are very difficult to consider completely and satisfactorily at the design stage. There is also the possibility that posterior designs are sub-optimal from a technical or safety perspective.

One advice derived from the Chilean experience is that consultations and agreements with the affected communities are essential and should be undertaken carefully before projects are tendered. MOP establishes protocol agreements with the relevant local governments before projects are tendered. Another recommendation is that land expropriation procedures should be undertaken as early as possible, and ideally before projects are tendered.

However, it is inevitable that some issues will still arise after a contract has been tendered and pressure will be placed on the authorities to change or expand projects. In this case, it is better to have a framework for dealing with subsequent negotiations rather than relying on ad-hoc procedures as issues arise. Otherwise, the risk perceived by potential concessionaires increases, as well as the loss in transparency and accountability of the tendering process.[17]

In order to provide the needed flexibility without compromising the interests of the concessionaire, there has been a progressive effort to include detailed procedures for the treatment of additional work in concession contracts. The government can demand additional work for up to a maximum of 20% of the initial official cost estimate of the project, and only up to two years before the concession ends. In the later concessions an additional restriction was added to the contract. It specifies that during the construction stage, additional work can only be demanded for up to 5% of the official cost estimate.

[17] Engel, Fisher y Galetovic (1996) analyze why the renegotiations may be harmful to the public interest.

There are two further issues that need to be considered. First, how the additional investment should be value. In recent concessions, any new investment demanded during the construction stage is valued according to a unitary pricing schedule contained in the tendering documents. Bidders implicitly accept these unitary costs when they participate in the franchising process. These official costs were introduced in the contract due to the difficulties encountered during negotiations to change some of the specifications of the initial concessions. In these earlier cases, bidders had to present detailed budgets for the project, including unit prices for all items[18]. However, since the project was awarded according to the Economic Offers-which were not required to be consistent with the investment budgets-bidders did not have an incentive to reveal their true costs

The construction phase lasts no more than a few years and therefore it may be reasonable to set unitary prices in the contract, especially when as in Chile they are indexed for inflation. However, setting prices far into the future may not be recommendable. Relative price variations and technological change will make prices set at the beginning of the concession period increasingly out of line with real costs. Therefore, the valuation of new investments required during the operational phase must be agreed between the Ministry of Public Works and the concessionaire. If they do not agree, differences must be settled by the Conciliatory Commission (described in the next section) based on technical reports produced by consultants from each party.

The second issue is how to compensate the concessionaire for the additional investments undertaken. There are several options: Increase tolls, increase the duration of the concession or direct payments by the State.

The Government and the concessionaire may not agree on the preferred compensation instrument, especially because of the different timing of cash flows implied by each alternative. Furthermore, due to the length of the political cycle, a government may have an undue preference for extending the length of the concession rather than increasing tolls or direct payments to the concessionaire. These may create an excessive incentive to demand new investments since the current authorities would enjoy the political benefits of procuring extra infrastructure today but the costs would be borne by future users.

[18] Since MOP did not have the detailed engineering studies in the early concessions, it was impossible to have official unit prices.

In order to avoid conflicts and to reduce the incentive problem mentioned above, the most recent concessions place explicit restrictions on the compensation mechanism. For example, in the Río Bueno-Puerto Montt concession, tariff increases during the life of the contract cannot exceed 25% while the increase in the duration of the concession cannot be longer than 120 months. Furthermore, an explicit formula is included in the contract to calculate the required compensation.

The additional operational and maintenance costs, the projected traffic levels and the discount rate must be based on a technical report. If disagreements arise over these parameters, the Conciliatory Commission must be convened. However, the tender documents are very explicit on how to estimate the discount rate and they place an upper limit on the risk premium that the concessionaire can receive.

In order to avoid imposing additional traffic risks on the concessionaire, there is a payment at the end of the concession to compensate for the difference between the projected traffic levels and the real traffic level observed.

There is no compensation, however, for operational and maintenance costs that differ from the original estimates. Otherwise, the concessionaire would have an incentive to inflate these costs in order to receive extra compensation at the end of the concession period. However, these costs are usually small in comparison to investments. Differences between the expert's estimate used to calculate the compensation and real *ex-post* costs will probably not have a significant affect on the profitability of the concession.

3.3.6. Dispute settlement mechanisms

There has been a progressive attempt to reduce contractual ambiguities as the concession programme has developed. It is imperative to have a resourceful and effective dispute settlement mechanism. Due to the costs and time involved, recourse to the judicial system should be the last resort and thus limited to the most important and acrimonious conflicts.

The main dispute settlement mechanism in the Chilean concessions is the Conciliatory Commission, which has jurisdiction over all disputes and claims originating from the interpretation and implementation of the concession contract. This commission has three

members; each party names one member of the commission and the third member, who acts as a president, is appointed by mutual agreement. Members of the commission must be nominated at the beginning of the concession before any controversies have arisen. The commission is established when one of the parties raises a demand. In the case of the State, contracts stipulate an explicit and limited set of circumstances whereby it can raise a demand to the Commission. The concessionaire has more flexibility in this respect.

The Commission's initial task is to conciliate the diverging positions. If agreement is not reached, the concessionaire, and only the concessionaire, has the choice of either taking the matter to the judicial system or requesting the establishment of the Arbitration Commission. This last Commission is formed by the same members as the Conciliatory Commission and its decision is binding and not subject to appeal in the courts.

To date, several Conciliatory Commissions have been established (see Table 3.3.). In the case of El Melon Tunnel, the controversy related to the geological cost over-run guarantee offered by the State in that concession. In particular, there was a dispute as to the required level of compensation owed to the concessionaire. The final agreement resulted in a transfer that was an average of the government's and the concessionaire's position.

Other commissions have been established for the Nogales-Puchuncavi Road, Route 5 Rio Bueno to Puerto Montt, La Madera Road and the Access Road to the AMB international airport. In this last case, the controversy is related to the valuation of additional landscaping investments demanded by the government and the compensation for the modification of parking charges that had to be introduced after significant protests from airport workers forced the government to change the original charging policy.

The Chilean dispute settlement mechanism may be improved on several fronts. First, most conflicts have taken longer to resolve than originally planned, reducing the efficiency of the mechanism. Establishing time limits for a dispute settlement, or paying commission members a fixed fee rather than an hourly fee, as is currently done, may help to speed up these processes. Second, concession contracts do not specify a time limit for raising conflicts to the commission. Therefore, complaints may be lodged by a concessionaire many months after the occurrence of the offending event, after which it is nearly impossible for the State to collect the required information to argue its case or to negotiate a reasonable settlement.

Another problem relates to the transition from the Conciliatory Commission to the Arbitration Commission. The members of both of these commissions are the same. Each party to a conflict will have an opportunity to measure the commission member's attitudes and opinions regarding the issue under dispute during the conciliatory stage. This benefits the concessionaire who has the sole right to decide-if agreement is not reached during the first stage-whether to pursue the issue in the judicial system or through the Arbitration Commission. The concessionaire may then have the incentive to take the matter to the Courts only when it perceives that the majority of commission members have a position less favourable to its own and vice versa. Hence, the dispute settlement mechanism may not be fair to the State.

Finally, the dispute mechanism currently lacks clear rules and procedures for arriving at a settlement. The outcome of the El Melon Tunnel and the La Madera Road cases point to an 'average' solution to disputes. If parties anticipate that this will be the case, they have an incentive to exaggerate their *ex-ante* position in order to benefit from this *ex-post* averaging. This may increase the frequency of disputes and make them harder to reconcile during the conciliatory stage. Constraining the Arbitration Commission to use 'swing arbitration'-where they have to choose between the positions of one of the parties but not an intermediate one-may be recommendable. This is the approach taken in Chile to deal with price setting disputes in the utility industries.

3.3.7. Government guarantees[19]

The biggest cause of uncertainty is future traffic levels because they are extremely difficult to predict. Some public Chilean toll roads had yearly traffic growth rates varied from as high as 21.5% to as low as 2.9% between the 1987 and 1995. Additionally, these variations occurred in a period of relative political and economic stability, and where the highways in question had been tolled for decades. With this volatility under reasonable conditions, predicting traffic flows far into the future, or in more unstable situations, is a difficult task.

When tolls are first introduced, measuring the reaction to the toll among users or, in more technical terminology, the price elasticity of demand represents an immense complicatedness when estimating traffic growth trends.

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[19] Based on Engel, Fisher and Galetovic (1996, 1997)

Table No.3.3. Dispute settlement cases

Concession	Problems	Process	Outcome
El Melon Tunnel	Dispute over the interpretation of the geological risk insurance that was given by the State. The firm argues that compensation should be US$15 million while MOP argues it should only be US$ 7 million	Conciliatory Commission	The Commission recommended a US$ 10 million payment The recommendation was accepted by both parties
La Madera Road	Dispute regarding the inclusion or exclusion of 2 kms. of road in the concession. MOP argues that the stretch of road is part of the concession and thus the firm is responsible for its maintenance. The firm argues otherwise.	Conciliatory Commission was unable to produce an agreement and the case was taken to the Arbitration Commission	The Arbitration Commission determined that the 2 km in question are part of the concession but MOP must compensate the firm for50% of maintenance and other costs
Access Road to AMB Airport	Dispute regarding additional landscaping investments demanded by the State and the status of parking charges	Conciliatory Commission	In process
Route 5, Rio Bueno to Puerto Montt	Dispute over a US$ 100,000 fine applied to the concessionaire for its delay in cancelling an expropriation payment due to the State	Conciliatory Commission	In process
Nogales Puchuncavi Road	Dispute over the original design of the project and its modifications, a catastrophe insurance claim and cost over-runs in land expropriations	Conciliatory Commission was unable to produce an agreement and the case was taken to the Arbitration Commission	In process

In Chile, of the projects currently in full service, the one that has faced the most difficulties is the El Melon-Tunnel, partly because in this particular case there is a very good substitute. The tunnel has to compete with the old route that goes over the mountain, and which increases travel time by about thirty to ninety minutes depending on the vehicle's size and weight. Due to the tendering mechanism described earlier, tolls were set at inefficiently high levels, producing important traffic diversions. This was especially so for trucks and buses who-organised around their respective trade associations-formally boycotted the tunnel until the concessionaire was forced to reduced tolls.

One recommendation then for reducing the above problem, and to reduce traffic risk in general, would be to avoid building toll roads where convenient free alternative freeways

are available, unless the saturation of the existing freeway implies that there is little risk of traffic diversion. A second recommendation is to allow downward toll flexibility in order for the concessionaire to adjust quickly to lower than expected traffic flows.

In Chile, the benefits of down pricing flexibility can be illustrated by two examples. In the North Access to Concepción, the concessionaire reduced tolls for 2 or more axles vehicles at the end of 1998. Traffic in this category increased by 40%. In the case of La Madera Road, the concessionaire offered a free fuel coupon (valued approximately at US$7 and representing a reduction of less than 50% of the toll) for trucks with more than two axles that travelled without cargo. Traffic in this category increased by 100%.

In Chile, most projects enjoy a near monopoly as far as road traffic is concerned. Also, tolls are set as maximum values, which can be reduced if the concessionaire so wishes. In spite of this, it became evident early in the concession process that if firms were made to assume all traffic risks they would not be able to secure the needed finance. Financial institutions were not willing to fund projects unless the government provided some form of guarantee.

In addition to traffic risk, a concessionaire faces what may be called "regulatory or policy" risk. Infrastructure investments have the characteristics of being sunk, in the sense that once they are built they cannot be dismantled or sold and the resources transferred to an alternative economic use. This opens the possibility of opportunistic behaviour by the government. For example, once a road is built a government could unilaterally demand a decrease in toll levels. The concessionaire cannot threaten to "close the shop" and transfer the assets to another economic activity. The road-once built-is an irreversible investment. Knowing that they may be subject to such *ex-post* expropriatory behaviour, private investors might not be willing to invest in the programme.

In Chile, tariff changes by the government are not the most important factor contributing to "regulatory or policy" risk. Tolls, and their indexing formula, were set in the concession contract and the concessionaire has legal protection against such unilateral changes. However, it was much more difficult to guarantee that the government would not change its transport policy. As discussed above, in Chile alternative freeways are not required for toll roads to be built, and for the most part, existing projects do not have convenient free alternative routes. However, nothing prevents the government from building such alternative routes in the future, thus draining off some of the traffic from the concession. It would be

nearly impossible for a government to commit-even when it truly wanted to-to ensuring that no such policy change would occur.

The traditional solution to overcome the obstacles that traffic and regulatory risk create for a concession programme is to give government income, traffic or debt guarantees. The guarantee scheme adopted in Chile is discussed next.

3.3.7.1. Minimum Income Guarantees

All but one concession contract tendered so far provides a minimum income guarantee to the concessionaire. This guarantee was introduced so that investors could secure the needed finance for the projects.

There are variations to the minimum income guarantee scheme across concessions. The first two concessions (El Melon Tunnel and the Madera Road) have actual physical traffic volume guarantees. Subsequent concession contracts express the guarantee as a minimum income level. If different types of traffic (cars, buses and trucks) pay different tolls, then it may make a difference which approach is taken[20].

Since the original objective of the guarantee scheme in Chile was to facilitate concessionaires' access to the financial market, a minimum income guarantee seemed preferable.

Before the bidding stage, MOP sets the total income level it will guarantee for the duration of the concession. This is set to a level equivalent to 70% of the estimated official cost of the project. Except for the first concessions tendered, MOP now gives bidders the flexibility to choose the time profile of the yearly guarantee within a band contained in the Bidding Documents. The bands are set with reference to the expected growth in traffic levels and usually have a maximum of 80% to 85% of expected yearly income as a ceiling.

Bidders choose yearly income guarantees subject to the constraint that the present value of the chosen guarantee is equal to the total set by MOP. The official present value of the

[20] When the contract guarantees total traffic level, the changes in the composition of traffic affect income flows but are irrelevant to the guarantee scheme.

concession corresponds to the initial estimate by MOP of the investment, operating expenditure and maintenance cost over the life of the concession.

If in a given year income levels fall below the minimum income set for that year, the government pays the concessionaire the shortfall in revenues.

It is interesting to note that most bidders have opted for a time profile of income guarantees that is heavily weighted to the present. That is, they chose the maximum of the band for the first period of the concession and then drop to the lower end of the band for the remainder. Bidders seem to be more concerned about short-term rather than long term traffic uncertainty. Alternatively, this may be a result of the debt structure of these firms. To date, domestic commercial banks have provided most of the funds and these credits are usually of relatively short maturity. In order to extend these credits, banks may have forced firms to bid high guarantee levels in the early part of a concession.

The 70% parameter of the minimum income guarantee was chosen based on the average ratios of concession firms. Debt is approximately 70% of assets in these companies. Therefore, implicitly the minimum income guarantee is designed so that revenues are sufficient to cover debt repayment. In essence, the scheme is a debt guarantee that benefits creditors. The decision to apply this guarantee was based on an assessment that without it, lending institutions would not finance the infrastructure projects.

Besides the income guarantee, there is also a Revenue Sharing Scheme in which-as a counter balance to the minimum income guarantee-a concessionaire must share 50% of the revenues obtained if traffic levels are consistently above estimated levels. This revenue sharing rule is triggered when the accumulated revenues pass a threshold level set at the beginning of the concession. The threshold level is set as that level of revenues beyond which the concessionaire would earn a rate of return on invested capital above 15%. It is estimated based on expected investment levels and costs at the time the project is tendered.

The first concessions had a different revenue sharing mechanism. The El Melon Tunnel, for example, has a yearly maximum traffic ceiling, which is symmetric to the minimum traffic guarantee set for this concession. If traffic volumes are above this maximum level, the concessionaire must share 30% of its additional income that year with the government. The

Access Road to the AMB airport has a similar mechanism, but it is based on a yearly income threshold rather than traffic volume.

Minimum income guarantees and the revenue sharing mechanism serve to reduce income variance. However, it is important to note that in the latest concessions both effects are not symmetric. Income guarantees are based on yearly traffic levels while revenue sharing depends on accumulated traffic levels. One consequence of this asymmetry is that while income guarantees could be made effective any year that traffic levels fall significantly, revenue sharing will not occur until far into the future. From a public finance point of view then, there is a predisposition to the guarantee side of the scheme during the early stages of the programme.

The original idea of the revenue or profit sharing schemes was to compensate for the free income guarantees that were being provided to the concessionaire. Minimum income guarantees and the corresponding revenue sharing scheme have been optional. In the case of the two concessions tendered by a Least Present Value of Revenue scheme there was no revenue sharing rule. Instead, the concessionaire had to pay a yearly fee if he chose to have the minimum income guarantee. In other words, the revenue sharing scheme was replaced by a direct price ('premium') for the income insurance. For example, in the Santiago-Valaparaiso-Viña del Mar concession, there was a yearly charge equivalent to 0.75% of the outstanding value of the guarantees.

Due to the changing nature of the guarantee design described above, some projects have an income guarantee mechanism while others have a traffic guarantee mechanism.

In most cases, traffic or income levels are well above the guaranteed levels. The exception is the Nogales-Puchuncavi Road. Minimum income guarantees were triggered in 1997 and 1998. This situation is due to the unusual history of this project. When it was tendered, bidders had to choose between three construction options, each of which had a corresponding income guarantee schedule. The winning bidder chose the most expensive option, which had the highest level of guarantees. However, it was unlikely that traffic demand would respond significantly to the quality improvement implied by that option. Therefore, although traffic levels have been similar to those originally projected, income guarantee levels are relatively higher than in other concessions. As traffic grows during the next few years, the

payments of minimum income guarantees in this particular concession are expected to cease.

In the case of the Access Road to the AMB Airport (the international airport in Santiago) traffic levels were so high in 1998, that they triggered a revenue sharing clause. That year, 30% of all income above 77,143 UF[21] was transferred to the government. Something similar happened for the El Melon Tunnel, which had to pay 2,838 UF in 1997. The net result for 1998 is a payment of 1,083 UF on behalf of the government for minimum income or traffic guarantees, or about US$35,000.

In the El Melon Tunnel concession, the concessionaire has faced some financial problems due to traffic diversion. However, a very high usage level for this project occurred since 1997. In fact, a revenue sharing clause was activated in 1997. This contradiction is explained by the nature of the traffic guarantee in this concession. It guarantees the total traffic levels using the tunnel *plus* the alternative route over the mountain. Therefore, a high traffic volume is consistent with low usage of the tunnel. This minimum traffic guarantee has not provided a real protection to the concessionaire. Needless to say, this is the only concession with such a mechanism.

3.3.8. Exchange rate guarantees and Financial Issues

One of the main motivations of the concession programme in Chile was to mobilize private sector finance for infrastructure investments. There were three potential sources of funds:

- ✓ the domestic banking system;
- ✓ domestic pension funds and insurance companies;
- ✓ foreign equity or financial investors .

To date, domestic banks have provided most of the credits for the construction stage. However, these credits are usually expensive and of short maturity. As the exposure of the domestic banking system to infrastructure investments increases, and as concessionaires attempt to refinance their debts after the construction stage, there will be a growing need to tap other sources of finance, especially long-term finance.

[21] The unidad de Fomento (UF) is a indexed monetary unit used in contracts.

The Chilean private pension system offers an attractive source of funds. These institutions could provide much needed long-term finance. However, pension funds are tightly regulated and in the initial stages of the programme these institutions were legally constrained from investing infrastructure projects. In particular, the lack of investment grade rating for bonds or other financial instruments issued by concession companies was an obstacle.

In order to facilitate investments from pension funds and insurance companies-as well as to expedite the participation of banks-legal changes to financial and infrastructure regulations were introduced between 1995 and 1996. These reforms, among other things, increased the lending allowances of commercial banks for infrastructure projects from 5% to 15% of capital and reserves. In addition, they opened the door for pension funds and insurance companies to invest in bonds without history. As a result of these reforms, a new long-term financial instrument-the Infrastructure Bond-was created.

Table 3.4. Infrastructure Bonds emissions

Concession	**Currency**	Amount	**Date of issuance**	**Rating***
AMB International Airport	US$ denominated bond	US$213 million	1999	AAA
Route 5, Talca-Chillan	Domestic denominated inflation linked bond	US$ 185 million	1999	AAA
Route 5, Santiago Los Vilos	Domestic denominated inflation linked bond	US$ 230 million	pending approval by financial regulator	A
Nogales Puchuncaví	Domestic denominated inflation linked bond	US$ 12 million	Advance stage of preparation	

* Rating by Standard & Poor's.

Up to 2000, there had been two bond emissions, both in early 1999 (See Table 3.4.). The consortium of the AMB International Airport in Santiago was successful in placing a dollar denominated bond in the North American market for US$213 million. Standard and Poor's rated these bonds as AAA. Another bond issue was successfully placed in the domestic market in February of this year. Pension funds were for the most part the purchasers of these domestic currency financial instruments. Standard and Poor's also rated these bonds as AAA.

In spite of these innovations, there is a growing perception that the domestic financial market may not be sufficiently large to fund, by itself, the next wave of concessions. Therefore, there is a concerted effort to attract foreign credit for the new projects. In addition to providing more competition in the financial market, foreign funding could also force a decrease in premiums, thereby reducing the financial costs faced by concessionaires.

However, exchange rate risk poses an important obstacle for attracting foreign credits in the infrastructure industry. In the last concession tendered-the Costanera Norte project-the government for the first time considered giving an exchange rate guarantee. This consisted of denominating part of the minimum income guarantees in US$. Therefore, in the case of devaluation, the real value of these guarantees increased. Once again, this mechanism only provided cover for their foreign currency denominated debt payments, for that reason foreign equity investors still faced the risk of currency fluctuations. Nevertheless, there was another mechanism whereby part of the LPVR would be denominated in US$. In this case, the devaluation would increase this value, extending the duration of the concession automatically. A revaluation of the currency would have the opposite effect.

An exchange rate guarantee has a similar problem to the minimum income guarantee. Both are likely to be triggered when government finances or balance of payment problems are at their worst. The interesting aspect of the LPVR exchange rate cover, as designed in the Costanera Norte project, is that it would not entail an actual payment by the government or users at the time of crisis. Therefore, although it provides an exchange rate protection to investors, it would not drain foreign reserves in times of crisis. This scheme would only have an affect on the duration of the concession, and then only if devaluations are not compensated by revaluations during this period.

The government is currently studying the development of a more comprehensive exchange rate guarantee in order to facilitate the foreign funding and re-financing of infrastructure projects.

3.4. REGULATIONS

Up to the present moment, the Ministry of Public Works has acted as the regulatory institution that monitors the concession contracts. However, this might not be an optimal long-run institutional arrangement.

The design of regulatory and monitoring institutions is a very important topic in any franchising process. These contracts create a long-term relationship between the government and the private concessionaires. There is barely any concession experience in the world that does not experience some form of renegotiation of the original terms of the contract. In addition, political considerations will always get in the way when it comes to monitoring, applying fines, and terminating a contract when the concessionaire does not meet the stipulated contract conditions.

For these reasons, it is ideal to have a regulatory agency that is politically independent from the executive power and not a promoter of the concession programme. Although, far from the ideal just described, in September 1997 a special unit was created within the Concession Agency in MOP and specifically designed to monitor and regulate the concession contracts.

One of the first difficulties faced by this new enforcement unit was the lack of human resources required to monitor such a large concession programme. In addition, there was a need to generate the technical information required to enforce the quality standards of the infrastructure during the construction phase. Although construction companies undertake regular quality tests for the infrastructure, it was found that in certain cases this information is not passed on to MOP, nor to other partners in the concession consortium, in a regular and timely manner.

To solve both of the above problems, regular quality audits are now undertaken by third party engineering firms paid for by the concessionaire. This information is immediately distributed among the various interested parties.

3.5. THE FUTURE

There are still over US$3 billion worth of projects to be tendered. Almost half of this amount is accounted for by the urban road projects, including the re-tendering of the Costanera Norte project.

In addition, MOP has been studying the possibility of extending the concession programme to new activities and areas. An interesting example currently being studied is the introduction of concession type contracts for the maintenance of parts of the existing road network. The private sector already undertakes maintenance activities under contract from MOP. However, these contracts usually cover specific tasks and have a short duration. A concession type maintenance arrangement would be longer and would try to exploit the full life cycle economies that could be achieved if an agent is responsible for the state of roads for a longer time period.

3.6. CONCLUSIONS

Among the lessons extracted from the Chilean experience, we can summarise the following:

It may be advisable to try to avoid as much as possible the concessioning of roads with convenient alternative freeways;
Choosing the appropriate variable to award a concession is critical. Mechanisms that encourage high tolls (for example by promoting large payments to the State or short concession periods) should be avoided. Also, if a concession is awarded to the firm offering to charge the lowest toll level, a floor and a ceiling should be placed on the possible bids. The first should be set to guarantee the financial viability of the concession and the latter should be set to avoid inefficient traffic diversions. Ties between bidders at the top or bottom end of this band should be resolved by a second variable such as the level of transfers between the firm and the State.

Downward toll flexibility should be allowed in order for the concessionaire to be able to react to unexpected low traffic flows, especially for particular categories of vehicles

Special attention should be placed in the tendering mechanism, as well as in the general incentive structure of the concession contract. Novel mechanisms, such as the LPVR auction, may help overcome many problems faced by traditional road franchises. Likewise, tendering mechanisms developed in Chile can be used to reduce the possibility of bidders presenting dangerously low bids, and hence jeopardise the financial stability of the concession.

If concessions are tendered by traditional methods and income guarantees are going to be given, it is advisable for them to cover only a fraction of the expected income stream of the concessionaire. This lowers the financial exposure of the State as well as improves the incentives faced by the concessionaire.

Finally, efforts should be made to make contracts as complete as possible. However, more likely than not, contracts will need to be modified or renegotiated. Therefore, it is advisable to have a framework for dealing with these events, including an efficient and well designed dispute resolution mechanism, rather than face each one in an ad-hoc manner.

The main motivation for the programme in Chile was the need to boost investment in order to plug the growing infrastructure deficit after more than a decade of sustained economic growth. To this end, the programme in Chile has been a success. To date, nearly 50% of the road infrastructure deficit identified initially has already been covered by the concession scheme. The rest will be addressed by forthcoming projects funded both by the private as well as the public sector. In addition, the programme has generated, in present value terms, net revenues amounting to between US$130 million to US$150 million for government coffers.

Chapter IV COLOMBIA

4.1. COUNTRY BACKGROUND

4.1.1. Fact sheet

- ✓ POPULATION GROWTH: 1.9%(a) (average, 1996-2000)
- ✓ LAND AREA: 1.14m sq km
- ✓ FISCAL YEAR: Starts January 1st
- ✓ CURRENCY PESO (Ps): Ps2,088:US$1 (2000, average) Ps2,298:US$1 (September 3rd 2001)
- ✓ GDP: Ps170trn(a) (2000); US$81.3bna (2000, at market exchange rate); US$286.9bna (2000, at PPP)
- ✓ GDP GROWTH: 1% (average, 1996-2000); 2.8% (2000)
- ✓ GDP PER HEAD: US$1,920(a) (2000, at market exchange rate); US$6,800(a) (2000, at PPP)
- ✓ INFLATION: 15.6% (average, 1996-2000); 9.2% (2000, average); 8.8% (2000, year-end)

4.1.2. Background

Since becoming a republic in 1819 Colombia has suffered intermittent periods of violence. Power sharing agreements between liberals and conservatives reduced the incidence of violence in the early 1960s, but led to the emergence of guerrilla groups as other political forces were marginalized. An ineffective legal system and deep social disparities encourage guerrilla movements and crime. Efforts to modernize political institutions and to control crime have had little success. In 1970-95 Colombia recorded the most stable macroeconomic volatility indices in Latin America. The economy was liberalized in 1991, boosting growth in the first half of the 1990s, but since 1996 growth has been depressed by low business confidence and the tight monetary policy used to compensate for a lack of control over the fiscal accounts.

4.1.3. Political structure

Colombia is a unitary republic. The president heads the executive branch and is elected for a four years, with re-election banned under the constitution. Legislative power is vested in Congress, which comprises the Senate and the Chamber of Deputies, members of which are elected for four-year terms by popular vote. Historically, the Partido Liberal and the Partido Social Conservador have dominated the executive and the legislature, but since 1991

independent political forces have become more influential. The judicial system comprises the Constitutional Court, the Supreme Court, the Council of State, the office of the prosecutor-general, and tribunals and judges.

4.1.4. Policy issues

The president, Andres Pastrana, whose term lasts until mid-2002, is seeking to end the civil conflict through negotiation. Economic policy is focused on removing structural imbalances in the public finances, which have caused a build-up of public debt since the mid-1990s, crowding out private-sector borrowing. A US$2.7bn IMF agreement targets rationalisation of spending at regional level, along with social security reform, but progress on much-needed pensions reform is doubtful. Labour market reform, as well as energy and telecommunications privatizations, are also planned.

4.1.5. Foreign trade

In 2000 merchandise exports (customs basis) were US$13.6bn and merchandise imports (fob) US$11.1bn. The current-account surplus was US$41m or 0.1% of GDP.

Major exports 2000	**% of total**
Oil & coal	41.6
Chemicals	10.6
Coffee	8.2
Leading markets 2000	**% of total**
US	49.8
EU	13.5
Venezuela	9.9
Major imports 2000	**% of total**
Chemicals	24.4
Machinery	23.1
Food	10.1
Leading suppliers 2000	**% of total**
US	33.7
EU	16.7
Venezuela	8.2

4.1.6. Taxation

The corporate income tax rate is 35%. Remittance tax for foreign companies is 7%. The general rate of value-added tax is 16%, but differential rates of 10%, 20%, 35% and 45% are applied to specific items and services. There is also a bank debits tax.

4.2. ECONOMIC OVERVIEW

Historically, Colombia has enjoyed one of Latin America's most consistent records of economic growth. This steady rate of growth has been supported by vast energy, agriculture and mineral resources, and a privileged geographical location characterized by coasts facing both the Pacific and the Atlantic Ocean that provide the country with low cost sea access to the North and South American markets. For a century, coffee has been at the heart of Colombia's economy. The country had enjoyed a fairly stable economy for the last 50 years, until the current Colombian economic depression began in 1998 when a weak Colombian economy, struggling with growing fiscal deficits and political instability, was hit by a depression in the international financial markets and world commodity prices. To deal with these problems the authorities designed a three-year stabilization program based on fiscal consolidation, exchange rate flexibility and structural reforms.

The economy had become increasingly fragile since the early 1990s when non-petroleum economic growth was slowed by the tight monetary policies adopted to offset the inflationary impact of high capital inflows to the oil industry. The country has had an enviable economic record over the past few decades. By 1998, its current account deficit was running at over five percent of GDP. The policy to cut inflation levels led to the strengthening of the peso. The strong peso declined but this hit the farmers and textile manufacturers hard. Labor became increasingly expensive. Cheap foreign credit flooded in and pushed up asset prices, especially for property.

Colombia has a literate and dependable work force capable of supplying middle level supervisory personnel but unable to provide a sufficient number of well-trained technicians. Partial access to education has curbed the development of the labor force and has maintained the significant inequalities in standard of living among the different sections of the population. Estimates of purchasing power distribution among the population illustrate the

following income brackets: 74 percent of the households earn more than US$5,000 annually, 40 percent earn more than US$15,000 and 10.5 percent earn more than US$20,000.

Setbacks in the peace process and economic slowdown have increased the government's unpopularity, but the peace process should remain alive until the end of the government's term in mid-2002. The new government is likely to take a tougher line with both guerrillas and paramilitaries. As a result of the September 11th attacks on the US, it is expected the US to confirm its support for anti-insurgency efforts in Colombia. Economic policy will continue to prioritise fiscal adjustment and inflation-targeting under the IMF framework, although some fiscal slippage is expected. The poor international economic outlook will keep economic growth modest in 2002-03. Inflation will subside further, to end 2003 at around 6%, and the exchange rate will slip slightly in real terms, to some Ps2,660:US$1 at end-2003. The return of the trade account to deficit will result in a widening of the current-account deficit.

4.3. OVERVIEW OF THE CONCESSION PROGRAMME

4.3.1. Introduction

In the past eight years the Colombian transport sector has witnessed major changes with regard to its institutional structure and the role of the private sector in the construction and operation of major transport infrastructure facilities. These changes have brought about substantial reductions in transport costs for Colombia's externally traded goods and commerce. Nevertheless, critical weaknesses in the transportation system, particularly in road infrastructure (which serves more than 90% of freight transport, excluding pipelines) undermine the competitiveness of the Colombian economy and introduce higher than normal transport costs in all phases of the economy. A recent analysis conducted by DNP[22] estimates that in the 30-year period between 1960-1993, the low levels of investment in infrastructure (below 1% of the GDP in the case of transport), resulted in additional costs to the economy of about 5.3% of the GDP (about 2.7% if only the road sub-sector is counted).

The main problem of Colombia's road system has been the poor operating condition of the highways that serve the largest consumption and production centers located on rugged mountain ranges (a factor that notably adds to the cost of expanding and modernizing the

[22] Departamento Nacional de Planeacion-Colombia

road infrastructure). Years of chronic deficit in public funding, untimely implementation of investments as a result of mismanagement, and poor quality of maintenance of primary highways have compounded those conditions.

The main objectives of the Government's strategy to overcome these constraints have been to: (i) strengthen sector management by splitting responsibility for planning and policy making from execution, and establishing a road agency, INVIAS[23], to manage a well-defined network of export/import corridors and trunk roads; (ii) decentralize the provision and management of road infrastructure passing on to departments and local governments responsibility over secondary and tertiary roads; (iii) increase the level of investments from the historical average to clear the existing road investment backlog and accommodate the transport system to present needs; (iv) revise the system of road user charges to eliminate distortions in contributions by different vehicle classes and allocations to the national, departmental and municipal levels of administration; and (v) expand the role of the private sector by contracting out all road operations under INVIAS and bringing the private sector to finance and manage road projects under long-term concessions.

4.3.2. Legal Framework

In 1993, Colombia enacted Law No. 80 (General Statute Regarding Public Administration of the Republic of Colombia), which contained the legislative framework for public contracting including the granting of concessions. While the law allows the government to extend concessions to private investors, it also guarantees to the project investors that economic equilibrium will be maintained throughout the long term of the concession. The concept of economic equilibrium is well established under the public works law of Colombia and other Latin American countries. This legal doctrine is one that applies to long term contracts wherein, during the term of the contract, circumstances change that alter the original agreement in such a way that to comply with the contract as originally agreed would result in a more onerous burden for one or both of the parties.

In Article 20 of Law 80, the government may modify a concession agreement where, in the public interest, it must maintain the economic equilibrium of the contract for both parties and respect the economic advantages that have been given to the contractor. In the event the

[23] Instituto Nacional de Vias- National Road Institute

contract does not maintain the required economic balance, the law provides that the parties shall take the necessary steps to re-establish the equilibrium.

Under Law 80, public entities entering into concession agreements with private investors are required to maintain annual reserves in their budgets to cover contingencies that may bring about an economic imbalance. Moreover, the law permits the government to extend certain guarantees on behalf of the private investor as an incentive for attracting private investment. This is particularly helpful when financing is required for the development of the project and the start-up of the concession.

As a result of this legislation, concessionaires developing and operating infrastructure over a long-term period are provided with a measure of protection for their investment. Should economic circumstances change that detrimentally impact the concessionaire, the developer may insist that the concession be modified to re-establish the economic balance of the agreement. Moreover, the law contemplates maintaining monetary reserves available to attend to any perceived imbalance.

The Law 105 (Transport Law), enacted in 1993, form together with the law 80, above described, the legal basis for the concession.

4.3.3. Concessioning Process

Prior to the 90s, transport infrastructure in Colombia was a state monopoly. However, although this sector has been given priority in the various national development plans, roads have not developed in keeping with the needs of the country. This is partly attributable to the difficult topography, institutional weaknesses in this sector and, until recently, the lack of opportunities for private investors to participate in road building.

The deregulation process starting in the 90s, prompted the government to streamline state management of the road sector by structural reform and administrative decentralization. Decree 2171 of 30th December 1992 transformed the Ministry of Transport & Public Works into the Ministry of Transport and created INVIAS. The former handles policy for the transportation sector while INVIAS charged with performing road infrastructure policies and projects throughout the country.

The World Bank was another factor prompting changes in this sector. It modified the loan conditions for infrastructure, requiring that projects be ruled by commercial rather than bureaucratic criteria. It proposed different forms of risk association with the private sector, one being the concession system.

Therefore, starting in the 90s the government launched a concession system aimed at attracting domestic and foreign investors to build infrastructure. Fifteen concessions were granted between 1994-1999; this involved building 465.6 km of road and rehabilitating another 1,492.6 as well as maintaining about 2,534 km of the National highway network. Among these 15 projects, 13 belong to the first generation of concessions and two to the second generation. The future targets, including concessions to be granted during 2002, aim at modernizing about 3,840 km of highways. The private sector has responded with interest, though the original program targets were downsized to reflect the progress made to date in procuring the projects and more realistic assumptions with regard to engineering projects and mobilizing the financing needed to support them.

Law 105, 1993 provided the criteria to calculate the national road system handled by INVIAS. This network covered 12,398 km. consisting of seven main roads (5,682 km.) crossed by 8 roads (4,072 km.). Additionally, access roads to regional capitals and river ports account for 2,300 km., plus another 344 km. of road. The National Road Expansion Plan[24] increased the grid handled by INVIAS giving a total of 18,314 km. of which 2,676 correspond to the expansion project. Only 10% of the roads are paved. Colombia has 310 km of paved roads per million inhabitants, as compared to 1,059 km in Costa Rica, 858 km in Argentina and 820 km in Mexico. Despite the deficiencies in coverage and quality, road transportation prevails in Colombia. In 1997, 95% of the passengers and 92% of the cargo transport were carried by road.

Until 1993, roads were built via "public works" contracts. In this scheme, overcost and delays were assumed entirely by the government. Therefore, everything was subject to renegotiation: design, technical specifications, deadlines, unit costs and additional works. Road building firms took advantage of their bargaining power during the construction period, as the political and economic cost for the government of breaching a badly performing ongoing project was higher than continuing the works with the same contractor. The scheme

[24] CONPES document 2972/97

gave way to delays and overcosts as well as to corruption. Delays were up to four times the programmed schedule and overages were twice the amount budgeted (Sarmiento *et al.* 1996).

Since 1992, INVIAS (Instituto Nacional de Vías) is the institution in charge of the contracting process for construction and maintenance of the national road network. It is funded with national budget resources, taxes on gasoline and the increased value of properties, and toll collection. INVIAS is often late in its payment schedule to road contractors. This has become a permanent source of conflict, leading to periodic requests for cost readjustment and interest for delayed payment[25]. Most of the delays occur because the Ministry of Finance is the institution with the residual control over national budget funds. The government cuts investment budgets when it faces fiscal restrictions, directly affecting the execution of civil works. Under these circumstances, concession contracts may become a better procurement alternative because they improve the structure of incentives associated with public works contracts and also attract additional funds.

However, the scope for concessions is limited because the majority of roads in the country have reduced traffic levels, and the government must provide direct budget contributions. Public outlays are recovered in part through taxes on the increased value of property. To the extent that government funding represents a high percentage of the necessary resources to build the works, what will differentiate concessions from the old public works contract is the allocation of risk between the government and the concessionaire. The government's ability to enforce the contract will determine if concessions represent an improvement over Public works contracts.

4.3.3.1. First Generation Of Concessions (See Figure No. 4.1)

A "first generation" of road concession contracts started in 1994 using the BOMT system. The concession-holder was responsible for financing the project and setting up a trust to attract and manage resources. Guarantees on construction, commercial and regulatory risks were conferred to the concessionaire. Land acquisition and license procurement were left in the hands of the concessionaires.

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[25] As noted by Palacios (1996) "these delays are very frequent with state contracts in Colombia, since the budget legislation (Ley Organica de Presupuesto) does not provide mechanisms to enforce the timely payment of State contracts. On the contrary, in includes multiple norms that may legally justify the delay".

Figure No. 4.1. Road Concessions in Colombia – First Generation -

Santa Marta – Paraguachón

Cartagena – Barranquilla

Desarrollo Vial Oriente de Medellín

El Cortijo – La Punta – El Vino

Fontibón – Facatativá – Los Alpes

Desarrollo Vial Norte de Bogotá

Los Patios – La Calera – Guasca y El Salitre – Sopó – Briceño

Malla Vial del Meta

Bogotá – Cáqueza

Girardot – Espinal – Neiva

Armenia – Pereira – Manizales

Source: DNP

Table No.8 -FIRST GENERATION OF CONCESSIONS -							
Contract No.	PROJECT	LENGTH (Km)			ESTIMATED COST*	CONCESSIONAIRE	PRESENT STATUS
		CON	RH	MNT			
0445-94	Santa Marta - Riohacha - Paraguachón	0	170	250	96,699.35	Concesión Santa Marta - Paraguachón S.A.	Operation
004-93	Barranquilla - Ciénaga (*)	0	62	62	55,519.99	Consorcio Concesión	Operation
0503-94	Cartagena - Barranquilla	0	63	109	26,812.35	Consorcio Vía al Mar	Operation
0448-94	Los Patios - La Calera - Guasca y El Salitre - Sopo - Briceño	0	50	50	18,234.04	Consorcio La Calera S.A.	Operation
0444-94	Bogotá - Cáqueza	15.2	16	0	186,130.51	Coviandes S.A.	Operation
0447-94	Bogotá (Puente El Cortijo) - Siberia - La Punta - El Vino	15	31	31	63,006.63	Concesión Sabana de Occidente S.A.	Operation
0446-94	Malla vial del Meta	2.8	180.9	190	93,682.17	Carreteras Nacionales del Meta S.A.	Operation
GM-001-96	Buga - Tulua - La Paila (*)	57	60	60	172,382.33	Pisa S.A.	Operation and Construction
849-95	Girardot - Espinal - Neiva	11.2	138.8	150	77,712.54	Consorcio Solarte - Solarte	Operation and Construction
0275-96	Desarrollo del Oriente de Medellín y Valle de Río Negro	45.7	168.4	349.1	196,282.18	Devimed S.A.	Construction
0664-94	Desarrollo Vial del Norte de Bogotá	46	48	48	172,498.07	U.T. Desarrollo Vial del Norte de Bogotá	Construction
0937-95	Fontibón - Facatativa - Los Alpes	28	41	41	147,365.13	Concesiones CCFC S.A.	Pre construction
0113-97	Armenia - Pereira - Manizales	66.4	110	219	257,667.64	Autopistas del Café S.A.	Pre construction
	TOTAL	**287**	**1139**	**1559**	**1,563,992.92**		

*Million pesos as per december 1999, (*) Provincial Contracts with Magdalena and Valle del Cauca Provinces

CON: Construction, **RH**: Rehabilitation, **MNT**: Maintenance.

Figure No. 4.2. Road Concessions in Colombia – Second Generation -

El Vino – Tobiagrande – Puerto Salgar – San Alberto

Valle del Cauca and Cauca road network

Source: DNP

Thirteen concessions were granted between 1994-96 (Table 4.1). The program included the rehabilitation of 1,139 km and new construction of 287 km, at a cost of about ColPs$1,563,993 millions[26]. During the operational phase, the concessionaires would be in charge of maintaining 1,559 km (approximately 10% of the road network).

Most of the financing for the privately funded first generation road projects in Colombia came from local banks, with maturities and interest rates that were costly and insecure for undertaking road projects. These arrangements were made possible by the fact that the financing requirements had been relatively modest in size.

The first generation of concessions improved roads in Colombia, guaranteed their maintenance, and reduced operating costs for users. However, traffic on some roads was insufficient to make the project profitable for the concession holder as stipulated in the original contract and therefore the Nation was forced to cover the difference. The first generation of contracts conferred too many government guarantees to concessionaires. The corresponding financial burden led the government to devise a new design for the concession contracts ("second generation").

4.3.3.2. Second Generation of Concessions[27]. See Figure No.4.2

The government launched a second generation of concessions in 1997 using the same BOMT format but setting out a competitive bidding system whereby bidders could propose the following:

- ✓ Concession term
- ✓ Rates (the maximum being that set out by the Ministry of Transport)
- ✓ Partial guarantee for minimum income
- ✓ Annual or biannual changes in rates
- ✓ Additional works (segments, bridges, by-passes etc.)

[26] Colombian pesos as per December of 1999; Ps2,298:US$1 (September 3rd 2001)
[27] This section is partly based on World Bank, 1998, Project Appraisal Document on a Proposed loan

Under this format, the bid that offered the best guarantees for the government, additional work and term for awarding the concession was the most likely to win the tender. In order to reduce delays and uncertainly in construction costs, it was agreed that project designs should be completed before licenses are granted[28].

This second phase awarded 2 projects for an approximate amount of Col$ **1,157,561.65** million[29], as shown in Table4.2.

Table No.4.2. -SECOND GENERATION OF CONCESSIONS -

Contract No.	PROJECT	LENGTH (Km)			ESTIMATED COST*	CONCESSIONAIRE	PRESENT STATUS
		CON	RH	MNT			
0388-97	El Vino - Tobia Grande - Puerto Salgar - San Alberto	68	60	571	656,548.67	Concesionaria del Magdalena Medio S.A.	Construction - Operation
0005-99	Malla Vial del Valle del Cauca y Cauca	144	287	470	501,012.98	U.T. Desarrollo vial del Valle del Cauca y Cauca	Pre construction
	TOTAL	**212**	**347**	**1041**	**1,157,561.65**		

*Million pesos as per december 1999

CON: Construction, **RH**: Rehabilitation, **MNT**: Maintenance.

INVIAS was then allowed to purchase land and obtain the environmental licenses before the design is finished. A new scheme of guarantees was established to reflect the complexity of the works. Construction risks assumed by the government were limited to 20% in new projects, to 10% in roadside construction, and totally eliminated in rehabilitation projects. INVIAS requested to ensure "future disbursements" ("vigencias futuras") with the Ministry of Finance. This is a mechanism by means of which the government makes a commitment to include line items for the necessary amounts to cover the guarantees during the term of the concession[30].

Minimum revenue guarantees were limited in time and the concept of expected present value of revenues was introduced. The concessionaire has 25 years to realize this amount at

[28] This means that the engineering design must be performed along with studies on traffic, revenues, environmental impact, value appraisals and financial feasibility.
[29] Colombian pesos as per December of 1999; Ps2,298:US$1 (September 3rd 2001)
[30] The mechanism, however, does not imply the liquidity of such guarantees.

which point the road is transferred to the state. The World Bank provided a liquidity guarantee (a contingent credit granted to INVIAS) which acts as a bridge credit from the moment when the guarantee is made effective, until it is possible for INVIAS to cash the scheduled outlays. The World Bank also offered a partial risk guarantee that protects project lenders from eventual breach of contract by INVIAS.

There were some improvements made to the concessions scheme in comparison with the first generation based on the real level of government support needed for the projects and was subject to market testing through competitive bidding. Key elements of the improved elements during the bidding process, and the rationale for offering them, are described below:

a) *Government up-front capital contribution.*

The amount of government capital contribution required was decided through competitive bidding, so as to make the project sufficiently attractive to private investors and compensate them for the externalities associated with the project.

The government would partially finance the construction costs through a cash contribution, reimbursed in kind when the facility is returned to Government at the end of the concession term or as soon as cumulative project revenues reach the revenue target set in the concessionaire's bid, whichever is earlier. Without this initial contribution, the project would be unfinanceable by the private sector. The experience gained in several international road concessions demonstrated that it is good policy to base project revenues on affordable toll rates. The toll rates determined by the government exceeded short-run marginal pricing but were deemed affordable to users and adequate to avoid excessive traffic diversion and consequent erosion of benefits accrued to the transportation system as a result of building the project. INVIAS also included in the concession-when possible and existing-the operation of an open contiguous tolled road section to allow economies of scale in project operation, reduce its financial support, and enhance project revenues.

b) *Government Minimum Revenue Support*

Even with affordable toll rates, the uncertainty of traffic revenue has been one of the biggest issues hindering private financing of new roads. In order to address this issue, the government

designed a revenue support mechanism, limited in duration and size, to improve the bankability of the project and reduce financial costs. Bidders were asked to bid on the minimum level of comfort, if any. This support would only be available during certain period of time[31]-in some cases the construction period-. The level of government's support would represent what the successful bidder assessed in its bid as the minimum revenue that such bidder requires for each semester to convince lenders that project revenues would cover estimated debt service and operation and maintenance expenses during the fixed period.

Revenues in excess of the minimum revenue support would be applied to cover any shortfall during unfavorable years. Thus, the government's funds would only be used when there is still a shortfall to be filled. Any government compensation under this limited revenue obligation would be counted against the revenue target set in the concessionaire's bid. Bidders were also asked to bid on the portion of the minimum revenue obligation that they consider essential to cover likely fluctuations in project revenue during the same availability period. In the event of a revenue shortfall, such portion would have become available to the concessionaire through a Liquidity Mechanism to be funded by the World Bank loan to ensure rapid payment.

c) World *Bank Partial Risk Guarantee*

Bidders were given the option to use the World Bank Partial Risk Guarantee to improve project borrowings. The guarantee would protect project lenders or bond holders against debt service default due to INVIAS' inability to comply with its payment obligations in the concession contract in respect of: (i) MOT not authorizing the toll adjustments agreed in the contract; (ii) compensation for events of political force majeure ("Extraordinary Excusable Events"); and (iii) compensation for possible changes in the law (such as changes to environmental standards, imposition of taxes on the collection of tolls, or laws restricting contractual arrangements for toll collection) that would adversely affect the project's ability to service its debt and lead to a default of the debt covered under the guarantee.

[31] In the El Vino – Tobiagrande – Puerto Salgar – San Alberto case, this period of time corresponded to the first nine years (including four-year construction period and the first five years of operation of the new link) out of the proposed 24-year concession. These first nine years were considered to be the most critical in terms of traffic build-up.

Overall, compared with the first generation of road concessions in Colombia, the structure offered proposed to allocate risks to the various parties in a more cost effective manner, reducing governments' exposure to contingent obligations throughout the concession period, and promoting a more secure financing structure compared to the existing concessions, capable of tapping the international markets, since neither the capacity nor the conditions of the financing available in the local market are commensurate with the size of this project.

In particular, the minimum traffic/revenue obligations granted in previous concessions would be reduced to a "start-up minimum revenue support" designed to cover only the initial years of operation. The risks to be covered under the proposed guarantee were restricted to political and regulatory risks over which the government has direct control. Thus, the level of support subject to competitive bidding aims at restricting residual risk bearing by the government. Table 4.3 summarizes a comparison of key government undertakings in the first generation concessions and the second generation.

Table No.4.3: Comparison of Government undertakings in Colombian Road Concessions

Government Undertaking	First Generation	Second Generation
Capital Contribution	For large projects exceeding financial viability, part of investment undertaken with public funding outside the concession, and transferred to concessionaire for exploitation upon completion.	Up front capital contribution during construction stage in the form of a grant. The specific amount subject to bidding.
Construction Cost Increases:		
- Roads and bridges:	Full compensation of cost increases up to 30% of bid cost, and 75% of cost increases between 30-50% over bid cost.	No coverage granted
- Tunnels:	Initially no tunnels considered under concession (undertaken outside concession)	Limited to geologic risk. First 20% to be absorbed by concessionaire.
Minimum Revenue Support:		
- Size and duration:	Historic traffic throughout concession term	Ceilings (targeted at debt). Nine years out of 24 year term (ramp-up period).
- Form of compensation	(i) term extension; (ii) toll increase; (iii. cash payment.	Cash payment
Maximum Revenue or Recapture Mechanism	50-50% share of additional revenue over 125% of historic traffic	Capped at total expected revenue by successful bidder.

d) Maximum Revenue Regulation.

The maximum revenue that the concessionaire is entitled to (not guaranteed) is capped at the Total Expected Revenue bid by the successful bidder. Upon reaching this target, the concessionaire has to revert the concession to INVIAS even if the contractual term has not yet expired. The Total Expected Revenue indirectly permits INVIAS a share in the project's revenue upside [32]. An upside in project revenue would accelerate the attainment of the Total Expected Revenue target, bid by the successful bidder, upon which the concession reverts back to INVIAS (even if earlier than the original concession term). In the event that project revenues exceed the projections, an accelerated termination of the concession would enable INVIAS to award a new concession for the same project on more favourable terms for operating the road and financing future capacity expansions. The new concession would rely on established traffic patterns, a key element in attracting more favourable financing terms, and would therefore require minimal, if any, cash or revenue support from INVIAS. The Total Expected Revenue target would also enable flexibility and transparency in the event that a renegotiation of the contractual terms, or an advanced termination of the concession, are necessary to improve the economic performance of the project [33].

e) Tendering Process

INVIAS selected the concessionaire through international competitive bidding, following certain procedures. The process started with an invitation to pre-qualify prospective bidders.

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[32] Each road project that is deemed to need revenue support from the host government or the implementing agency may require a different approach in the way such support is structured to ensure that government also has a share or "recaptures" potential revenue upsides. The mechanism depends largely on the applicable concession regulations, toll rates and traffic projections, and the trade-off the implementing agency is willing to make between recapturing potential excess revenue and giving the most appropriate incentives to the concessionaire to ensure the optimum performance of the project throughout the concession term.

[33] The initial concession design contained two additional mechanisms during the revenue protection period (if taken by the successful bidder): (i) all payment made by INVIAS under its Minimum Revenue Support obligation would count as part of the Total Expected Revenue in calculating the point in time when the concession would revert to INVIAS; and (ii) any income exceeding the bidder's Minimum Revenue Support (MRS) quoted for a semester would be accounted to an Accumulated Revenue Surplus Account. Thus, the concessionaire would have to tap into any previously accumulated revenue before INVIAS is asked to make any compensation. While there is no actual excess revenue cash transferred to INVLAS, this mechanism allows INVIAS to take full advantage of all revenue earned by the concessionaire in excess of the MRS. As such, knowing that they have access to all the revenue up-side, bidders may be prepared to quote a lower MRS level, just sufficient to cover their estimated costs of debt financing and project operating expenses.

The bidders pre-qualify when they meet the technical and financial requirements set for this purpose in the pre-qualification document. The bidding process followed. As stated in the bidding documents, bidders were asked to quote in their bids: (i) the annual capital contributions requested from Government; (ii) the amounts requested in respect of the Minimum Revenue Support for each calendar semester during a fixed period of time of the concession, if any; (iii) the maximum portion of this Minimum Revenue Support that would become available to the concessionaire through the Liquidity Mechanism (to be funded by the World Bank), if any; and (iv) the Total Expected Revenue that as concessionaire plans to realize during the concession term. Items (i) and (iii) were subject to caps set forth in the bidding documents.

The bidding document required that the Concession Contract be awarded to the bid that represented the least expected cost to the government. A bid seeking less support from government would reduce government exposure to contingent obligations and, thus, have a lower cost for the government. Thus, the comparison of the bids accounted for the expected cost to the government resulting from each of the bidding variables mentioned above, as follows: the amounts quoted by bidders (all in present value terms with the exception of the total expected revenue target) were multiplied by the respective weighting factors stated in the bidding documents, and added to determine the total expected cost to government. The weighting factors represented the probability of the government incurring in a loss due to the exposure resulting from the obligation.[34]

Although the second-generation projects incorporate better risk assignment and legal-financial structure, there are still some weak points. One being that the projects were over-dimensioned with regard to present traffic conditions and effective road potential.

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[34] As such, the government capital contribution would have a weighting factor of 1.0, since the amount requested by the successful bidder will become an actual cost. The remaining variables would have factors lower than 1.0, since due to their contingent nature it is uncertain whether government will incur in a cost. Thus, the weighting factors for the latter variables were determined on the basis of statistical analysis as follows: each variable was assumed to follow a normal probability curve using typical variation parameters suggested by the consultants; the values expected from the financial model developed by the government with its financial advisors were assumed as the mean or the most expected value for the variable in question; finally, the probability of incurring a loss because of the coverage, represented by the area of the probability curve within the boundaries of the comfort offered in the bidding documents, became the respective weighting factor. The resulting factors were then converted into percentages.

Another weak point has been community relations, particularly with regard to the positioning of tollbooths. So far this has only been based on financial criteria, disregarding socio-economic and traffic conditions. This must be rectified when deciding where to place the booths and the charges to be levied. These considerations gave rise to the third generation of concessions.

4.3.3.3. Third Generation of Concessions. See Figure No. 4.3

In January 2000, the government launched an ambitious plan to award eight concessions (Table 4.4), opening the tenders between 2001 and 2002. These projects involve building 700 km of road, rehabilitating another 2,200 km, and maintaining 3,578 km

In this wave, each project will bring investment in line with expected service and road capacity and focus more on the operational aspect, as well as economic aspects of financing to assure that government goals are attained. The guarantee and risk components are the same as the ones described above for the second generation.

Table No.4.4 -THIRD GENERATION OF CONCESSIONS -

Concession	Length (Km)	Amount Estimated*	Tender opening
Corridor Zipaquira-Santa Marta.	942	200	2st Semester 2001
Caribbean Road Network	1200	270	2nd Semester 2002
Corridor Briceño - Tunja - Sogamoso	182	500	1st Semester 2002
Ibagué - Bogotá	250	300	1st Semester 2002
Ibagué - Buenaventura	259	700	2nd Semester 2002
Rumichaca - Pasto - Popayán	347	300	2nd Semester 2002
Medellín - La Pintada	72	80	2nd Semester 2002
La Paila - Pereira	77	80	2nd Semester 2002
Troncal del Llano	678	160	2nd Semester 2002
TOTAL	**4007.00**	**2590.00**	
*US$ Millions			

4.3.4. Dispute settlement mechanisms

There have been numerous efforts to reduce contractual ambiguities and make contracts as complete as possible. Nevertheless, arguments occur anyway.

Figure No. 4.3. Road Concessions in Colombia – Third Generation -

Zipaquirá - Santa Marta

Caribbean Road Network

Llano´s Corridor

Medellín - La Pintada

Briceño - Tunja - Sogamoso

Pereira - La Paila

Bogotá - Buenaventura Corridor

Rumichaca - Popayán

Source: DNP

The main dispute settlement mechanism in the Colombian concessions for the technical matters is the friendly conciliator, formed by an Engineering Advisory Firm. This company is nominated by mutual accord, when technical controversies arise. The company must be nominated within the 30 days after the controversy has arisen.

The Conciliator's initial task is to reconcile the diverging positions. If agreement is not reached, the concessionaire has the choice of either taking the matter to the judicial system or requesting the establishment of the Arbitration Commission. This Commission is formed by the members chosen by mutual agreement and its decision is binding and not subject to appeal in the courts.

All matters not related with technical controversies would be conciliated by the same Arbitration Commission in accord with decrees 2279/1989 and 2651/1991, and law 23 of 1991.

4.4. Sustainability and Risks

The sustainability of the project benefits derives from: (i) the ability of the concessionaire to complete the project and comply with the performance standards set in the Contract; and (ii) the acceptance of the proposed toll rates by road users. Choosing a competent concessionaire, with sufficient qualifications as an operator of long-term concessions, strengthens the project's sustainability. Initial toll rates must be set by INVIAS taking into account the user's willingness to pay and possible impact on traffic diversion. The Government's contribution is intended to make the project financially viable with affordable toll rates. In turn, the project must generate enough revenues to enable the concessionaire service the debt and cover operation and maintenance expenditures. A critical factor is to mobilize long-term debt to avoid excessive exposure during the first years of operation of the concession.

Regarding risk allocation, the design and structure of the concessions in the new generations, attempt to strike a balance in the distribution of the project's risks among the sponsors, the lenders and the regulator. As shown in Tables No. 4.5 and No.4.6, the government has undertaken some measures in order to create a fair and reasonable allocation scheme.

Table No.4.5. - Critical Risks -

Risk	Risk Minimization Measure
Overall project economic and financial performance hampered by traffic volumes significantly below forecasts. Traffic growth along the corridors may be restrained by deterioration of economic activity, or changes in traffic patterns on national road network induced by other government investments.	The uncertainty of traffic forecasts has been a major issue in Greenfield projects[35]. The inclusion of existing sections with an established traffic pattern reduces, partially, this risk. The projects have to be designed on the basis of conservative traffic projections prepared by an independent consultant with ample experience in toll roads.
Public opposition to tolls, resulting from rates that after the inflation adjustments stipulated in the Contract, exceed users' willingness or ability to pay (which largely depends on how country economic conditions evolve).	Historically, toll rates on national highways have kept pace with inflation, and the expansion of the road concession program reassures this policy would continue.
Poor project performance due to (i) concessionaire's inability to comply with the standards stipulated in the Contract, (ii) constraints imposed by the project design (e.g., deficient level of service in tunnels), or (iii) interference with the operation of the facility or the development of traffic resulting from the deterioration of security conditions in the project area (exposure to current areas of guerrilla activity).	Risks minimization measures include: (i) the concessionaire's potential to realize an accelerated return on the investment in the event that the facility outperforms the traffic projections, or a loss of revenue in the event traffic falls because of poor performance; (ii) the operator liability to performance penalties set in the Contract for non-compliance with stipulated standards; (iii) the discipline brought by the lenders' scrutiny of financial covenants; (iv) stringent qualifications requirements met by the concessionaire, which minimize the risk of unskilled operator; and (v) availability of insurance for the concessionaire to protect its investment from guerrilla interference.
Fluctuations of foreign exchange and interest rates (where project revenues are in currency different to debt) may result in a debt-service burden beyond the capacity of the project.	The use of the Minimum Revenue Support, which being denominated in US currency would protect (albeit partially) against normal variations in exchange and interest rates during construction and ramp-up period. Other measures available include the use of a mix of local and foreign financing and hedging arrangements floating debt and stand-by funding.
Delays in project completion due to (i) the inability of the concessionaire to control cost overruns, (ii) shortages of funds during construction resulting from unforeseen increases in financing costs or delays in placing bonds, (iii) security unrest in project area or other force majeure events.	The combination of the following factors minimizes this risk: (i) the stringent pre-qualification requirements that bidders have to meet in respect of financial strength, technical capacity and construction experience; (ii) the limited recourse nature of the project provides strong incentives for controlling costs and imposes use of start-up arrangements for stand-by funding and other financial instruments (swaps, hedging) required by lenders.

Source: World Bank, 1998

[35] Greenfield project. A private entity or a public-private joint venture builds and operates a new facility. This category includes build-own-transfer and build-own-operate contracts as well as merchant power plants.

Table No. 4.6 Risk Allocation by Institution and Projects Phase

Concession Phase	*Risk/Obligation*	*INVIAS*	*Investors& Lenders*	*Insurance*	*Guarantee*
Pre-construction	Land Acquisition/Right of Way	x			
	Environmental Approvals	x			
	Government Financial Contribution	x			
	Project Design(Tunnels)	x			
	Project Design (Roads, Bridges)		x		
	Debt & Equity Financing		x		
Concession Term	Political Force Majeure	x			x
	Changes in Law	x			x
	Expropriation	x	x		
	Nature Force Majeure		x	x	
	Currency Devaluation		x		
	Currency Inconvertibility		x		
Construction	Cost Overrun		x		
	Construction Delays		x		
Operations	Tort Liability		x	x	
	Toll Evasion		x		
	Traffic Levels		x		
	Toll Adjustment	x			x
	Operations and Maintenance		x		

4.5. Regulations

Institutional and implementation arrangements:

The Ministry of Transport (MOT) has overall responsibility for the transport sector and the policy framework within which the project will be implemented as a private toll road concession. MOT annually approves the toll tariff proposed by INVIAS for collection on the national road network during the incoming year. For privately operated concessions, MOT approves the initial and subsequent tariffs, as well as the formulae for future adjustments stipulated in the respective concession contract.

INVIAS, the national road agency under the Ministry of Transport is charged with managing the Colombian national road network. As such, INVIAS owns the road facility and is responsible for: (i) defining the project design and performance standards, (ii) recommending and obtaining MOT's approval of the initial toll rate structure and (iii) granting the concession to a private Project.

Other Government Agencies. The National Department of Planning, through the Committee for Private Participation in Infrastructure (CPPI)[36] is responsible for coordinating private sector participation in the various infrastructure sectors, and monitoring adherence to the National Development Plan. The Ministry of the Environment (MOE) is responsible for issuing and monitoring compliance with the environmental license for the project (MOE has already approved the environmental license and the Environmental Management Plan; both were part of the bidding documents). The Regional Autonomous Corporations are responsible for issuing the environmental permits (location of campsites, protection of water sources and use of quarries) needed during construction.

4.6. Conclusions

Concession contracts show fewer delays and overcosts than the public works contract scheme. The average delay of the projects under concession has been 17 months, compared to 3.5 years for public works contracts. Concession projects had average overcosts of 40%, compared to 300% in public works contracts. Nevertheless, the figures for concessions are still high by international standards. Increased costs in concessions come from civil works (58%) and land acquisition (40%). Increases in costs of civil works are due to changes from preliminary to definitive design, and to additional works requested by the contractor. Changes of design explains 57% of the increments, while additional works explain the remaining 43%.

In Colombia, regulation is a new institutional choice, created as a delegation of authority that can revert to the executive power at any moment. It set the first stage for redistributing control rights on public utilities, fully held by politicians (both at the legislative and the city levels) before 1994. Private participation has increased the number of interested parties in

[36] The committee is composed of top representatives from the Ministries of Finance and Public Credit, Transportation, Energy and Mines, Environment, and the National Department of Planning.

public utilities. This creates an implicit system of checks and balances that could keep economic rents under control in the long term. Further private investment will occur if politicians are blocked in their attempt to maintain control over firms via public control or regulatory capture

With regard to contract law, it has been observed that legal rules and contracts are not binding. Both the concessionaires and government agencies rely on extra judicial agreements because they are cheaper and easier to renegotiate than resorting to the prevailing enforcement system. Enforcement is weak and does not replace or compensate for the quality of contract law.

The combination of weak enforcement and non-binding contracts keeps the cost of provision via concession high. Extra-judicial agreements amount to bilateral bargaining between a firm and a monopolistic government agency. In this legal and enforcement context, renegotiation (additional works, majority of risks borne by the government, changes in design, quality standards, coverage, unit costs, and the like) tends to be settled in favour of the concessionaire.

Better contract design, correct bidding objective function and contest format to grant concessions, and stronger reliance on incentive-compatible regulations are needed to increase the efficiency gains of private participation in public utilities and infrastructure.

Case No. 3 - First Generation Road Concessions: The Bogotá— Villavicencio Road

Terms of the Dispute

The construction of the Bogotá-Villavicencio road was contracted with private firms using public works contracts for two stretches, and a concession scheme for the third stretch and the operation and maintenance of the entire road. Though each type of contract shared risks between parties *ex ante*, in practice the government bore most of them *ex post*. Each and every project contingency ended up in claims. Pass-through of increased costs was easily accomplished by the contractors, finding almost no resistance from the government. The disputes in this project arise from:

- ✓ Failure of the government to timely comply with land acquisition, environmental licenses and other permits.
- ✓ Deficiencies in technical information and engineering studies, leading to changes in design and the periodic imposition of additional works.
- ✓ Inadequate methodologies for costs, expenses, traffic and rates estimation.

Analysis of the Case

The original road linking the country's capital with Villavicencio has a sinuous design. Frequent landslides make maintenance cost high (about US$30-US$35 million a year). This led to a decision to construct a new road, considered as the pilot project of the "first generation" of road concessions. In 1993, the government declared the project viable and stated that the 92 km of road would be completed by 1996.

The project included construction, operation and maintenance. Construction was divided into three stretches. Stretch I, between Km 8+000 and Km 39+200, would be developed under concession. The concessionaire would also take responsibility for operation and maintenance of the entire road. From Km 39+200 to Villavicencio (Stretches II and III), construction would be undertaken through a tender system with INVIAS resources.

The concession contract included guarantees on maximum overcost, minimum traffic and toll rates adjustment. The concessionaire, by means of a fiduciary contract, was required to establish an autonomous fund to collect and manage the resources for financing, constructing and operating the project.

Stretch I (KM 8+00 to KM 39+200)

Two consortia submitted bids for the original contest, which was declared void. The consortiums were ICA (Mexico)-CORFIGAN-ODINSA and Concesionaria Vial de los Andes, made up of Dragados y Construcciones (Spain) and Corporacion Financiera de los Andes (Coviandes). In the summoning for direct contracting, these same two firms participated again. The stretch was granted to the second consortium and the contract was signed in August 1994. The delivery of works was set for September 1999.

The works included construction and rehabilitation of the existing road, the construction of 2.3 km tunnel (El Boquerón), and the construction of the by pass of Cáqueza (9.6 km) with resources from INVIAS. Operations would last 178 months, including asset transfer to the government.

The start of construction was delayed by 15 months because of postponement in granting environmental licenses, delays in land acquisitions and difficulties in the road design. This forced the signing of an amendment to the contract May 28, 1996, which extended the delivery date for 17 additional months.

The length of the stretch was reduced, as it initially included Km 0+00 to Km 55+00. It was later modified to run from Km 8+00 to Km 38+200. In spite of the reduction, operation and maintenance costs were not reduced in proportion. The term for operation and maintenance was extended from 178 months to 196 months. The concession now expires in 2013, three years after the original date.

Before the filing the May 1996 amendment, Coviandes filed a US$15 million claim of pecuniary loss from no fulfillment on the part of INVIAS, equivalent to 30% of the value of the contract. The origin of the claim was the delay in the initiation of the works when the alternative of building the tunnel of El Boquerón was still being studied. The claim is not justified because the concessionaire was committed to submitting a complete design. Moreover, the 1994 contract foresaw the construction of this tunnel. Additionally, the 1996 amendment modified the costs and terms of the work in order to adjust it to the new design. The Cáqueza backup road (K39+100 to k55+100) was introduced as a modification of Stretch I. The work was assigned to Murillo Lobo Guerrero-Gayco S.A. in May 1997, to be completed

by August 1998. The work was already concluded, though with widespread flaws in pavement quality (Contraloría General de la Republica 1998).

Stretch II (KM 55+300 to KM 87+500)

This stretch, which entailed road rehabilitation, was initially assigned to the Brazilian firm Andrade Gutierrez Constructora S.A. in 1994, and scheduled for delivery in April 1997 (Contract 290/94) and December 1997 (Contract 291/94).

The contract was declared void by mutual agreement before completion on April 18, 1997, just twelve days before the deadline for the works agreed on one of the two sectors[37]. The same day INVIAS called three construction firms to submit quotations for completion of the work. On April 22, 1997 INVIAS invoked the state of "manifest emergency," which allows it to sign contracts bypassing normal procedures. This power was used to hastily write a contract with Inconstruc Ltda to deliver the remaining works within nine months. INVIAS subsequently granted an extension of two additional months. The works were finally completed in April 1998. Poor quality led to further negotiations to permit the contractor to improve the quality of the work. Delivery in inadequate conditions reveals auditing problems related with the lack of adequate incentives and penalties to undertake this task in an efficient way.

Stretch III (KM 87+512 to the Intersection Villavicencio-Acacias)

The works for Stretch III included construction and rehabilitation of the existing road and the construction of two tunnels (Bijagual and Buenavista, with a length of 185 m and 4,519 m respectively). The project was assigned to Recchi Grandi Livori Fincosit in August 1994 and had to be delivered by October 1997. The firm did not meet scheduled dates and costs; however, no penalties were imposed. The deadline was extended by one month and finally the contract was declared void in January 1998 at which time close to 50% of the construction had been completed. Rechi Grandi Lavori Fincosit is requesting compensation of US$55 million from INVIAS for breach of contract.

The delay originated mainly in the Buenavista tunnel (which was only 47% complete). In February 1998, INVIAS invoked again the state of manifest emergency and direct contract

[37] The Brazilian firm withdrew for safety reasons, since some of its engineers were kidnapped by the guerrillas. Andrade Gutierrez is currently requesting compensation of US$6 million from INVIAS.

with Conconcreto in March 1998 for the completion of the tunnel. Works are to be finished in 2001[38]. The bypass of Pipiral, which should take at least two years to complete, has not been contracted yet. Costs increased 38% over the face value of the original contract as compared to the initial estimation.

The delays in the delivery of the third Stretch forced the State to make disbursements to keep the financial equilibrium of the contract. INVIAS tried to transfer those cost overruns to the customers by raising toll rates before the works were completed. User and community opposition to the measure have prevented changing the agreed to rates, forcing INVIAS to provide additional funding. By the delivery time toll rates will be adjusted by about 62%. Renegotiation on quality has delayed the application of the new rates.

According to calculations performed in November 1998, the road will eventually cost twice the original value contracted.[39] Four firms had to be hired to complete the works. By 1998, the execution level reached only 60%.

In practice, the seemingly superior contracting scheme of concessions has not worked. Fines were not levied. Delays and cost overruns were borne by customers. The weak bargaining power of INVIAS led to substantial changes in the road's design, as well as delays and renegotiations in the construction schedule and the cost of the works. Additionally, the government has shown a willingness to increase its contributions to the project. The financial equilibrium of the concessionaire has prevailed in detriment to customers and the government. Contract design has improved but enforcement remains ineffective. Efficiency gains heavily depend on strengthening the institutions responsible for enforcement.

Case 4 - Second Generation of Concessions: The El Vino-Puerto Salgar Project -

Terms of the Dispute

In October 1997, the El Vino-Puerto Salgar concession was granted in a multi-attribute contest in which the bidding variable with the highest weight was "requested government contributions." The bidding variable "expected present value of revenues" was given a very

[38] The Buenavista tunnel is 5 km long and it is situated at the entrance of Villavicencio. Its final costs are still uncertain, since serious geological problems were encountered during construction. Moreover, solving tunnel ventilation problems may cost INVIAS around US$25 million.
[39] The road was contracted for US$160 million of 1994 and will end up costing US$320 million as of 1998.

low weight, in spite of being more competitive. The firm Concesionario del Magdalena Medio won the bidding process by submitting the highest requested present value of revenues and the lowest requested government contributions, and foregoing requests for guarantees. As the concession was awarded, the concessionaire requested a change in design to reduce project costs and risk. The aim of this strategy was to capitalize a high chance of contract modification *ex post*. It attains perfect hedging because high present value of revenues is ensured anyway. The variable with highest impact in the bidding process is loosely related to performance.

Analysis of the Case

The El Vino-Puerto Salgar project comprises:

- ✓ Operation and maintenance of the stretch El Vino-Tobia Grande-Villeta Intersection (51 km).
- ✓ Rehabilitation, operation and maintenance of the stretch Villeta-Honda (72 km).
- ✓ Construction, operation and maintenance of the stretch Intersection Tobia Grande-Intersection Puerto Salgar (68.5 km).
- ✓ Operation and maintenance of the stretch Honda-La Dorada-San Alberto (380 km).[40]

The concession contest was organized in two stages: a preliminary qualification (May 1997), followed by the bidding process itself (October 1997). The bidding variables and weighting factors were: requested government contributions (69%), minimum requested revenue (10%), expected present value of requested revenues (just 3%), requested liquidity guarantees (6%) and items subject to geological risk (12%). In practice, this arrangement could be labelled as "minimum value of requested government contributions," where the winner is granted the right of collecting their proposed expected revenues. This is totally different from the Engel *et al.* 1997 approach (least present value of expected revenues): the winner here was precisely the firm that proposed (and ensured) the highest expected revenue, winning by requesting the lowest amount of government contributions. Colombia committed itself to funding the project with US$285 million at most. Minimum revenue guarantees were limited to the period 1998-2006 and overcost guarantees in tunnel construction were limited too.

Four international consortia participated in the contest. The winning consortium was Concesionario del Magdalena Medio (made up by the Colombian and Spanish firms Sacyr-

[40] The total length is 571.5 km, of which 68 correspond to new works, 442 to maintenance and 60 to rehabilitation. The estimated cost of the works is US$411 million. This is a complex work including 20 km of tunnels with an estimated cost of US$244 million. The road will have 6 tolls.

OCP CONSTRUCCIONES–IFI), which asked for US$137.1 million in government contributions[41] and gave up the option of government guarantees. Moreover, the consortium did not request a guarantee for cost overruns in the construction of the tunnels, nor the minimum income and liquidity guarantees. Instead, they asked for the highest expected value of revenue. Accordingly, one third of the project cost would be financed with government contributions,[42] the remaining two thirds being funded by the concessionaire. The work was scheduled to start in July 1998.

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NVIAS was now in charge of purchasing 95% of the land needed to start the project. Inflation risk was hedged with toll indexation to RPI. Revenue risk was hedged allowing extensions up to five additional years; if expected revenues are not realized during the extension, no additional money will be handed out by INVIAS. *Force majeure* risks are borne by the concessionaire, excepting terrorist attacks and *coups d'état*, which are borne by INVIAS. Risks stemming from changes in the law related to environmental issues and tariff policies are borne by INVIAS.

As soon as the concession was granted, Concesionario del Magdalena Medio proposed a new design eliminating all the original bridges, reducing the number of viaducts from 35 to 26, and the number and total length of tunnels (from 15 to 9, and from 19.6 to 6.2 km, respectively). This proposal challenges the contract clauses, as presentation of alternative designs was forbidden.

A decision about the acceptance of the new design had not been made as of March 1999. The new design avoids the geological risk and cost of tunnels, but adds 7 more km to the road. Were the proposal accepted, concessionaire profits would increase (7 km of open road are cheaper than 13.4 km of tunnels), but the cost reduction would not be passed on to the users.

The case illustrates two huge government weaknesses the design of in procurement mechanisms and the credibility of enforcement. Contests granted through multivariate ranking are easier to manipulate and the winner may not be the bidder with the highest

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[41] Some national civil engineering firms believed that undertaking of this project would be impossible under the conditions offered by the winner (Poder y Dinero 1997). They state that project profitability required contributions ranging between US$240 and US$260 million.

[42] The government was authorized (Conpes Document 2997 of April 16, 1998) to finance contributions through foreign credit

valuation. In this case, the bidding variable with the highest weight (requested government contributions) bears no relationship to effort. With respect to the credibility of enforcement, poor understanding of incentive compatibility is less harmful than the perception on the part of bidders that breaching the major contract dispositions *ex post* will have few, if any, consequences on their finances or reputation. The behavior observed in this case is extremely disturbing. Not only rents are ensured (due to the almost irrelevant role of expected present value of requested revenues in the ranking), but also there is an attempt to change the whole object of the contract *ex post*.

Chapter V MEXICO

5.1. COUNTRY BACKGROUND

5.1.1. Fact sheet

- ✓ POPULATION: 99.1m (2000)(a)
- ✓ POPULATION GROWTH: 1.9% (average, 1996-2000)
- ✓ LAND AREA: 1.9m sq km
- ✓ FISCAL YEAR: Starts January 1st
- ✓ CURRENCY (Mexican peso (Ps)): Ps9.46:US$1 (2000, average); Ps9.209:US$1 (August 31st 2001)
- ✓ GDP: Ps5.3trn (2000); US$575bn (2000, at market exchange rate); US$892bn (2000, at PPP)(a)(b)
- ✓ GDP GROWTH: 5.5% (average, 1996-2000); 6.9% (2000)
- ✓ GDP PER HEAD: US$5,800 (2000, at market exchange rate)(a); US$9,000 (2000, at PPP)(a)(b)
- ✓ INFLATION: 16.7% (average, 1996-2000); 9.5% (2000, average)

5.1.2. Background

Mexico was ruled by the Partido Revolucionario Institucional (PRI), or its predecessor, the Partido Revolucionario Nacional (PRN), between 1929 and 2000. At one time strongly nationalistic and interventionist, the party embraced free market policies and economic liberalisation in the 1990s. Victory for the presidential candidate of the centre-right Partido Accion Nacional (PAN), Vicente Fox Quesada, in July 2000 is leading to changes in the political system, but the PRI remains the largest party in Congress.

5.1.3. Political structure

The Mexican political system is presidential, bicameral (Senate and Chamber of Deputies) and federal (32 states). The president is elected every six years; Mr Fox took office in December 2000. The 500 members of the Chamber of Deputies are elected every three years: 300 from single-member districts and 200 by proportional representation. 75% of Senate members are elected directly for a six-year term; the remaining 25% are elected by proportional representation.

5.1.4. Policy issues

The gradual deregulation of sectors of the economy will continue under the Fox administration, although proposals to privatize the electricity sector are proving contentious. Monetary policy is geared to reducing inflation to rates in OECD countries in the medium term. Fiscal policy is generally cautious, but the tax system requires reform in order to lessen dependence on oil receipts and increase revenue to help meet Mexico's pressing social and infrastructure needs and defray the costs of social security reform and the bank bail-out. The floating exchange rate curbs destabilizing short-term capital inflows, but complicates efforts to reduce inflation. Recent financial reforms are helping to strengthen balance sheets and attract foreign investment into the banking sector, paving the way for a resumption in lending in 2002. The Fox administration is seeking to introduce micro-credit schemes and improved access to credit for small and medium-sized enterprises.

5.1.5. Foreign trade

Trade liberalization has deepened following a free-trade agreement between Mexico and the US in 2000. In 2000 merchandise exports totalled US$167bn and merchandise imports US$175bn (of which 35.4% were for the maquila[41] industry, destined for re-export), producing a trade deficit of US$8bn. The current-account deficit reached US$18.1bn, equivalent to 3.2% of GDP.

Major exports 2000	**% of total**
Manufactures	88.0
Maquiladora	47.7
Oil	9.8
Agricultural products	2.2
Major imports 2000	**% of total**
Intermediate goods	76.5

[41] A "Maquiladora" is a foreign-owned assembly plant. Maquiladora companies import materials and export the finished products free of taxes. They import their materials from the United States, and their finished products are received primarily in the U.S., but all around the world as well. Maquiladoras are also known as twin plants or maquilas. There are a great number of Maquilas in Mexico and in other Central American countries, but the ones that will be focused on are those in near the Mexico border to the United States. Maquiladoras became popular after the advent of NAFTA, which allowed for a large profit to be drawn from them.

Maquiladora	35.4
Capital goods	13.9
Consumer goods	9.6
Leading markets 2000	**% of total**
US	83.2
Canada	5.2
Japan	1.3
Brazil	1.1
Leading suppliers 2000	**% of total**
US	74.8
Germany	3.9
Japan	3.8
Korea	1.6

5.1.6. Taxation

The corporate income tax rate is 30% for retained earnings and 40% for dividends. Tax on royalties is between 15% and 34%. Depreciation allowances range from 5% to 25%, but can be up to 50% for equipment used in pollution control. Tax on assets is 1.8%, which is deductible from income tax. The value-added tax (VAT) rate is 15%; food products and medicines are currently exempt.

5.2. Economic Overview

Mexico is the world's 13th-largest economy, its eighth-largest exporter of goods and services, and fourth-largest oil producer. Far-reaching stabilization and structural reform efforts since the late 1980s are rapidly transforming the Mexican economy and clearly putting the country on a higher growth track. Despite the massive setback from the 1994-95 financial crises, the country experienced a trend of average annual economic growth during the 1990's of close to three percent compared to the virtual stagnation of the economy in the 1980's. The initially export-led recovery after the 1994-95 financial crises has brought the trend of average annual economic growth close to five percent. Trade liberalization and in particular the North American Free Trade Agreement (NAFTA) clearly contributed to this rapid economic transformation.

Mexico's gross domestic product rose to US $484 billion in 1999, and economic growth surged to 6.92 percent in year 2000, easily outpacing the original government target of 4.5 percent. Fiscal and monetary discipline and a flexible exchange rate policy, have been the Mexican government's key economic policy instruments to create conditions for strong macroeconomic stability and growth. External factors, notably the high level of international oil prices and economic growth in the U.S., have also contributed to the recent strong growth performance.

Last year's (2001) extraordinarily low inflation rate of just 4.4 percent virtually ensures higher inflation this year. Meeting this year's 4.5 percent inflation objective would have been difficult in any case. Strong aggregate demand and in particular a rapid expansion of private consumption is leading to increasing trade and current account deficits, notwithstanding the country's continued strong export performance and the significant oil export revenue windfall. Nevertheless, the moderate level of the current account deficit as well as the sound structure of its financing (largely through foreign direct investment) are reassuring, as they suggest that the external accounts will not pose a major risk to the country's macroeconomic stability. In addition, the flexible exchange rate policy has thus far proved its effectiveness in absorbing external shocks. The Government's stated intention to continue with it should help avoid build-up of undue external finance pressures and macroeconomic imbalances.

Although short-term macroeconomic management has been successful, challenges remain. Dependence on oil for fiscal revenues needs to be reduced by tapping other sources. Responding to the drop in international oil prices in 1998 and 1999, the government reduced public spending to keep the fiscal deficit at its target of respectively 1.25 and 1.15 percent of GDP. Even though broad-based social expenditures have been sustained and their efficiency improved due to the increase in more targeted policy interventions, the reduction in public spending has not been without cost. Persistent low levels of public investment have already created a substantial backlog in basic infrastructure improvements. Sustained economic growth will require additional efforts and expenditures to improve the quality of public education and health services.

Mexico had a GNP per capita of US$5,080,as per year 2001, and had a total external debt stock of US$152 billion by September of 2001. Many of its social indicators are positive. Average life expectancy at birth is 72 years, adult illiteracy is just nine percent, and primary

school enrolment is at almost 100 percent for the relevant age group. Almost three-quarters of Mexico's 97.4 million people live in urban areas, and 83 percent have access to safe water.

But poverty persists, with 28.6 percent—or 27 million—of the country's people classified as poor, according to 1996 consumption measures. Much progress on poverty reduction since the mid-1980s was wiped out by the 1994-95 currency devaluation crisis. While the impressive economic recovery as of 1996 has likely reduced the proportion of poor reported, no comparable data for a full assessment of this impact is yet available.

Economic Data

	1997	1998	1999	2000
GDP per head (USD)	4,282	4,439	4,990	5,780
GDP (% real change)	6.78	4.91	3.84	6.92
Government consumption (% of GDP)	9.92	10.40	10.93	10.70
Budget balance (% of GDP)	-0.73	-1.25	-1.13	-1.10
Consumer prices (% change pa; av)	20.63	15.93	16.59	9.51
Public debt (% of GDP)	30.66	32.59	29.07	25.40
Labour costs per hour (USD)	1.37	1.41	1.58	1.82
Recorded unemployment (%)	23.30	21.78	19.06	18.50
Current-account balance/GDP	-1.86	-3.74	-2.95	-3.10
Foreign-exchange reserves (m$)	28,136	31,461	30,992	35,142

5.3. OVERVIEW OF THE CONCESSION PROGRAMME

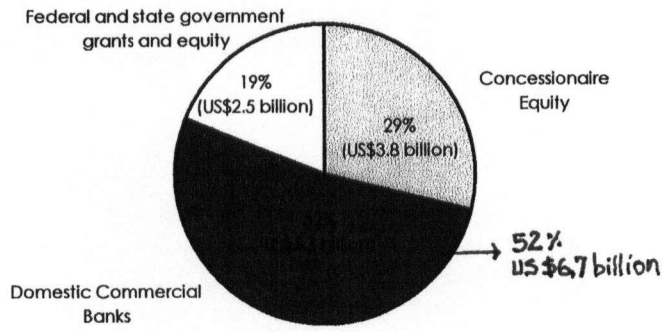
5.3.1. Introduction

Mexico's transportation infrastructure comprises approximately 303,000 km of roads (of which 67 percent are unpaved), more than 25,000 km of railways (one percent electrified), 2,900 km of navigable rivers and coastal canals, and over 50,000 km of oil, gas, and petrochemical pipelines.

Mexico's private toll road program more than doubled the national toll road network—from 4,500 kilometres in 1989 to 9,900 kilometres in 1994. Fifty-three concessions were awarded for the approximately 5,500 kilometres of roads, and by the first quarter of 1995 forty-four were in full or partial operation, representing 5,120 kilometres. The investment of approximately US$13

billion in the program over the period 1989–94 was sourced from local commercial bank debt, concessionaire equity, and federal and state government grants and equity contributions (Figure 5.1.).[42]

Figure No.5.1. Sources of Funding for the Toll Road Concessions



Source: World Bank, 1998

Even with these accomplishments, the program was highly controversial. Gross miscalculation of investment costs and operating income led to an unsustainable set of operating conditions for these limited recourse financings. The financial equilibrium of the sector was further undermined by the Mexican currency crisis of December 1994. The combination of macroeconomic and project-level factors brought new project development to a standstill, despite government estimates that another 6,500 kilometres of roads were needed by 2000.

The devaluation also scared away international investors, and ending, at least temporarily, interest in new concessions. The financial and economic repercussions had been widespread. Local commercial banks were saddled with non-performing toll road loans estimated at US$4.5 billion to US$5.5 billion. Concessionaires and their affiliates were faced with writing off significant portions of their investments. Moreover, after several failed attempts to restructure the weakest concessions, the government was forced in August 1997 to take over 25 of the concessions at a cost to the government of U$8 billion. Users, in the meantime, were left with some of the most expensive road tolls in the world.

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[42] Federal funding also included contributions by Petroleos Mexicanos (Pemex) and by Caminos y Puentes Federales de Ingreso y Servicio Conexo (CAPUFE), the federal highways and bridge operator, for more than 1,100 kilometres of public roads.

In retrospect, some industry observers have characterized the toll road program as a rushed and poorly designed effort to develop the infrastructure the country needed to compete effectively in an era of free trade. Others have simply labeled it a mechanism to lift the construction industry out of the economic depression of the 1980s. Whatever the diagnosis for the poor performance of the sector, from a private investment perspective the impact was to shut off capital flows to the sector and to add to the Mexican banking system's non-performing loan portfolio.

However, Mexico's experience did not lead to reduce interest in private concession toll roads elsewhere in Latin America. On the contrary, the challenge for these other countries, then, was to learn from Mexico's experience in designing their concession programs. In 1997, most industrializing countries in the world faced the same problems that led Mexico to use private concessions: growing traffic and highway needs but limited ability or willingness of the public sector to take on additional debt to build roads. As a result, virtually all the expressways that had been built in developing countries during the 1990's were built as private toll roads concessions.

5.3.2. Legal Framework

For the past ten years Mexico has been in the process of reforming its domestic legislation to attract foreign investors. Under the terms of the Foreign Investment Laws of 1994 and 1997, markets that were once reserved either for the state or for Mexican nationals have been opened to foreign capital participation. These activities include: 1) Transportation and Distribution of Natural Gas and Electricity; 2) Oil Exploration and Operation of Secondary Petrochemical Plants; 3) Operation of Port Facilities, Railroads, Airports and Highways; and 4) Telephone and Satellite Services.

Under the concessions program, the Secretary of Communications and Transport granted concessions to special-purpose entities, which in almost all cases were either directly owned by or were affiliates of one or more local construction companies. The concession agreements were issued under the federal law of General Means of Communication, which governs, among other things, roads that connect two or more Mexican states and bridges along any such road. Under this legal framework, concessions could not exceed fifteen years,

though this was later extended to thirty years, and a free, parallel alternative to each highway was required.

One of the most recent examples of Mexico's attempt to attract private investment for infrastructure relates to the privatization of the Mexican airport systems. In 1995, the Mexican Congress enacted the Airports Law in order to privatize the existing airport system and to allow for the participation of foreign capital in the process.

The most important aspects of the Airports Law include the creation of four regional airport concessions and the creation of their respective holding companies. The participation in the holding companies is to be initially shared between the federal government and a strategic partner to be made up by a qualified Mexican partner and one or more foreign investors. The strategic partner will initially be entitled to own 15% of the holding company and may increase its participation to 20% after five years. Once the concession of thirty years is awarded to the strategic partner, the government will then sell its shares in the holding company through a public offering through the international capital markets. Under this scheme, the Mexican government seeks to turn the running of the airport system over to private investors and world class airport operators.

Mexico's prior experience with the privatization of the railroad system paved the way for the airport privatization. Under the 1995 Railroads Law, the Mexican Congress authorized that the nation's railroad system be divided into three regions each having its own concession. Once the concession was awarded, the government sold off 80% to 100% of its participation in each railroad group allowing the concessionaire to retain the sole right to administer and operate the railroad.

Bidding for public works and concessions is highly regulated. Under the Law of Acquisitions and Public Works, the Mexican Congress has mandated that competitive bids be received from qualifying candidates. Although the law permits direct assignation of contracts without competitive bidding, said assignation is only permitted in time of emergency and is subject to review by the Comptroller General's Office.

5.3.3. Concessioning Process

Mexico began building its high performance road system as publicity owned toll roads in the 1950's. Approximately 1,000 kilometres of public toll road were eventually opened, with most construction taking place before 1970. These roads were mostly operated by the federal toll road authority, CAPUFE (Caminos y Puentes Federales de Ingreso y Servicios Conexos), an agency of the Ministry of Communications and Transportation. The public toll roads were concentrated around Mexico City, where traffic volumes were generally highest.

In the early 1970's, however, Mexico shifted to tax financing for new expressways, fuelled by the pro-public sector regimes of Presidents Echevarria (1970-76) and Lopez-Portillo (1976-82). By the mid of 1980s, almost 3,000 kilometres of untolled four-lane divided highways had been opened to supplement CAPUFE's 1,000 toll network. Many of these highways were near Mexico City too, but substantial segments were built in the north around other major cities and on routes to the border on the United States.

The rapid expansion of the public sector combined with the collapse of oil prices in the early 1980s adversely affected the Mexican economy, which led in turn to another dramatic reversal of government polices. With the Mexican economy experiencing negative growth rates in 1982 and 1983, government budgets deficits grew to as much as 16 percent of the gross domestic product, and the financing of these deficits helped stimulate severe inflation. In response, President Miguel de la Madrid (1982-1988) initiated a program to cut the size of the public sector which his successor, President Carlos Salinas de Gortari (1988-1994), expanded and accelerated.

Privatization played a key role in these two Presidents strategies for reducing the government budget deficit, largely through the sale of liquidation of money losing state enterprises. In fact, in 1986 President de la Madrid asked the National Development Bank, BANOBRAS, to analyze the possibility that new toll roads could be built as private concessions. BANOBRAS was optimistic and, as an experiment, two road concessions totalling 215 kilometres were granted at the end of the la Madrid administration. BANOBRAS served as the concessionaire and financed 50 percent of the project costs, the contractors financed 25 percent and state governments the remaining 25 percent. However, highways were not a focus of President de la Madrid's program largely because the recession had cut traffic growth rates and made road investments a less pressing priority. By the time president Salinas was inaugurated, the economy had begun to show signs of recovery and the need for road improvements was evident.

In February 1989, less than three months after taking office, President Salinas announced a dramatic new program to build 4,000 kilometres of new toll roads and seven new international toll bridges as private concessions before the end of his administration in 1994. Road building would provide an immediate stimulus to the economy by putting Mexico's idle construction industry back to work, and high quality infrastructure was considered critical to Mexico's long term growth. Private toll roads seemed the only choice, moreover, given that the government was trying to cut the public deficit and was in the midst of difficult renegotiations to reschedule the enamours foreign debts it had assumed during the public expansions of the 1970s.

5.3.3.1 Tendering procedures

Mexico did not have many models to draw from when designing its concession program, as it was one of the first developing countries to do so. Spain and France had awarded private concessions for toll roads in the 1960s and early 1970s, but not in a very transparent and competitive process. Argentina, Indonesia and Malaysia were beginning concession programs and Britain and several states in United States were studying the idea, but in 1989 none had much experience to offer.

Under the new program, the Secretariat of Communications and Transportation (SCT) would select the roads to be offered for concessions subject to the constraint that a parallel free road had to be available for motorists. The SCT would also specify the toll to be charged, although tolls would be adjusted twice a year to keep pace with the consumer price index. Bidders would be supplied with preliminary designs, costs estimates, and traffic projections prepared by the SCT. The concession would be awarded to the bidder that offered the shortest concession period, which initially could not exceed 15 years. The maximum was soon raised to 20 years and finally in 1993 to 30 years.

The concessions were to be awarded to consortia of construction companies and banks. The construction companies were expected to put 25 to 30 percent of the cost in the form of "sweat equity" by discounting their construction bills by the agreed upon percentage. The companies could afford such discounts, the government reasoned, by deferring their normal profits and the depreciation on their construction equipment, which was idle in the recession

anyway. The banks would finance the remaining 70 to 75 percent. To guard against conflicts of interest, each concession would create a special independent trustee to review the contractor's bills, pay out the bank financing and distribute the toll proceeds to the investors.

The government would guarantee its traffic and cost estimates in part. If traffic were less than SCT forecast, the concessionaire could request an extension of the term of the concession. The concessionaire was responsible for the first 15 percent of any construction cost overrun; overruns in excess of 15 percent and any overruns caused by government-imposed delays or design modifications were grounds for request for concession extensions. Direct public assistance for the concessionaires was initially to be kept to a minimum, except that the SCT would assemble the required right-of-way and lease it to the concessionaire for a nominal charge.

In designing the program, Mexican government officials were concerned that the process of awarding concessions would be competitive and fair. Bidding for a concession would take place in two phases. In the first, bidders would be pre-qualified based on whether or not they had the experience and financial resources to execute the project. In the second phase, the pre-qualified bidders would bid on a single easily measured criterion – the concession duration- with all other terms set by the SCT in advance. Competition along one dimension, SCT official reasoned, would make the process transparent to all and less subject to charges of manipulation and fraud.

The SCT chose concession duration as the basis for the competition for both political and financial reasons. When the Salinas administration was drafting its toll road concession law in 1989, it reportedly faced a revolt from the traditional populist legislators in Mexico's ruling party, the PRI (Partido Revolucionario Institucional), who were opposed to granting private concessions for essential infrastructure like toll roads. The compromise was to reassure the legislators that the concessions would revert to the state as quickly as possible by requiring in the law that the concessions were awarded to the bidder proposing the shortest duration and by setting a maximum duration.

Even without the political constraints, the SCT might have been forced to base the competition on concession duration because short concessions made it easier to attract private capital. Financing long-term debt was nearly impossible in the Mexican domestic capital market during the 1980s, given the virulent inflation at the time. Even medium term (5

years) instruments were rare and could be sold only by the largest and most secure companies. The banks involved in the consortia preferred shorter concessions since they were reluctant to tie up their own funds for long periods. The contractors were also anxious to recover their sweat equity quickly, especially since some would be in the form of deferred depreciation on their equipment.

The experience showed that both the tendering process and the concession design were quite inadequate; the pre-qualification standard was not rigorous enough. For instance, the pre-selection process to screen out potential bidders, that lacked the capacity to assume the essential risks of construction design and management, completion of large projects, and commercial management of toll road operations, was not effective.

While operating a toll road is fairly simple, managing a toll road program is much more complex. It includes estimating demand in the face of competition from toll-free roads or other forms of transport, adjusting tolls to optimize revenues, planning maintenance to minimize long-term costs, and managing short- and long-term financial commitments. Ideally, the bidding consortia should be able to demonstrate that these skills are available to them. The lack of a good screening process led, for example, to the selection of medium-size concessionaires that financed their equity contributions through commercial loans. When projects began to suffer financial difficulties, these concessionaires were often unable to meet their equity infusion requirements. Others did not have the necessary technical capabilities, including specialized machinery, skilled labor, and adequate quality control procedures. Even some of the larger companies were stretched too thin, given the speed at which different concessions were awarded to the same firm.

Additionally, the project award criteria limited the pool of potential candidates (and thus potential competition for the market) to a handful of local construction companies that were more interested in the construction work than in the long-term financial viability of the projects.

5.3.4. The concession program

By early 1992, 3,600 kilometres had been awarded and 1,500 kilometres were already open to the traffic. Given the rapidity of the program, four basic problems were already evident. One

was that the toll road program was too extensive for every highway to be financially self-supporting from its toll revenues alone. The concessions with the highest profit potential were generally among the first to be awarded. By 1990, as the program expanded to award concessions with less traffic or more difficult construction, the government began to offer concessions in which it participated in the financing. Initially the maximum government contribution was set at 25 percent of costs, although this was exceeded in some late concessions.

In early 1992, SCT announced that future government contributions toward construction costs would be treated as equity investments instead of grants; they would thus earn the same returns as the sweat equity investment of the contractors, instead of no returns at all. The primary source of the government equity investments was surpluses generated by the existing CAPUFE toll roads. The government gradually was forced to increase its maximum share of the investment in any new road from 20 to 40 percent of construction costs.

A second problem was that awarding the concessions based on concession duration encouraged potential concessionaires to bid for very short concessions and to charge the maximum toll allowed. The average duration of the first 22 concessions was just short of twelve years and two were for only five years. Because of the high tolls, traffic was lower than expected and some of the toll roads were almost empty while the parallel untolled roads were heavily congested and deteriorating.

Third, the quality of the design, cost and traffic projections supplied by SCT was often not very good. This was caused in part by the speed of the program; with thousands of kilometres of concessions being let each year, the SCT simply did not have the resources to prepare very detailed design or projections. The SCT did not have either a good idea of how the motorists would react to the tolls since the maximum tolls allowed were so much higher than those CAPUFE charged. In 1988, before the concession program started, CAPUFE's average toll was US$0.02 per vehicle kilometre, while in 1991 the average concessionaire was charging US$0.17 per vehicle kilometre[43].

Additionally, there was some concern that the contractors were taking advantage of the system both by underbidding and by exaggerating the sweat equity they were contributing. Underbidding might be encouraged because extensions were possible in the case of costs

[43] Goméz-Ibañéz and Meyer, 1993

overruns. Exaggerated equity might be possible because the other members of the concession who were supposed to monitor the contractor's bills were not accustomed to doing so. In principle, the concession law required that each concession establish a special trust that was to represent the lenders and other equity holders and to scrutinize the construction bills. However, most of the debt for the concessions was held by Mexican banks, which had been nationalized in 1982 and were not privatized until 1992. In the early years of the concession program, when the banks were still public, they were pressed by the government to lend to the concessions. And as public institutions, they probably were less accustomed than they should have been monitoring the behaviour of their borrowers closely.

Despite these problems, the government went ahead. At some point during the early 1990s the government expanded its commitment to build 4,000 kilometres of concessions by an additional 2,000 kilometres. The SCT identified a priority national network of five main routes. Three of these priorities routes ran from Mexico City North to the US border (one trough Guadalajara to Nogales, a second through Leon and Chihuahua to Ciudad Jerez and a third through Saltillo and Monterrey with branches to Nuevo Laredo, Reynosa and Matamoros). The other two routes extended from the Pacific to the Atlantic coasts (Acapulco-Mexico City –Tampico) and from Mexico City southeast to Veracruz and the Guatemalan border. Many segments of these routes had already been modernized by CAPUFE or as untolled divided highways or had been among the early private concessions. The unimproved links were to be awarded as new concessions, with government as needed. Interestingly, some segments in the planned national network were unprofitable not only because of low traffic but because of strong competition from untolled alternatives. This was particularly true in the deserts on northern Mexico, where the existing national roads was often straight, flat and not congested by local traffic.

The expansion of the program was encouraged by the fact that after a decade of stagnation the Mexican economy had recovered strongly under President Salinas' program-with the economy growing at 6 to 7 percent per year; more roads would be needed soon. The president was apparently also under political pressure from state governors to add roads in undeserved areas. In any event, the Federal government eventually awarded 52 concessions for 5,486 kilometres between 1987 and 1995 (See Table No.5.1), most to private consortia but some to state governments. The state governments themselves awarded approximately 20 additional concessions on the state road network, although some of them were never begun or completed because of lack of financing.

Table No.5.1- Concessions Awarded by the Federal Government, 1987-1994

Year	Concessions awarded that year			Cumulative Total		
	Number Awarded	Awarded Competitively	Kilometres	Number Awarded	Awarded Competitively	Kilometres
1987	2	0	212	2	0	212
1988	2	0	92	4	0	304
1989	10	9	1194	14	9	1498
1990	10	7	1234	24	16	2732
1991	9	6	723	33	22	3455
1992	8	3	1276	41	25	4731
1993	9	0	670	50	25	5402
1994	2	0	85	52	25	5486

Source: " La Privatización de la Infraestructura Carretera"

The private concessionaries included most of the major construction companies and banks in Mexico. Mexico's three largest construction companies (Tribasa, ICA and GMD) won 23 of the concessions that were awarded by 1995, while the reminder went mainly to smaller construction companies or, in a few cases, to state governments. By December 1994, a total of US$13 billion had been raised to build 5,120 kilometres, of which, 29% was in the form of concessionaire equity, 52% in loans from domestic commercial banks and 19% in federal or state government equity investments.

As the program expanded, cost overruns and traffic shortfalls continued to be a problem. For instance, on roads opened before 1995, the average construction cost of a concession was 24.7% higher in real terms (net of inflation) than the original estimate by the SCT or the concessionaire. This figure does not reveal the full extent of the overruns associated with the "hard costs" of construction, that is, the costs associated with required equipment, material, and labor, and as opposed to "soft costs" (interest payments during construction, cost escalation due to inflation, advisory services, and the like). Of 31 roads for which detailed costs were available 6 had construction costs that were less than 10 percent higher than the original estimates, 8 had costs 10 to 25 percent higher and 17 had cost overruns in excess of 25 percent. Additionally, the average level of traffic was only 68 percent of that originally guaranteed by the SCT. Of 32 roads for which detailed traffic data were available, traffic exceeded guaranteed levels on only 5 and was less than 50 percent of guaranteed levels on 16.

Cost overruns and delays frequently arose because of information deficiencies, problems with securing rights of way, lack of effective turnkey construction arrangements, unanticipated design changes, local community resistance, and permitting issues. The dramatic drop during 1990–94 in both inflation and interest rates offset in part the real increases in hard costs.

Other reasons for cost overruns included the following:

Projects often broke ground with only very preliminary engineering and design work. In the case of the 267 kilometer Cuernavaca-Acapulco toll road, for example, this led to cost overruns of 200 percent and time delays of thirty months.

Construction often began without first securing the right of way. This failure was often exacerbated by mounting resistance from local farmers and community groups, environmentalists, and historical conservationists, and resulted in delays and even rerouting of some projects. As problems occurred, machinery and material sat idle while mobilization and interest costs mounted.

One of the most frequently recurring problems related to supervision and unilaterally mandated change orders by the Secretary of Communications and Transport. In a project in which four pedestrian bridges were expected, the final number reached almost sixty as a result of government-mandated change orders, often required to appease local interest groups.

Many projects were financed under very loose cost-plus construction arrangements or none at all. This, combined with the fact that lenders only rarely hired an independent engineer to assist them with their due diligence investigation before financial closing or with supervision of the contractors' efforts, created a void in terms of monitoring quality control programs, permitting issues, and the progress of construction budgets, critical path activities, and the like.

In some projects, construction came to a virtual standstill because of poorly defined procedures and bureaucratic delays regarding the issuance of permits for purchase and use of chemicals or dangerous substances. In one project, time delays resulting from problems in securing permits for dynamite directly resulted in cost increases of nearly 30 percent.

5.3.4. Renegotiations

The continuing problems of the toll roads would force several rounds of restructuring during the 1990s. The adjustments were at first made by a small team of analysts operating under the Subsecretary for Infrastructure of the SCT and consulting with senior official of the finance ministry. This team grew over time and in May 1994 was finally established as a separate agency, the toll road office (Unidad de Autopistas de Cuota), reporting directly to the Subsecretary. As of June 1997, the Toll Road Office had a staff of approximately 65 people to supervise 63 federal concessions for toll roads or bridges[44]. The approximately 20 state concessions were supervised by the respective state governments, although the problems the states faced and the solutions they were adopting were apparently similar[45].

The first round of restructuring lasted from the early 1990s until the surprise devaluation of the peso in December 1994. Concessions that had traffic shortfalls or cost overruns would petition the SCT for relief, which the SCT would grant on a case by case basis. At some point in the early 1990s, the government began contributing to the financing of already concessioned roads where the cost overruns and traffic forecast were so severe that they could not be offset by extending the concession to the year limit. The contributions took a variety of different forms including loans from the national development bank (BANOBRAS) or CAPUFE or the assignment of a specified period of the toll receipts from an existing CAPUFE toll road.

During this period, the government also began to insist that the construction companies and the lenders also contribute to the financial restructuring. The equity owners, mainly construction companies, were often asked to accept a limit on the return on their investment. Real rates of return were often capped at between 7 and 10 percent depending on the specific project, with the toll road reverting to the government if that return was earned before the concession expired. Lenders would often be required to reduce the interest rates on their loans. The basic idea was that all three parties should make a contribution to the settlement because all three had made mistakes; the government offered very optimistic or incomplete designs and forecasts and the contractor and lenders did not care to control costs and presented very optimistic bids.

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[44] These data are from the Unidad de Autopistas de Cuota.

[45] Some of the state concessions apparently either suspended or never began construction because of lack of financing.

The next round of restructuring began after President Ernesto Zedillo took office in late 1994. The new administration's surprise devaluation of the Peso in December of 1994 caused an economic slump that worsened the financial position of the concessionaries. Traffic on the toll roads dropped while interest rates rose, which was particularly harmful because virtually all of the concessionaries' debt carried floating rather than fixed interest rates. Moreover, the banks who were the concessionaries' primary creditors were themselves hard hit. The economic downturn made the weaknesses in their loan portfolios more apparent and the devaluation made it harder for them to repay loans they had borrowed on foreign capital markets.

During negotiations with the concessionaries, the Zedillo administration became convinced that the toll road crisis could not be solved just with an injection of cash but also had to address directly the problem of excessively high tolls. Lower tolls would improve the utilization of the roads and provide the motoring public with some tangible benefit from restructuring. In December 1995 the government agreed to a package under which it would grant commercial truckers and bus operators a 40 percent income tax credit for any tolls they paid. The tax credit was thought particularly important to stimulate traffic and revenue because truckers paid high tolls and accounted for a large part of the difference between forecast and actual traffic. In return, 28 of the concessions agreed to reduce their tolls below the levels allowed in the concession contracts. The government estimated that the combination of the tax cut and the toll reductions would reduce the effective toll rates by an average of 28 percent[46].

The December 1995 package did not prove enough to compensate the continuing economic problems of the concessions, in part because the economy was recovering from the peso devaluation very slowly. In April 1997 the SCT Secretary announced the government would unveil soon a new master restructuring plan to resolve the concession problems once and for all. The scope of the Secretary is shown in Table No.5.2, which illustrates the status of the 38 federal concessions that had requested renegotiations as of March 1997. The investment figures in the table are updated to early 1997 price levels. Many of these concessions had been restructured several times already, although a few had not been restructured at all because of the failure of the government and the investors and creditors to come to terms. As of March 1997, the total investment in these 38 concessions was valuated

[46] Development program for the Communication and Transportation Industries "Programa de desarrollo del Sector Comunicaciones y Transporte", 1995-2000

at 106.8 billion pesos, of which 15.3 billion represented investments by the government either as part of the initial offering (with late concessions) or in subsequent restructurings. Projection showed that the present value of the toll revenues amounts to less than half the investments. The remaining non-government investment amounted to 91.4 billion pesos, or approximately US$11.4 billion. The cost of a bailout to the government would be substantially less than this amount if the government paid investors less than face value, although more concessions might choose to participate in addition to these 38.

Table No.5.2–Financial Conditions of 38 Concessions Requesting Restructuring, March 1997

	Pesos (Millions)	Dollars (Millions)*
Financial structure as of March 1997		
Equity	28,730	3,591
Short-term debt	18,371	2,296
Long-term debt	44,356	5,545
Government	15,319	1,915
Total	106,774	13,347
Projected net present value of toll receipts for 24 years at 6percent real interest		
Assuming 3 percent annual traffic growth	33,154	4,145
Assuming 6 percent annual traffic growth	51,182	6,398

Source: Unidad de Autopistas de Cuota
* Exchange rate assumed as of March 1997 1US$ = 8 pesos

The 1997 Bailout

The final bailout was not announced until August 1997. The government would explain later that it had delayed until interest rates had dropped a bit, but most observers thought that the real motive was to wait until the midterm elections, which were held in July. A toll road restructuring was likely to be very unpopular, especially since the government had in 1996 committed itself to assuming some of the bad loans of the banks, many of which would have otherwise collapsed after peso devaluation and the subsequent recession. The bank and toll road problems were closely related since some of the bank' bad debts were non-performing loans to the toll road concessions.

In the bailout, the SCT took over 25 failing toll roads and assumed the 60 billion pesos (US$ 7.7 billion) of debt the concessionaries owned. Two thirds of the debt (40 billion pesos) were owned to Mexican banks, and these presumably would be among the bad debts the

government would assume as part of its bank bailout. The remaining one third (20 billion pesos) were owned to the construction companies that built the roads, which were in most cases also the same construction companies that were the major stockholders in the concessions. That debt would be paid by issuing long term government bonds. The equity of the stockholders in the 25 concessions-which the government estimated at 26 billion pesos (US$3 billion)-would be completely lost.

Of the remaining 27 toll road concessions, 23 were healthy enough that they chose not to participate in the plan. Four other concessions required a bailout, but they had foreign as well as domestic loans and the government was still negotiating with their international creditors.

The SCT argued that in the long run the bailout would cost the government only 19 billion pesos (US$2.45 billion), since toll road receipts would eventually pay back the remaining 41 billon pesos. It also announced that it would reduce the toll rates on 25 roads by an average of 17 percent for passenger cars, 27 percent for buses and 36 to 39 percent for cargo trucks. After a two-year adjustment period the 25 concessions would be once again privatized.

As expected, the bailout was deeply unpopular both within the PRI and with the opposition parties, which had won control of the national legislature in July 1997 elections.

Legislators from all parties agreed that the situation required government intervention, but they said the Zedillo administration should have forced the companies and the banks to assume a greater portion of the rescue costs.

5.3.6. Dispute settlement mechanisms

Legal aspects of the projects that weakened financial discipline included issues associated with lender security and enforcement rights, dispute resolution mechanisms, tax treatment, and procedures for securing government capital contributions. Key problems included the following:

Legal disputes in Mexico arising between a private party and the government were to be resolved within the constraints of the Mexican court system and were not subject to

international arbitration. Being subject to the local court system represented a significant risk to international investors because of their lack of familiarity with the legal system.

State governments were expected to provide grants or cash equity or to dedicate toll revenues from existing roads for certain projects as part of the construction financing, as contingent obligations to cover cost overruns, or to cover costs related to securing the right of way. But there were often delays or actual defaults in the fulfillment of these financial obligations, in part because the contributions were to be sourced from annual budget appropriations, a process subject to tremendous uncertainty and discretion. As a result, state governments were often left without any means of meeting their obligations. Other problems arose because of the lack of a clear registration process for public debt, which left lenders with no clear understanding of where they stood relative to other state creditors.

Lenders were not allowed a collateral assignment of the concession agreement. Consequently, they could neither secure revenue generated by the project nor exercise borrower substitution rights in the event of a default. This greatly diminished their bargaining power at the negotiating table with both the borrower and the government.

Some concessionaires were not single-purpose entities. In these cases, it was impossible for lenders to isolate specific cash flows by project, and borrowers with multiple concessions were able to apply the cash flow from some projects to support the financial needs of related but separately financed ventures. Under many trust agreements, local banks allowed the concessionaire the final word in technical decisions on such matters as change orders, change of material subcontractors, and toll collection procedures. This led to major problems relating to construction and operating costs as well as quality control.

Certain tax aspects affected the financial viability of the projects. Changes to the tax code were required regarding the 2 percent tax on assets, application and calculation of depreciation and tax credits, and payment of value added taxes. But these modifications were made only after nearly twenty-five projects had been concessioned, and in many cases they required annual approval and thus subjected financiers to non-renewal risk.

5.3.7. Financial Issues and Exchange rate guarantees

Until the peso crisis of December 1994, the Mexican banks, concessionaries, and government were successful in developing new financial instruments to tap additional sources of private funds. The banks were particularly innovative, probably because they were the most exposed. Contractors were also tense by their equity requirements, but maybe less because the possibility of padded construction bills meant that the real investment was less than claimed.

As mentioned before, concessionaires' financial contributions were in the form of "sweat equity" provided through the retention of work from construction affiliates. These contributions originally amounted to 25 to 30 percent of investment costs, but as lenders demanded higher equity cushions and debt service coverage ratios, the contributions increased to about 50 percent of project costs. This led to inflated construction budgets (and hence toll levels), with some projects effectively financed with 100 percent or more leverage. Estimates of the average gross margins in the road building program range from 35 percent to 50 percent of total costs. These excessive margins were the result of a lack of competition among the limited number of project bidders.

The only source of local debt financing was the commercial banking sector. But the purport for such debt often extended only through the construction period, with the expectation that once the project was in operation, cash flows would be secured through local or international debt offerings. However, as roads incurred cost overruns and the debt servicing ability of the projects proved far less than had been expected, these construction lenders soon were forced to restructure and extend the terms of their bridge financing. In addition, the loans were characterized by high floating interest rates, often 1,000 basis points higher than the local market reference rate. This combination of high interest rates and short maturities resulted in prohibitively high tariffs.

The banks gradually broadened the pool of domestic investors involved in toll roads. Initially, most banks financed their share of construction costs through normal construction or commercial loans, drawing on their existing pool of savers. Later many banks began to refinance their contribution by issuing medium term "infrastructure bonds" on the domestic bonds market; toll road revenues were not sufficient security to back most of these bonds, however, so they guaranteed by the bank. As some roads opened and developed a reliable

traffic base, however, a few banks began to successfully sell " certificates of participation" that carried a fixed interest rate (over inflation) and were secured only by a claim against the toll road revenues and not guaranteed by the bank.

The banks and concessionaries also finally began to tap foreign capital markets to refinance roads in operation. Attracting foreign capital had always been a priority for the government because of the concern that the huge toll road investment might increase domestic interest rates and displace useful private domestic investment. But it had been impossible to convince foreigners to invest in new toll roads since under the Mexican Concession system there was no assurance that the government would make investors whole in the event of a cost overrun or a traffic shortfall. Mexican investors, who understood the system, were more willing to assume these risks than foreigners.

Beginning in 1992, however, the concessionaries and the government realized that it might attract foreign capital by securing toll roads that had been opened for a few years, and thus whose construction costs and traffic potential were now much better known. The first offering was to refinance US$207 million in debt and equity for the Mexico City-Toluca concession, a road that had already attracted sufficient traffic to satisfy foreign investors. The placement, in June 1992, was for 10 years at 700 basis points[47] over US Treasury bills, a premium charged because of tight debt coverage ratios and exchange rate risks. Soon after, two other private toll roads (Ecatepec -Piramedes and Manzanilo-Armenia) were refinanced in a single offering of US$110 million at 500 basis points over US treasuries. The final international placement made before the peso crisis was in August 1994 for a twenty-year old and highly profitable CAPUFE toll road (Mexico City-Cuernavaca);the US $275 million placement was priced at only 350 basis points above US treasuries because the government still owned the road. (The government planned to use the proceeds to help fund its equity investments in new private toll roads.) A fourth placement for a private road was cancelled at the last minute during the peso crisis.

As many projects became increasingly unable to meet their debt service obligations, lenders' appetite for new toll road investments declined. Consequently, many banks that had underwritten huge amounts for projects were later unable to syndicate or refinance the loans, and liquidity quickly dried up in the market. Once word spread about the actual financial situation of many projects, other, untapped sources of funding (such as international

[47] One hundred basis points equals 1 percent

institutional investors) quickly turned their attention to other investment opportunities, both within and outside the country. Likewise, in the few international offerings, market liquidity and resulting pricing were adversely affected by the presence of currency risk, in the form of both exchange rate depreciation and convertibility or transferability concerns.

Local commercial banks were lacking in credit analysis, loan documentation, internal controls, and risk and liquidity management. Thus, the skills needed for limited recourse financing—to analyze project credit, security arrangements, and operative agreements—simply were not adequate for the complexity of the projects and the huge demand for credit.

Summarizing, lack of liquidity in the local financial markets, use of short-term, high-cost, floating rate debt, currency risk (both devaluation and convertibility) faced by international investors, and the high cost and limited availability of surety and insurance coverage severely hampered sector performance.

The concession agreements contained an adjustment clause to shorten the concession term if traffic exceeded guaranteed levels. Because of the lack of any upside potential, this clause led to significant disincentives to apply true risk capital.

Performance, advance payment, and hidden defects bonds, as well as insurance for property damage, third-party liability, force majure, and delayed opening, were high cost and very scarce. Where coverage was secured, significant problems arose in collection. These problems resulted as much from lenders' inexperience in negotiating the terms of such policies as from cumbersome and vague collection procedures.

Project revenue structure

Cash flow generated by the sector has been far below base-case expectations as a result of traffic shortfalls and higher-than-expected operations and maintenance expenditures. The December 1994 currency crisis led to a sharp decline in disposable income and thus road usage, along with a drop in economic activity that resulted in a marked decrease in commercial activity and freight transportation. As a result, of the thirty-two projects for which operating data were available in March 1995, less than five could meet their base-case

revenue projections. On average, actual project revenues were 30 percent below original projections.

Important factors leading to this situation included the following:

Shortcomings in the traffic studies reflected a general lack of expertise by the concessionaires, the lenders, and their consultants in developing adequate methodologies. On only five of the thirty-two toll roads for which traffic data are available has the average daily traffic been above base-case expectations.

In some projects, trucks were expected to account for 20 to 45 percent of users. In reality, trucks were less than 5 percent of the traffic on many roads, leading to a weighted average tariff much lower than originally expected. In some cases, the existence of a black market for toll tickets contributed to this outcome.

Despite obvious time and cost advantages of the new roads, many potential users were simply unwilling to pay the toll. Aside from the extremely high tariffs, this unwillingness was also due to the fact that the concessionaires did little to market the time and cost savings of the roads (for example, through monthly passes, volume discounts, and direct negotiations with high-volume users such as trucking or passenger bus companies).

In all but a few concession agreements, the concessionaire could adjust the tariffs only with prior approval by the Secretary of Communications and Transport (even for downward adjustments). This greatly reduced the flexibility of the concessionaire in efforts to maximize cash flow.

Minimal attention was paid to the development of such auxiliary services as gas stations, rest stops, hospitals, tow truck services, and restaurants. (For most projects, concessionaires were granted the right to operate these services for two years beyond the concession term.) A toll bridge expected to handle 5,000 trucks a day moving through a U.S. border crossing captured only 200 users a day. This shortfall was in large part due to inadequate attention to access roads and to installation of customs clearing facilities.

The government faced great resistance from the trucking industry in implementing and enforcing technical measurement and axle-weight standards. Truckers for the most part continued to use the toll-free option, especially in light of the very high tolls.

Operations and maintenance budgets often were not heavily scrutinized by the concessionaire or its lenders, and in many cases extraordinary maintenance costs were grossly underestimated. Though provisions for major maintenance reserve funds were included in most concession agreements, enforcement of these provisions by the Secretary of Communications and Transport and creditors was often lacking, especially as concessionaires began to experience financial difficulties. Inadequate toll collection operations and systems, poorly designed fiduciary structures, and the inexperience of the trustees and commercial banks responsible for supervising the flow of project funds led to less than strict controls over collection and proper application of road revenues.

5.4. Regulations

A well-structured legal, regulatory, and institutional framework ought to be formulated well in advance of the awarding of concessions. In the case of Mexico, it has been suggested that the lack of legal and regulatory institutional arrangements discouraged lenders and builders from respecting their agreements. There were no formal mechanisms for the Government to obtain and address requests or inquiries from the private sector parties before, during, or after the bidding process. This situation led to an often adversarial and less than transparent relationship between the parties.

The independent regulatory authority for supervising contractual arrangements was insufficient, and contracts were subject to the local court system, which represented a significant risk to international investors who were unfamiliar with the domestic legal system. With projects that needed direct government support, SCT's dual role as government regulator as well as concession partner sent somewhat conflicting signals to the private concessionaires. In particular, the extent to which the Government would retain managerial control over such projects was uncertain.

There were several problems relating to the regulatory and institutional framework for the concessions, which included vague project selection criteria stemming in large part from the

lack of a strategy and inadequate planning criteria at the federal and state level, inadequate pre-qualification and award criteria, uncertain tariff adjustment procedures, and lack of an independent regulatory authority to supervise the contractual arrangements. The major recurring issues included the following:

This concessioning program sought to establish five main road corridors, three of which were to run between the main industrial centers in Mexico and the principal border crossings into the United States. Nonetheless, some high-priority segments were never concessioned, while others that were constructed lacked contiguous sections that would integrate them into the network. This piecemeal pattern of contracting reduced the near-term attractiveness of the toll roads to long-distance traffic, particularly to truckers, who pay the highest tolls.

Somewhat related is the lack of an intermodal development strategy. Thus, project development in the various transport sectors often occurred without due coordination. Consequently, investors were unable to determine whether a project fit well into the long-term development plans of a region, especially given concurrent plans to privatize the rail, port, and airport sectors.

Understaffing and limited institutional capabilities within the Secretariat of Communications and Transport often led to problems in obtaining permits or approvals for change orders on a timely basis and to inadequate enforcement of the concession requirements regarding construction and maintenance quality control standards.

Formal mechanisms were never established for soliciting or channelling inquiries or requests from private sector participants before, during, or after the bidding process. Thus, the relationship that developed between the public and private sectors often lacked transparency and was at times adversarial.

In order to keep private sector projects financially viable, and in the private sector, there is a need to provide the private sector with incentives in order to face their associated commercial and financial risks. Successful arrangements also protect the Government and taxpayers from ultimately being responsible for the financial condition of the private sector entities. It has been concluded that while contractual arrangements alone may be sufficient for encouraging the commencement of private sector participation in infrastructure development, a broader regulatory and legal framework (for both the concessionaires and

financiers) is perhaps necessary to sustain private sector involvement in infrastructure operation and management.

5.5. Conclusions

There are many lessons to be learned from the Mexican program, however, perhaps the most important for governments developing a sector program based on private investment is the necessity of devising systems of regulation and support that provide the encouragement and room for maneuver that the private sector needs, while minimizing the government's exposure to the host of commercial and financial risks surrounding projects.

The sector strategy must include sound and explicit incentives to select worthwhile projects. Prices should be set to ensure the viability of privatized enterprises without protecting private parties from bankruptcy. Prices should also be allowed to reflect actual demand—in this respect, the need to develop congestion pricing is of fundamental importance. The regulatory framework should check the abuse of market power and ensure adequate services. Besides protecting investors, an appropriate regulatory and market structure protects the government and eventually taxpayers from bearing ultimate responsibility for the financial performance of privatized enterprises.

Chapter VI CONCLUSIONS

Implementing infrastructure projects through private-public partnerships brings important fiscal and efficiency benefits. First, private sector financing carries additional resources to Latin American's aggressive infrastructure modernization programs, which would allow governments to address the existing infrastructure shortage more rapidly while freeing scarce public funds. With only public funding these countries could not sustain the increased levels of investment required in all sectors without a further deterioration of its fiscal position or hard investment trade-offs. Secondly, private sector financing and management of project construction and operation, and the limited recourse structure of the project finance, should help improve efficiency. The private sector, also, brings the latest technologies available and the discipline needed to avoid cost overruns and delays in project completion that have plagued implementation of public sector road projects in Latin-American countries. The concession contracts ensure adequate maintenance of the road corridors and the timely provision of traffic services, as well as substantial benefits to the functioning of transport, reducing transport costs and increasing the reliability, safety and quality of freight and passenger transport services along the corridors.

There are several lessons learned from the Latin America experience with the on-going plan for infrastructure development through private sector participation. A precondition is to have a credible, enabling regulatory framework in place, supported by tangible evidence of Government's commitment to private sector participation in infrastructure.

Clear rules and credible institutions for solving conflicts and renegotiating contracts could reduce the perception of regulatory risks, in turn reducing the financial cost of these projects. Modifications and interpretations of contract conditions are usually necessary, but they are often difficult to undertake because road concession terms are large and contracts are complex. As a result, there may be conflicts in between concessionaires and public authorities in the interpretation of contract conditions. Public authorities often need to modify contract conditions to take into account economic and political changes. These modifications may occur when constructing a new road, when increasing tolls to avoid congestions, and when decreasing tolls to encourage new users.

Calculating a fair compensation for the concessionaire is difficult. Concessionaires will tend to exaggerate losses and downplay benefits in order to receive a larger compensation. Clear regulations and reliable institutions for resolving conflicts should be included in the concession contracts and, if possible, in concession laws. Guidelines and procedures for renegotiating contracts should also be included in the contracts. Revenue based schemes which have a simple scheme for calculating fair compensation, would help the renegotiation of contract conditions. Therefore, even if a concession is granted using minimum toll criteria, the concession contract may include guidelines for contract modifications based on revenue.

Most of the implementation issues experienced with the road concession scheme can be addressed by emphasizing quality-at-entry in project preparation, by: (i) retaining financial advisors with international experience to structure the project, prepare the legal documentation and advise government agencies throughout the procurement process; (ii) designing the bidding process to attract high quality international investors (including a well-targeted promotion campaign and a clear bid evaluation criteria to prompt bidders' attention on the few parameters upon which strong competition is critical for achieving long-term efficiency); (iii) making available to prospective bidders detailed engineering data but allowing them the time needed to quote their own estimates; (iv) using state-of-the-art technology to produce traffic forecasts and undertake risk analysis; (v) addressing in advance environmental and social issues that may arise from the proposed route location, the toll rate structure, and the location of toll collection facilities; (vi) having the right-of-way purchased before the concessionaire reaches financial close; and (vii) in view of the long duration of the concession term, designing a robust contract with built-in incentives to improve performance and with flexibility to manage uncertainties but avoiding opportunistic negotiations.

Selecting the appropriate projects is essential, as financial engineering will not turn a bad project into a successful one; the project should have a robust justification for the transportation system, and its design standards and the tariffs commensurate with its functional justification and the ability of users to pay the tolls. Financial sustainability of a BOT project requires mobilizing more secure and favorable financing structures than those prevailing in current road concessions in Latin america. This requirement necessitates ensuring access to both international and domestic markets by (i) improving the allocation of risks among the parties in the current concession contracts (in particular termination clauses); (ii) redefining government support through fewer obligations but directly aimed at helping the

concessionaire meet its debtor obligations, particularly at the beginning of the concession; (iii) giving liquidity to these obligations through clear and credible compensation mechanisms; and (iv) minimizing the impact of the foreign exchange risk (in view that all project revenues are in local currency).

The Financial proposals should play a relevant role in the selection processes, including commitments of sponsors and appropriate financing. These conditions will help the implementation of the proposed financial plan and avoid delays in starting road construction.

Concessionaires controlled by large construction companies may have efficiency and incentive compatibility problems. The shareholders of concession companies are, for the most part, construction companies. These companies have a great deal of expertise in public works and short-term financing, but their expertise may be limited in operating facilities and long-term financing. The role of the constructing company as a shareholder as well as an input supplier may give rise to an incompatibility of incentives. As input supplier, it may be willing to maximize the construction costs but as concessionaire it should be willing to minimize them. The profits associated with high building costs accrue in the short run, while the profits from lower construction costs are obtained in the long run. A large equity participation may reduce the incentive compatibility problems.

Toll road projects generally pose more risks to private investors than other infrastructure projects. The predictability of expected traffic is subject to regional development growth and competition from alternative routes, which may significantly alter the traffic patterns on the road network. The willingness of users to pay tolls is largely a function of the wealth of potential users, the value assigned to time savings and other toil road benefits, and the cost of competing routes.

Minimum tolls as the selection criterion may encourage overly optimistic proposals. Proposals predicting larger traffic will require lower tolls. This means that optimistic proposals are likely to win the bidding process. However, the cost of an erroneous traffic forecast is not usually borne by the concessionaire because the participation of equity and quasi-equity in the project is usually small, and most governments are reluctant to let a concessionaire go bankrupt. The bankruptcy of a road concession company may ruin a country's private infrastructure program. Therefore, public authorities and concessionaires renegotiate the

concession's conditions established by the optimistic, and perhaps opportunistic, proposal. To discourage this behavior, attention should be given to the financial proposal of the concessionaire. If sponsor equity participation in the project is large, then the risk of opportunistic behavior is reduced. A concessionaire with a strong financial structure may bear the lower traffic for longer periods without danger of bankruptcy, thus reducing pressures for a renegotiation of the concession contract.

The assignment of traffic risk should be reconsidered. In most traditional concession schemes, traffic risk is borne ex- ante by the concessionaire and the public sector, but ex-post it is borne by the public sector. However, mechanisms assigning the whole traffic risk to the concessionaire or the public sector may not be efficient because a large part of the traffic risk is beyond the control of the sponsors and the public authority. Therefore, mechanisms that allow transferring manageable risks to those agents more able to manage them, as well as diversifying non-manageable risks are desirable. Unbundled schemes (Trujillo, J.A and others, 1997) and revenue based auctions (Engel, E and others, 1997) may be effective for assigning risk to final users because the concession term becomes a function of actual traffic. Therefore, lower revenues from lower traffic are compensated with revenues from a longer concession term. However, the use of these schemes is limited by the existence of a developed financial markets that offer funds with variable maturities or appropriate refinancing facilities easily

Guarantees from the public sector are more common than contributions in road concession in Latin American countries. Contingent contributions are charged against future public budgets and their economic and financial implications are, therefore, difficult to evaluate. It should be noted that a project with full traffic risk guarantees bears credit risk and liquidity risk. The credit risk stems from the capacity and willingness to pay of the public agency. Liquidity risk exists because it takes time to include payments in public budgets after the occurrence of the events whose consequences are guaranteed. Full guarantee schemes may also suffer from a loss of interest on the part of the concessionaire for improving traffic forecasts, particularly when guarantees are large.

Without appropriate levels of Government support (in the form of contributions in cash or kind, minimum revenue and other risk-sharing undertakings), commercial lenders are reluctant to consider financing new road projects, irrespective of the project's commercial

fundamentals, political environment, or macro conditions. While the specific nature and need of these undertakings may vary from project to project (even within the road sector), their main purpose is to improve the financial viability of the project by allocating certain risks partially or entirely to government, in line with the principles of diversifying risks and allocating them to the party that is in better relative position to manage them.

A final remark, unbundled mechanisms and revenue based selection criteria seem to be a promising approach for the mitigating traffic risk management problems of concession roads. Although no experiences with these schemes can be reported, they may allow the transfer of traffic risk to road users since neither approach fixes the concession term but makes it a function of toll revenues.

Unbundled schemes also give local authorities the opportunity of designing isolated contracts for each activity, financing, construction and operation. Independent contracts allow for providing appropriate incentives to each economic agent and increase the scope for competition. The two main criticisms of these schemes are the lack of efficient public sector institutions to articulate, coordinate and supervise the project and private sector participants, and the cost of coordinating the different agents and the lack of sponsors willing to accept a contract with uncertain terms for receiving income. The advantages of specialization versus the cost of coordination in using unbundled schemes should be analyzed in each case. The availability of financial markets able to offer funds appropriate for these schemes also should be appraised in each case. It cannot expect to find schemes that are free of problems and appropriate for every case.

The ideal scheme would remove those barriers by providing the level of government support needed under well-structured incentives to minimize government exposure, and by improving risk allocation to the parties in line with the principles presented above. This improved allocation of risks builds on the experience gained from a review of other BOT road projects in Latin America. Private investors have, however, different attitudes towards country risk, project risks, and revenue potential associated with a project in a particular setting. Thus, the actual level of government support needed for the project has been so far subject to market testing through competitive bidding.

BIBLIOGRAPHY

- Acevedo, R., and J. E. Errazuriz, "Infraestructura: oportunidad u obstaculo para el desarrollo". In F. Larrain (ed.) *Chile hacia el 2000: Ideas para el desarrollo*. Santiago: Centro de Estudios Publicos, 1994.

- Bauer, C., "Derecho y economia en la Constitucion' de 1980," *Perspectivas en Politica, Economia y Gestion,* **2**, 23–47, 1998.

- Carruthers, R., "Privatization of Transport Infrastructure and Operations in Mexico – Has it Been Worthwhile?" *Financing Transport Infrastructure* – A compilation of major papers selected from PTRC's Summer Annual Meeting and Conferences, pp. 143-152, January 1994

- Carruthers, R., "The Mexican Approach to Toll Roads" *Financing Transport Infrastructure* – A compilation of major papers selected from PTRC's Summer Annual Meeting and Conferences, pp. 131-141, January 1994.

- Darrow, P.V., N.V.F. Bergman Fong, and J. Paul Forrester, "Financing Infrastructure Projects in the International Capital Markets: The Tribasa Toll Road Trust," *The Financier: ACMT,* Vol. 1, No. 3, pp. 9-19, August 1994.

- Demsetz, H., "Why Regulate Utilities," *Journal of Law and Economics* **11**, 55–66, 1968.

- Economides, N. "The Incentive for Non-price discrimination by an Output Monopolist," *International Journal of Industrial Organization,* **16**, 271–284, 1999.

- Engel, E., R. Fischer and A. Galetovic, "A New Method for Auctioning Highways," in The World Bank, *The Private Sector in Infrastructure—Strategy,* Regulation, and Risk, September 1997.

- Engel, E., R. Fischer and A. Galetovic, "¿Como licitar una concesion vial urbana?" *Estudios Publicos,* **67**, 177–214, 1997a.

- Engel, E., R. Fischer and A. Galetovic, "Highway Franchising: Pitfalls and Opportunities", *American Economic Review Papers and Proceedings* **87**, 177-214, 1997b.

- Engel, E., R. Fischer and A. Galetovic, "Infrastructure Franchising and Government Guarantees" in T. Irwin, M. Klein, G. Perry and M. Thobani (eds.) Dealing with Public Risks in Private Infrastructure. Washington DC: The World Bank, 1997e. (Also in Revista de Analisis ´ Economico ´ 13, 51–73, 1998)

- Engel, E., R. Fischer and A. Galetovic, "Least Present Value of Revenue Auctions and Highway Franchising," NBER Working Paper 6889, 1998.

- Engel, E., R. Fischer and A. Galetovic, "Licitacion de carreteras en Chile", *Estudios Publicos,* **61**, 5-37, 1996.

- Engel, E., R. Fischer and A. Galetovic, "Respuesta a Michael Klein y Jean Tirole", *Estudios Publicos,* **67**, 215–225, 1997d.

- Engel, E., R. Fischer and A. Galetovic, "Revenue Based Auctions and the Unbundling of Infrastructure Franchises," Technical Paper IFM-112, Washington: Inter American Development Bank, 1997c.

- Estache, A. and J. Carbajo, "Designing Toll Road Concessions—Lessons from Argentina," *Public Policy for the Private Sector,* The World Bank, Private Sector Development Department, Note No. 99, December 1996.

- Fischer, R., "La Economia de las Concesiones Viales en Chile". Paper prepared for the Regional Workshop on Managing Regulatory Policy and Regulatory Reform in Chile and Latin America organized by the World Bank's Economic Development Institute and the Center for Applied Economics (CEA) of the University of Chile. Santiago, October 5–7, 1995.

- Gomez-Ibañez, J. and J. Meyer, *Going Private: The International Experience with Transport Privatization*. Washington: The Brookings Institution, 1993.

- Gomez-Ibañez, J. and J. Meyer, "Chapter 9: Regulatory and Financial Tradeoffs –The Developing Countries' Experiences," *The Political Economy of Transport Privatization: Successes, Failures, and Lessons from Developed and Developing Countries*, U.S. Department of Transportation, pp. 9-1 – 9-24, September 1992.

- Gomez-Ibañez, J., Two Cautionary Tales: *Private Toll Roads in Bangkok and Mexico*, presentation overheads, Seminar on Financing India's Infrastructure: Toll Roads, New Delhi, 12 pages, May 6, 1998.

- Harstad, R. and M. Crew, "Franchise Bidding Without Holdups: Utility Regulation with Efficient Pricing and Choice of Provider," *Journal of Regulatory Economics* **15**, 141-164, 1999.

- Hook, W, *Wheels Out of Balance: Suggested Guidelines for Intermodal Transport Sector Lending at the World Bank*, Section B.1 "Mexico's Toluca Toll Road," Institute for Transportation and Development Policy, p. 27, July 1996.

- Klein, M. "Los requisitos de una politica global de infraestructura vial," *Estudios Publicos*, **65**, 215–223, 1997.

- Klein, M. "Bidding for Concessions," *Revista de Analisis Economico*, **13**, 25–49, 1998.

- Magni, A. [Planning Director, Ministry of Public Works], "Chilean Infrastructure Concessions," *International Supplement to RCC's Public Works Financing*, July/August 1993.

- Moguillanski, G., "Chile: las reformas estructurales y la inversion privada en areas de infraestructura," *Serie Reformas Economicas*, N-2, Santiago: Cepal, 1997.

- Paredes, R., "Politicas de competencia en paises sin tradicion de mercado", *Perspectivas en Politica, Economia y Gestion*, **1**, 45–66, 1997.

- Ruster, J., "A Retrospective on the Mexican Toll Road Program (1989-1994)," *The Private Sector in Infrastructure: Strategy, Regulation, and Risk*, The World Bank – Finance, Private Sector, and Infrastructure Network, pp. 117-124, September 1997.

- Sociedad Chilena de Ingenieria de Transporte, "Un sistema de transporte urbano para una ciudad sustentable," *Anales del Instituto de Ingenieros* **109**, 71–75, August 1997.

- Tirole, J., *The Theory of Industrial Organization*. Cambridge, MIT Press, 1988.

- Tirole, J., "Comentario a la propuesta de Engel, Fischer y Galetovic sobre licitacion de carreteras," *Estudios Publicos,* **65**, 201–214, 1997.

- Williamson, O., "Franchise Bidding for Natural Monopoly". Chap. 13 in O.E. Williamson, *The Economic Institutions of Capitalism*. New York: The Free Press, 1985.

- Wright, Charles L. and D. Freire Coloma, "Toll-Road Partnerships: What Works, What Doesn't, and Why?" *Transportation Quarterly*, Vol. 51, No. 4, Fall 1997, pp. 85-101.

- "Argies Pan Uruguay Span" [sic], *Transport Finance No. 115*, June 12, 1998, p. 21.

- "Chile Pulls Costanera Norte Toll BOT," *PWFinancing*, January 1999, p. 11.

- Inter-American Development Bank, *Environmental and Social Impact Brief, Access Roads Network to Cordoba City*, April 9, 1998.

- *Private Financing of Investment in Infrastructure: Issues and Alternatives in Colombia*, Draft Paper prepared by The World Bank, Private Sector Department, 1996.

- "Taps Local Chilean Financing" *PWFinancing*, January 1999, p. 19. "1998 International Major Projects Survey," *Public Works Financing*, October 1998, p. 54-56. "Chile Road to Sacyr," *PWFinancing*, April 1998, p. 10. "Chile Toll Concession," *PWFinancing*, July-August 1997, p. 9. "Chile Roads: $2 Billion," *PWFinancing*, November 1996, p. 16.

- *Toll Road Program in Argentina: A Policy and Financial Review*, Draft Country Paper prepared by The World Bank, Private Sector Department, 1997.

- *The Toll Road Program in Argentina: Road Sector Development Within a Maturing Domestic Capital Market*, Draft Country Paper prepared by The World Bank, Private Sector Department, 1997.

- The Toll Road in Mexico: A Policy and Financial Review, Draft Country Paper prepared by the World Bank, Private Sector Department, 1997

- The World Bank, *Argentina – Transport Privatization and Regulation*, Report No. 14469, 1996.

- The World Bank, Finance, Private Sector, and Infrastructure (LCSFP), Country Management Unit for Colombia, Ecuador and Venezuela (LCC4C), Latin America and Caribbean Regional Office, *Project Appraisal Document on a Proposed Loan in the Amount of US$137.1 million to Colombia for a Toll Road Concession Project*, Report No. 17986, June 11, 1998.

- The World Bank, *Project Information Document, Chile – Third Road Sector Project*, March 1994.

- The World Bank, Operations Evaluation Department, "Highway Improvements in Chile," *OED Précis*, June 1994.

- *Various articles from PW Financing, "IFC Trumped on Rio Road," May 1997, p. 13; "Buenos Aires-Colonia Bridge," June/July 1995, p. 10; "IFC Finances Argentine Developer," January 1995, p. 12; "Argentine Toll Concessions," December 1993, p. 27.*

- Various articles from *Project Finance International*: "Rebound for Toll Road Bonds," *Project Finance International*, No. 131, October 22, 1997; "Few Certainties in Latin America's Toll Road Revival," (*PFI Yearbook 1997*), pp. 60-61; "New Lease on Life for Cordoba-Veracruz," No. 52, July 7, 1994; "Tribasa Gets the Cash," No. 42, February 18, 1994; "Cuernavaca Toll Road Bond Issue," *Project Finance International*, No. 38, December 10, 1993; "Toll Roads," No. 31, September 3, 1993; "CAPUFE Looks to Public Market," No. 21, April 2, 1993; and "More Work Needed on Toll Roads," No. 10, October 16, 1992.

Web Sites References

- Autopistas del Sol, "La Concesión" downloaded from http://www.ausol.com.ar/LaConcesion/LaConcesion.asp, 2001
- "Concession Projects Listing," downloaded from http://www.mop.cl/inter/mop/mopenglish/list.html, 2001.
- Bank of America, "Chile: Economic Trends and Outlook," downloaded from http://www.tradeport.org/ts/countries/chile/trends.html, 2001
- Cámara de Concesionarios Viales, Argentina, http://www.concesionesviales.com.ar/, 2001
- Centro de Estudios Públicos de Chile, http://www.cepchile.cl/, 2001
- Comisión Nacional de Regulación del Transporte de Argentina, downloaded from http://www.cnrt.gov.ar/, 2001
- Coinvertir, Invest in Colombia Corporation, "Colombia, Outlook and Investment Potential", downloaded from ftp://www.coinvertir.org.co/pub/p-ing/p-ing.ppt, 2001
- Coinvertir, Invest in Colombia Corporation, "Sector Profiles and Projects", downloaded from http://www.coinvertir.com/03-sector/01-infra/roads/7-roads.htm, 2001
- Coviares S.A., Concesión La Plata – Buenos Aires, http://www.roggio.com.ar/cv/coviares.htm
- Departamento Nacional de Planeación de Colombia, National Development Department, "Información Sectorial, Programas y Proyectos" downloaded from http://www.dnp.gov.co/02_SEC/TRANSPOR/Vial.htm#2
- Department of Foreign Affairs and International Trade "Latin America and the Caribbean", http://www.dfait-maeci.gc.ca/latinamerica/menu-e.asp, 2001-2002
- Dirección Nacional de Vialidad Argentina, http://www.vialidad.gov.ar
- Grupo Concesionario del Oeste, Argentina, "Análisis Bursátil Fundamental", http://www.abf.com.ar/OEST.html
- Instituto Nacional de Vías, National highways institute of Colombia, "Las Concesiones Viales en Colombia" http://www.invias.gov.co/programas/concesiones/concesiones.htm
- Gobierno de Chile, Ministerio de Obras Publicas, Transportes y Telecomunicaciones, "Conceciones en Chile", downloaded from http://www.concesioneschile.cl/home.htm, 2001
- Organo de Control de Concesiones Viales, OCCOVI, http://www.occovi.gov.ar/left_principal.htm

- The Economist Intelligence Unit, *Country Report: Argentina 2001, Country Profile: Argentina, 2001-2002* download from http://www.economist.com/countries/Argentina, *2001-2002*
- The Economist Intelligence Unit, *Country Report Chile, 2001, Country Profile: Chile, 2001-2002* download from http://www.economist.com/countries/Chile, *2001-2002*
- The Economist Intelligence Unit, *Country Report: Colombia, 2001,, Country Profile: Colombia, 2001-2002* download from http://www.economist.com/countries/Colombia, *2001-2002*
- The Economist Intelligence Unit, *Country Report: Mexico, 2001, Country Profile: Mexico, 2001-2002,* download from http://www.economist.com/countries/Mexico
- The World Bank, Private Sector Development, Private Participation in Infrastructure, http://www.worldbank.org/html/fpd/privatesector/PPIDBweb/Intro.htm, 2001
- The World Bank, Toll roads and Concessions http://www.worldbank.org/transport/roads/toll_rds.htm, 2001
- The World Bank, Research in Infrastructure http://wbln0018.worldbank.org/Research/workpapers.nsf/WPInfrastructure/?OpenView&count=500000&Topic=Infrastructure, 2001