FINANCIAL EVALUATION OF THE BUENOS AIRES-COLONIA BRIDGE PROJECT

by

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Submitted to the Department of Civil and Environmental Engineering
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ABSTRACT

The Buenos Aires-Colonia Bridge Project represents the culmination of a long awaited fixed crossing over the Río de la Plata that will link the area of Punta Lara on the Argentine side (approximately 50 Km. south of Buenos Aires) with the eastern area of the city of Colonia del Sacramento on the Uruguayan side. Thus, the facility will comprise approximately 51 Km. of main bridges, viaducts, and road connections to the highway networks of both countries.

The primary purpose of this thesis is to evaluate the financial feasibility to deliver the Bridge under a Build/Operate/Transfer (BOT) scheme.

Therefore, the present research starts with an analysis of the issues that influenced the decision to deliver the Bridge as a BOT project. It follows a description of the Bridge's procurement development, feasibility studies, technical aspects, financeability assessment, and modes of transportation currently operating at the Río de la Plata region. Subsequently, financial issues arisen during construction and/or operation of similar BOT projects, such as the Channel Tunnel and the Northumberland Bridge in Canada, are studied in order to identify relevant facts applicable to the Buenos Aires-Colonia Bridge.

Next, a model that evaluates the financial feasibility to deliver the Bridge as a BOT project is developed. Under a base-case scenario, the financial model incorporates a host of assumptions such as possible sources of financing, capital investment arrangements, and traffic levels and toll rates structures, among other pertinent variables. The financial model then calculates the Net Present Value and Internal Rate of Return of the concessionaire as a direct measure of the financial viability of the project. Then, a sensitivity analysis is performed on the financial model in order to test the project's flexibility to absorb an array of adverse contingencies without jeopardizing the financial robustness of the venture. The results of this analysis as well as its implications are studied in great detail.

Lastly, findings of this research are summarized as final conclusions.

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CHAPTER 1: INTRODUCTION

The Buenos Aires-Colonia Bridge Project represents the culmination of a long awaited fixed crossing over the Río de la Plata that will link the area of Punta Lara on the Argentine side (approximately 50 Km. south of Buenos Aires) with the eastern area of the city of Colonia del Sacramento on the Uruguayan side. Thus, the facility will comprise approximately 51 Km. of main bridges, viaducts, and road connections to the highway networks of both countries. The distance between the capitals, Buenos Aires and Montevideo, will thus be reduced to 258 Km. approximately. The total construction cost, considering the most likely 4-lane option and including road connections and expropriations, is about US$1,250 million (late-1994 US dollars).

The governments of Argentina and Uruguay resorted to a Build-Operate-Transfer (BOT) option for delivering the project. Specifically, the awarded concessionaire will be in charge of the finance, design, construction, operation, and maintenance of the facility at its entire risk. The concession period will be up to 35 years long.

The primary purpose of this thesis is to evaluate the financial feasibility to deliver the Bridge under a BOT scheme.

Therefore, the present research starts with an analysis of the issues, such as the development of the MERCOSUR agreement, that influenced the decision to deliver the Bridge as a BOT project.

After that, a description and analysis of the facts about the Bridge are presented. The Bridge's procurement development and conclusions of the

feasibility studies, technical aspects, preliminary assessment of the Bridge's financeability, and a description of the existing modes of transportation currently operating at the Río de la Plata region are topics of study.

Subsequently, financial issues arisen during construction and/or operation of similar BOT projects, such as the Channel Tunnel and the Northumberland Bridge, are studied in order to identify relevant facts applicable to the Buenos Aires-Colonia Bridge.

Next, a model that evaluates the financial feasibility to deliver the Bridge as a BOT project is developed. Under a base-case scenario, the financial model incorporates a host of assumptions such as possible sources of financing, capital investment structure, and traffic levels and toll rates structure, among other pertinent variables. The financial model then calculates the Net Present Value and Internal Rate of Return of the concessionaire as a direct measure of financial viability to deliver the project under a BOT scheme.

Then, a sensitivity analysis is performed on the financial model in order to test the project's flexibility to absorb an array of adverse contingencies without jeopardizing the financial robustness of the venture. The results of this analysis as well as its implications are studied in great detail.

Lastly, findings of the subject research are summarized as final conclusions.

CHAPTER 2: DESCRIPTION OF THE PROJECT

2.1. Background

The Buenos Aires-Colonia Bridge project stems from the political will of both Argentina and Uruguay, within the framework of the Mercado Común del Sur (Southern Common Market) or MERCOSUR. Therefore, it is important to briefly analyze MERCOSUR's history and objectives in order to understand the dynamics that are bringing the present project into existence.

2.1.1. MERCOSUR: History and Objectives

In spite of the fact that the formal launching of MERCOSUR occurred in March 1991 with the Asuncion Treaty signed by Argentina, Brazil, Paraguay, and Uruguay, the integration spirit in the region comes from far back and has a rich experience as well as the multiple bilateral complementation agreements which paved the way for the new enterprise.

A short while after the creation of the European Coal and Steel Community (1954) and the European Economic Community (1957), Latin America was already beginning to take its first steps towards regional integration. The treaty that created the Latin American Free Trade Association (ALALC, by its acronym in Spanish), signed in 1960, provided for the creation of a free-trade zone, by means of periodical and selective negotiations between its member states. This choice – as a product of negotiation among the member states rather than an automatic reduction of import duties– made the ALALC trade opening program develop

reasonably well in its first years, lose impetus as of 1965, and almost come to a complete standstill in the 70's. Thus, despite the ALALC had stimulated mutual trading between member states, the distance between its original objectives and the results obtained was very great.

The Latin American Integration Association (ALADI, by its acronym in Spanish), created in 1980 to replace ALALC, used other means to attempt member state integration. In place of the free-trade zone established by ALALC, an economic preference zone was established creating conditions favorable to the growth of bilateral initiatives, as a prelude to the institution of plurilateral relationships in Latin America. ALADI thus made possible agreements and joint actions between countries in the region which until then had only limited previous ties. The establishment of a common market, however, was still the long-term objective.

Under the ALADI system, Brazil and Argentina signed in 1986 twelve commercial protocols: their first concrete step towards the bringing of the two countries closer together that had officially been started in 1985 under the Declaration of Iguaçu. To supplement and improve on their former agreements, Brazil and Argentina signed in 1988 a Treaty for Integration, Cooperation and Development that set the stage for a common market between the two countries within ten years, with the gradual elimination of all tariff barriers and harmonization of the macro-economic policies of both nations. It was further established that this agreement would be open to all other Latin American countries. After the adhesion of Paraguay and Uruguay a new treaty was signed by all four countries on March 26, 1991, in Asuncion, Paraguay, providing for the creation of a common market among the four participants, to be known as the Southern Common Market (MERCOSUR, by its acronym in Spanish). The MERCOSUR agreement came into effect as of January 1, 1995.

Bolivia, Venezuela, Colombia, and Peru have already evinced interest in joining MERCOSUR. Other Latin American countries (also members of ALADI) interested in joining MERCOSUR can initially do so through association agreements with member nations, until full participation and conduct of a common market has been achieved.

Within this context, for instance, Chile has already signed in June, 1996, a cooperation agreement to gradually reduce its trade tariffs vis-à-vis MERCOSUR nations as well as to enhance the trade and integration among such countries.

The objectives of the MERCOSUR agreement can be summarized as follows:

- Free transit of production goods, services and factors between the member states with inter alia, the elimination of customs rights and lifting of non-tariff restrictions on the transit of goods or any other measures with similar effects;

- Establishment of a common external tariff and adoption of a common trade policy with regard to nonmember states or groups of states, and the coordination of positions in regional and international commercial and economic meetings;

- Coordination of macro-economic and sectorial policies of member states relating to foreign trade, agriculture, industry, taxes, monetary system, exchange and capital, services, customs, transport and communications, and any others they may agree on, in order to ensure free competition between member states; and

- The commitment by the member states to make the necessary adjustments to their laws in pertinent areas to allow for the strengthening of the integration process.

The Asuncion Treaty is based on the doctrine of the reciprocal rights and obligations of the member states. MERCOSUR initially targeted free-trade zones, then customs unification and, finally, a common market, where in addition to customs unification the free movement of manpower and capital across the member nations' international frontiers is possible, and depends on equal rights and duties being granted to all signatory countries.

During the transition period, as a result of the chronological differences in actual implementation of trade liberalization by the member states, the rights and obligations of each party will initially be equivalent but not necessarily equal.

In addition to the reciprocity doctrine, the Asuncion Treaty also contains provisions regarding the most-favored nation concept, according to which the member nations automatically extend to the other Treaty signatories –after actual formation of the common market– any advantage, favor, entitlement, immunity or privilege granted to a product originating from or intended for countries that are not part of ALADI.

2.1.2. Procurement Development of the Project

As mentioned above, the Buenos Aires-Colonia bridge is part of the dynamics generated by MERCOSUR.

On August 10, 1985, Argentina and Uruguay signed an understanding that covered the formation of a bilateral commission to study the viability of the Buenos Aires-Colonia Bridge project, among other topics. The Bi-national Commission of the Buenos Aires-Colonia Bridge (COBAICO, by its acronym in Spanish) came thus into existence. Its mandate was to analyze the feasibility of a fixed river crossing and to consider the possibilities of designing, constructing and operating the facility.

In 1987, COBAICO prepared a pre-feasibility study that concluded that a fixed river crossing is feasible under certain conditions. It also recommended that further feasibility analysis needed to be conducted as a basis for the government's decisions regarding the project.

In April, 1993, Argentina and Uruguay approved the selection of six companies qualified to conduct the feasibility studies of the Bridge. A consulting team formed by Louis Berger International, Inc., Bear Sterns & Co., and Latham & Watkins were finally selected to conduct the aforementioned studies. These studies were financed by the World Bank and were expected to cost around four million dollars (1993 Dollars).

In June 1995, this consulting team –with assistance from various other consulting firms in Argentina, Uruguay, and other countries– presented to COBAICO an executive summary of the preliminary studies for a fixed crossing over the Río de la Plata. Such studies were centered on five possible alignments.

From the financial standpoint, the executive summary concluded basically that the construction of the bridge may be financed by private capital alone under certain economic and toll scenarios. This fact is of important significance and attractiveness for both governments of Argentina and Uruguay since a private

financing of an infrastructure meant to strengthen the MERCOSUR dynamics at no fiscal monetary expense is more than welcome by such governments. Furthermore, the idea of having a facility financed with private-sector resources corresponds to the existing political process of privatization of state-owned enterprises carried out by Argentina and Uruguay.

In September 20, 1996, a Treaty for the construction of the bridge was signed by the Presidents of Argentina and Uruguay, thus institutionalizing the political commitment of both governments to build the facility and authorizing the beginning of the bidding process. The Treaty determines that the facility will be delivered under a BOT scheme. The concessionaire will be in charge of the finance, construction, operation, and maintenance of the facility during a period of up 35 years. Additionally, the Treaty establishes the link Punta Lara-Colonia as the selected alignment, among other important topics [Appendix 1].

Presently, COBAICO has issued the Request for Proposals documents (RFP) in January, 1997.

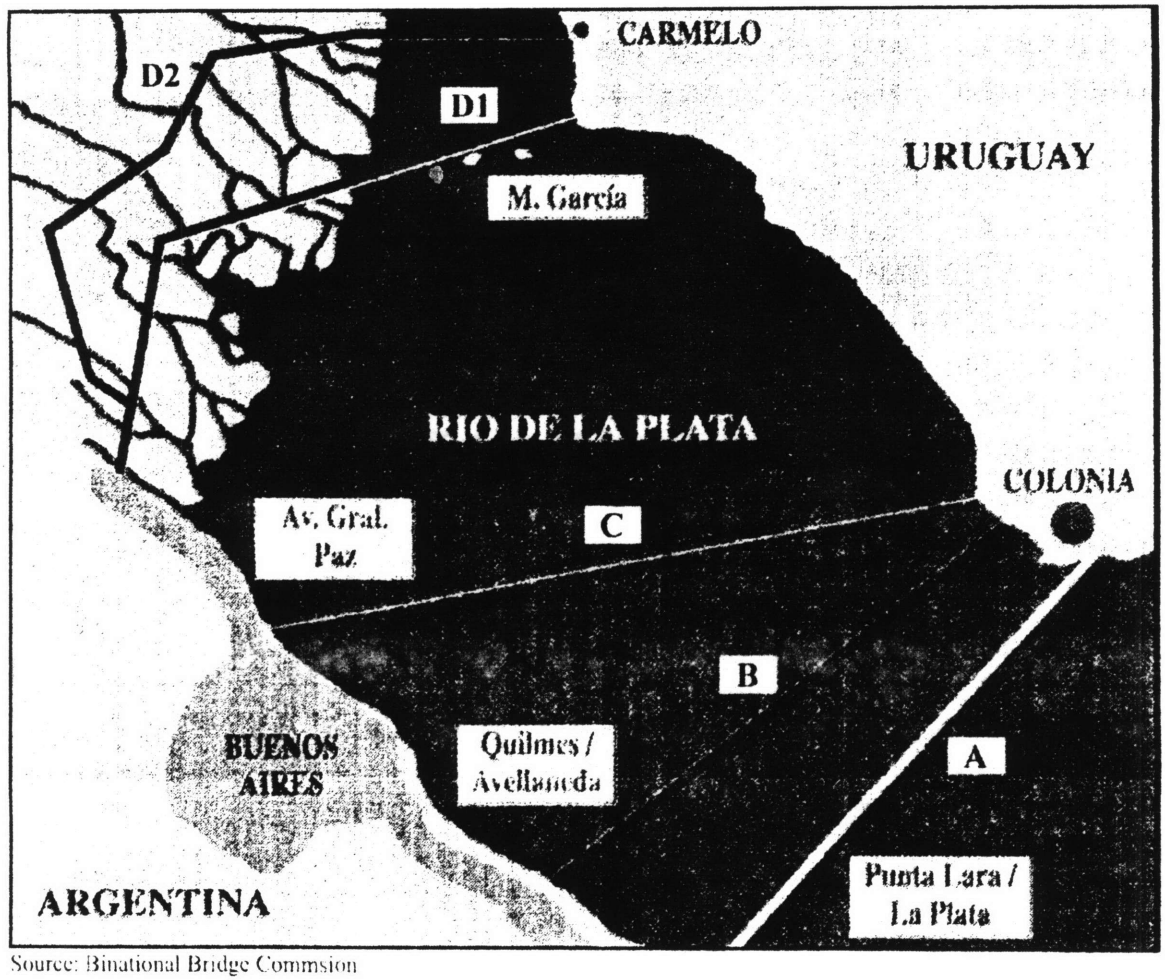
It is expected that the construction of the bridge commences by mid 1998 and that the opening of the facility takes place by 2003.

2.2. Conclusions of the Feasibility Studies

Below it is developed a summary of the conclusions of the feasibility studies presented by the consulting team led by Louis Berger International, Bears & Stern, and Latham and Watkins in June 1995.

They based their analysis on five possible alignments – A, B, C, D1, and D2, as shown in the following figure:

Figure 2.1. Possible Alignments for the Buenos Aires-Colonia Bridge



Source: Binational Bridge Commsion

The feasibility studies concluded on the following points:

a) Although the transportation system in the Río de la Plata has shown some improvement, the growing demand observed and expected in the future due to regional integration, makes it imperative to find solutions to the current

transportation problems. The construction of the bridge will solve many problems which constrain the present service, such as:

- long time needed to travel by highway
- limitation in frequency of other transportation modes
- limitation in the number of automobiles transported by ferry, particularly during peak seasons.
- delays in the departure of planes or ferries due to fog or other adverse weather conditions, etc.

At present, these limitations inhibit and even prevent trips across the river between Argentina and Uruguay. Therefore, considering that the present travel times and costs are relatively high, the construction of the bridge will undoubtedly produce an increase in trade and generate new cargo and passenger traffic.

b) The construction of a bridge to cross the Río de la Plata does not pose any particular technical problem. The construction of a tunnel under the river navigation channels would not be advantageous and would be significantly more costly; therefore, it is not recommended. It was also concluded that the most appropriate construction system for the main bridges in the different alternatives would be a cable-stayed design with segmented concrete deck; for the secondary crossings and high level viaducts, the use of segmented concrete design is recommended; and, for the low level viaducts, the pre-cast concrete system. For alignments D1 and D2, the construction of highway embankments with hydraulic fill should be considered. However, final decisions regarding detailed project engineering must clearly be made by the eventual concessionaire.

c) With the exception of alignments D1 and D2, the construction of the project does not require any additional investment in the highway systems of either Argentina or Uruguay; it will be necessary, however, to complete several projects presently under construction or in the planning or design stages in both countries.

d) The bridge would need a minimum configuration of three lanes with a central reversible lane, although the optimum configuration would be four lanes. Given that, regional rail transportation is very limited at present, and that the analysis indicates a concessionaire would not be able to recover the additional costs, there is no commercial advantage to incorporating a railway component into the bridge project.

e) The construction cost, including road connections and expropriations, range between US$940 and US$ 1,260 million for a bridge with three lanes, an between US$1,020 and US$1,360 million for a bridge with four lanes (late-1994 US dollars). If the ranking of alternatives is done on the basis of cost, the most economical would be alignment A, followed by alignments B, D1, D2, and C. In all cases, the cost of the project's connection to the road networks in Argentina and Uruguay is a relatively minor part of the total cost (between US$34 and US$66 million, including expropriations).

f) The crossing of the Río de la Plata at alignments A, B, and C does not pose specific environmental problems, given that the work will not significantly affect the river's hydrology. With respect to sedimentation in the navigation channels due to bridge operations, it was concluded that, even in a worst case scenario, the variation in the volume of sedimentation is negligible, as compared with the several million cubic meters involved in annual channel

maintenance. The construction of alignment B may require additional costs and/or special considerations given the possible presence of toxic materials near its starting point on the Argentine border. If this layout were selected, this matter must be thoroughly investigated. The construction of the crossing as per alternative D (in any of its variants) will require major mitigation measures for environmental impacts. The bridge will have both a socio-economic impact and an urban development impact in the Colonia area, and in the case of alternative D, the impact will be on both ends of the project.

g) Demand projections clearly indicate that the permanent crossing would attract a substantial amount of current traffic and that the amount of traffic generated due to the bridge construction will be very substantial. Bridge traffic depend upon four main factors:

- different scenarios for economic growth
- its layout
- tolls
- competing services and their tariffs.

It is estimated that alignment B would attract the highest volume of traffic (close to 5,650 vehicles daily in the year 2000, 7% of which are trucks, with a US$75 toll charge per car, based on an average economic growth). Alternatives B and C attract approximately the same number of vehicles; alignment A around 5% less than B, while alignments D1 and D2 end up with a smaller demand (around 15 to 20% less than that of alignment B).

h) The financial analysis concluded that a variety of financial and economic scenarios exist in which the bridge would be self-sufficient, and that it would be feasible to secure private financing in the form of a project concession. The IRR would vary from 20% to 39% based on more than thirty different combinations of alignments, tolls, and economic scenarios. The results are very sensitive to the cost of capital. Alignment A generates the highest IRR, even though it does not attract the largest traffic volume because it requires an initial investment of about $100 to $300 million Dollars less than the other alignments.

i) It is recommended that COBAICO consider the inclusion of complementary projects related to travelers services, such as service stations, duty-free shops, hotels and restaurants. This is because they have a good chance of being profitable and of attracting private sector investments, before or immediately after project construction. The income from these projects would be collected by the concessionaire, or COBAICO could grant separate concessions, capturing the various income streams as part of the project financing. With respect to the more capital intensive and speculative projects, a potential concessionaire would value the incomes with a much higher discount factor than incomes from tolls. Therefore, these complementary projects are not considered as having a significant impact, because their worth would be substantially undervalued if included in the project concession. In the future, however, projects with a broader scope should be considered as possible sources of income for both governments.

j) The economic analysis concluded that the project is highly feasible from the point of view of the countries involved in the venture. For alignment A, the IRR varies between 16.4% under the most conservative scenarios with respect to traffic volumes, cost (US$115 toll; 4 lanes) and methods used to

calculate benefits; and 29.2% in the most optimistic case (US$0 and three lanes). Alignment B is the most viable, with an IRR of 20.9% (US$115 toll and 3 lanes), followed by alignment A (20.0%), C (17.1%), D1 (15.8%), and D2 (15.0%). The results are not highly sensitive to the traffic level, and the values of IRR are acceptable even with reductions of up to 30% in traffic volume.

k) The construction of the Buenos Aires-Colonia bridge, its access roads and its support and service infrastructure will produce a large temporary impact on the economies of Uruguay and Argentina. It has been estimated that the project will generate 32,395 person-years of work in Uruguay and 24,024 person-years in Argentina. According to estimates of the cost in labor, materials, and services for alignment A (US$1,023 million), US$320 million will be spent in Uruguay, US$443 million in Argentina and the remaining US$260 million will come from foreign countries.

l) Based on the analysis of the five corridor alternatives, the best alignments in terms of possible demand, economic benefits, and financial and environmental aspects, can be ranked as follows:

Table 2.1. Ranking of Best Alignments

RANKING OF BEST ALIGNMENTS				
	Financial Aspects	Possible Demand	Economic Benefits	Environmental Aspects
ALIGNMENT	A	B C A	B A	A C

- From the financial point of view, alignment A, which connects Punta Lara to the east area of Colonia, is most preferable since it requires the smallest investment.

- From the point of view of potential traffic demand, alignments B and C attract the largest number of vehicles, followed closely by alignments A, while alignments D1 and D2 show a lesser demand of around 15 to 20%.

- From the point of view of economic benefits, alignment B produces the highest IRR, slightly higher than that of alignment A.

- From the point of view of environmental impact, alignments A and C do not seem to pose any serious problem, although it is recommended that a more detailed analysis of environmental impacts be carried out for any alignment selected, including planning studies to control growth and land use in Colonia[1]. In the case of alignment B, it is recommended that the potential presence of toxic waste be examined. Alignment D1 would probably result in more significant impacts that should be analyzed in depth. Generally, the impacts of alignment D2 will be similar, although not as serious as those of alignment D1.

[1] On December 5th, 1995, Colonia del Sacramento was declared in Berlin Human Cultural Heritage Site by UNESCO. It turns out to be obvious the need for a well thought land-use planning in order not to alter the historical preponderance of this city.

- From the point of view of risks, alignment D1 and D2 show a substantially higher risk level, including:

    * risk of significant environmental impact during construction and operation. Within this risk, the possibility of work interruption by international environmental organizations exists;
    * risk of delays and construction cost overruns which may even make the project unfeasible as a BOT type of venture;
    * risk of litigation spurred by the owners of adjacent land, due to possible changes in the hydraulic conditions of the river;
    * all these risks become more relevant in a BOT type of project, since a number of them would have to be assumed by the concessionaire.

In conclusion, the choice of an alignment depends upon the relative importance placed on the different points of view. Based on the studies, the conclusions is that any of the alternative designs could be feasible, but alignments A and B produce the highest results as concession projects, from the financial and economic point of view. In view of the high financial risk associated for the project, alignment A constitutes the most prudent selection should the governments decide to construct the project with private capital alone.

m) The eventual financing of the project by international capital markets will be affected by many of the features that make it unique, such as:

- the size of the project and the needed investment,
- its bi-national character,

- the fact that both countries, Argentina and Uruguay, belong to the so-called "emerging markets", and
- the lack of precedents on projects of this magnitude in non-developed areas.

Consequently, the results of the financial analysis represent only one of the factors that will determine the eventual financing of the project. The level of risks associated with the financing, construction, and operation of the bridge is too high to conclude with total certainty that the bridge is "financeable". However, the viability of the project is possible in light of the enormous importance of the bridge as an infrastructure project that will facilitate economic integration of the MERCOSUR countries; the positive economic impact that the project will have for Argentina and Uruguay; and the fact that the project may be financed by private capital alone under certain economic and toll scenarios.

2.3. Technical Facts

2.3.1. Structural Alternatives

The Treaty signed by the Presidents of Argentina and Uruguay on September 20, 1996, stipulated that alignment A is going to be the final location of the Bridge [Annex 1].

The structural configuration for alignment A would basically comprise one main crossing, one secondary crossing, and high-level and low-level viaducts.

Therefore, several structural options for each component of the Bridge are summarized below. These options are based on the alternatives taken into consideration in the feasibility studies conducted by the consulting team led by Louis Berger International, Bears & Stern, and Latham and Watkins.

a) Main Crossing:

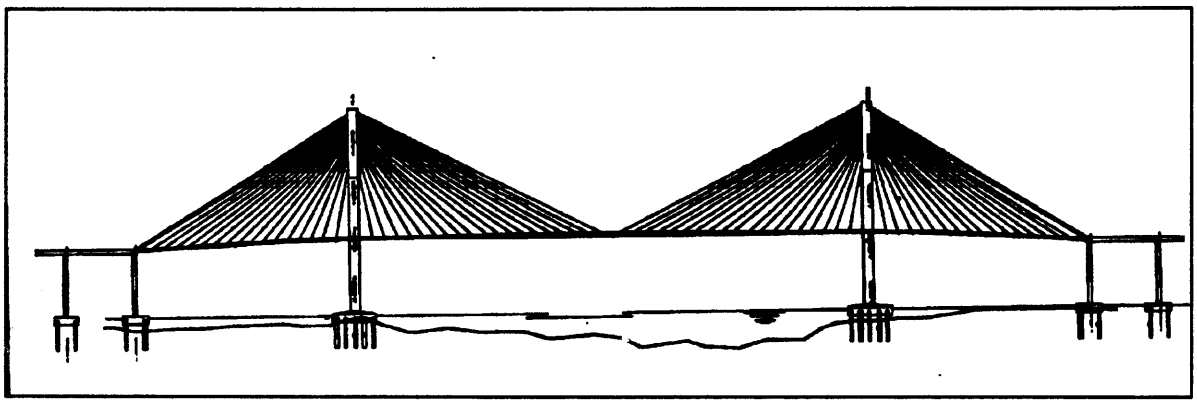
A single 450 meters span is required over the junction of the two main accesses of navigation to the Port of Buenos Aires. Also, a minimum vertical clearance of 50 meters is required in order to provide for a wider section to be used by the larger vessels on their way to either of such two channels.

Besides the tunnel alternative which was later discarded, the consulting team considered the two following alternatives:

- a single-span tied arch, with a total length of 450 meters
- a cable-stayed bridge made of three sections, with a total length of 850 meters

The cable-stayed option would feature two side spans of 200 meters for each side of the center span, as shown in the following figure:

Figure 2.2. Cable-Stayed Main Bridge Option



b) Secondary Crossing:

One secondary crossing with clear spans of 100 meters and 30-meter vertical clearance is needed near the Uruguayan coastline for the free passage of cruise vessels, sailboats and smaller freighters without the 8- to 10-meter draft of those using the main channels.

The structural solutions evaluated for this bridge component were as follows:

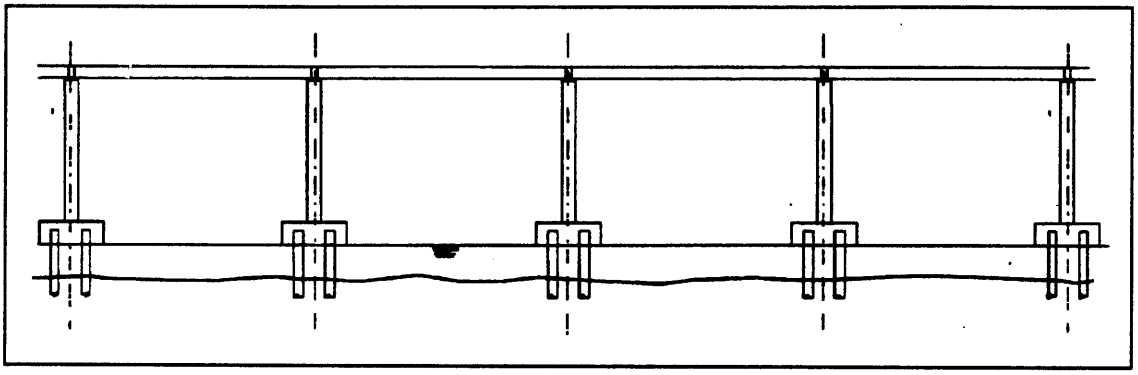
- steel girder-floorbeam-stringer systems
- steel trusses
- segmental precast concrete box girder system

The last alternative is the most efficient in these spans because of local availability of the construction material and low maintenance cost. The recommended configuration is three continuous spans, with a 100 m. center span and 65 m. side spans.

c) High-level Viaducts:

It would be used high- and low-level viaducts to connect the approaches to the main and secondary crossings, as shown in the following figure:

Figure 2.3. Viaducts



The high-level viaducts evaluated were:

- Precast segmented concrete box girder system
- Pre-stressed Bulb-T girders

It was determined that the most efficient range of spans for the precast segmented concrete box girder system is 75 meters, placed continuously for as many as four spans when the pier height above water level is more than 20 meters.

d) Low-level Viaducts:

For the remainder of the Río de la Plata crossing, the minimum clearance required is 6.5 meters above the "0" datum at Riachuelo River, based on expected

water and wave levels. The lengths of these viaducts have been determined by studies comparing the total minimum cost per square meter for different configurations. Since the vast majority of the project's overall length is made up by these low-level viaducts, the project's feasibility depends to a large extent on the cost/effectiveness ratio of the structural solutions adopted for the low level viaduct spans.

The following superstructure types have been considered for the project sections containing low-level viaducts:

- Steel multi-girder structures, continuous and/or simply supported
- Precast concrete multi-girder structures, continuous and/or simply supported

The recommended alternative for the low-level viaducts is pre-stressed precast Bulb-T beams made composite with the concrete deck to support live loads. From the point view of economy in construction and efficiency of operation, a four-span configuration is recommended.

2.3.2. Sub-Structural Alternatives

The Río de la Plata is located on the East coast of South America, draining the second largest drainage basin of the continent (3,170,000 km^2) and the first one in terms of population and economic importance. the Río de la Plata is a funnel-shaped coastal plain tidal river with a semi-enclosed shelf area at the mouth and a river palaeovalley at the northern coast favoring river discharge and sediment transport to the adjacent continental shelf. Morphological studies allowed

to recognize areas with particular features characterized as "morphological units". Surface bottom sediments distribution must be interpreted on a general context of long term graded and selective sedimentation. In such context, dynamic elements (differential contribution of the main tributaries, two main transport pathways, localization of sedimentation processes) and historical-stratigraphical elements (relict sediments masking actual processes), are involved.

Geotechnical investigations including borings to a maximum depth of 60 meters (if not previously encountering rock) and of 10 meters in dense sands were performed.

The results obtained served as a basis for the following conclusions:

a) There are two well defined subsurface strata:

- A stratum with considerably thick layers of low consistency sediments lying, with practically no transition, on fine and very dense sands known as "puelchenses". This situation occurs in about 80% of the area investigated.

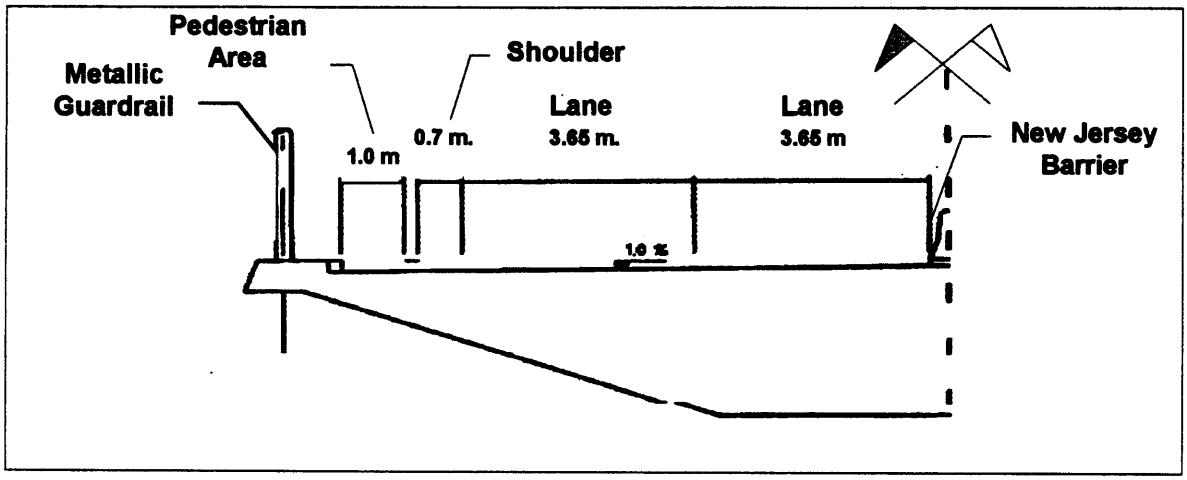
- A stratum near the Uruguayan coastline, where transition-type soils exist on underlying rocks.

b) Consequently, the use of large diameter excavated piles were adopted for the foundation design of viaducts and main crossing. The piles would get embedded 5 diameters in dense sands, and 1.5 to 3 diameters in rock for viaducts and main crossing, respectively.

2.3.3. Super-Structural Alternatives

With regard to the cross section, a four-lane configuration is preferred, as shown in the following figure:

Figure 2.4. Cross Section of a Four-Lane Alternative



However, two alternatives have been considered for possible superstructure configuration:

a) Two lanes in each direction with shoulders:

This scenario provides for four 3.65 m. wide lanes and 1.7 m. shoulders on each side and a central barrier. On a traffic more than 40 kilometers long, the first safety concern is to make sure that on-coming traffic should be separated by a New Jersey-type of physical barrier. Driving for approximately 30 minutes, very close to on-coming traffic, and without a divider can be highly dangerous and conducive to head-on collisions. The Bridge capacity with four lanes during

peak hour is approximately 2,000 vehicles/hour per lane. These volumes exceed traffic forecasts.

b) One lane per direction with a reversible central lane and shoulders for disabled vehicles:

This second scenario features two 3.65 m. -wide lanes, with shoulders 1.7m. wide and a reversible central lane for operation during peak hours. A system of movable barriers, like the Movable Rapid Interchange Barriers, would provide for a reversible central lane. In order to separate on-coming traffic, a divider such as a New Jersey-type of barrier could be used. This system is in operation in the United States and France and consists of a series of concrete barriers that are moved by a transfer vehicle using a special interchange system. Transfer vehicles are capable of moving the barrier system one entire lane in a single pass.

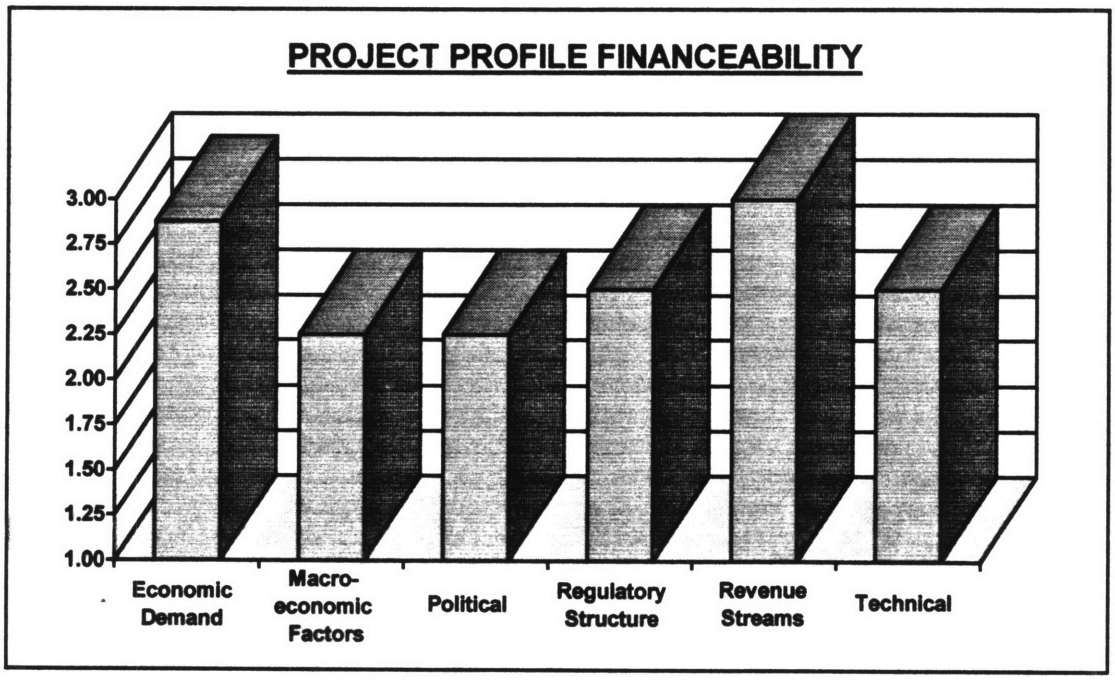
2.4. Preliminary Financeability Assessment

The US Trade and Development Agency and CG/LA Infrastructure – a US firm specialized in Latin American markets – developed a preliminary assessment of the financeability of the project. The report was presented at the TDA Conference on Infrastructure Opportunities in South America held in Rio de Janeiro, Brazil, in November, 1995.

They pointed out that the privatization of the transportation sector has been extremely successful in Argentina. The International Finance Corporation has announced the financing of a green toll road in Buenos Aires suburbs, and historic first. A number of concessions for rail lines were also awarded. The landslide reelection of the Argentine President Menem indicates continued support for these policies. Although, Uruguay's record in this respect is more mixed, the country granted its first highway concession in 1994, and the new government led by President Sanguinetti is dedicated to the success of the bridge project. Moreover, the two countries have a successful track record in the realization of joint infrastructure projects, such as the Salto Grande Dam on the Uruguay River. The basic underlying issue, however, is whether the costs of such an ambitious undertaking can be recouped through tolls reasonable enough to attract sufficient travelers and truck traffic.

The report also included a financeability profile of the project which is summarized in the following chart:

Figure 2.5. Project Profile Financeability



Financeability ratings above are given on a scale of 1 to 3, with 3 being the highest rating. The ratings are preliminary assessments, using existing data, of the impact of a given factor on project financeability – and thus the likelihood that the project will proceed in a timely fashion. These are not based on detailed cash flow assessments or credit ratings of individual companies or government institutions. Nor are they based on a detailed credit analysis of the project because, quite simply, insufficient information is available.

Rating are qualitative and broad stroke. A rating near "1" indicates that the factor is considered to be an extreme impediment to the project's financeability and

thus its viability. On the other end a rating near "3" indicates that the factor supports the project's financeability and presents few obstacles to a potential lender or investor. A rating of "2" is important as it indicates an area that is problematic, must be carefully monitored, and needs resolution for the project to proceed. At the same time, unlike a rating of "1", it is assessed that the obstacles are potentially resolvable.

Financeability rating is a subjective business. Therefore, ratings should not be used to rank the project – rather to flag areas that will need to be addressed by the concessionaire. Many issues associated with lower rankings can be overcome with the correct financial and commercial strategy.

The six factors on which the project financeability assessment is based are driven by the following considerations:

- Economic Demand: Is there a strong economic need driving the project with many beneficiaries?
- Macro-economic factors: How stable and secure is the country's macro-economic situation including the risk of devaluation?
- Political: Are there strong political pressures to push the project forward?
- Regulatory Structure: Are adequate government regulations in place to protect the rights of the investor or concession owner? Are the rules of the game clear or do ambiguities exist that might hurt the concessionaire?
- Revenue Stream: How secure is the flow of funds that will provide an adequate rate of return on the initial investment?
- Technical: Are there technical issues that might impact on the ability to complete the project or for the project to operate according to plan?

2.5. Existing Modes of Transportation at the Río de la Plata Region[2]

The Río de la Plata region between Argentina and Uruguay is connected by four transportation modes, three of which capture a significant share of the total market: maritime/ferry, highway and air transportation. The table below presents a summary of the connections and services available through each of the different modes. Rail service is only available for transporting freight over the Salto Grande Dam.

Table 2.2. Existing Modes of Transportation at the Río de la Plata Region

MODE	CONNECTION	MAIN SERVICES	TERMINAL/CROSSINGS
Maritime/Ferry	Buenos Aires-Montevideo	Buquebus	Port of Buenos Aires/Port of Montevideo
	Buenos Aires-Colonia	Ferrylíneas/ Buquebus/Alíscafos	Port of Buenos Aires/Port of Colonia
Roadway	Fray Bentos-Puerto Unzué	Condor/COT/ETSA/ CITA	Gral. San Martín Bridge
	Paysandu - Colón		Gral. Artigas Bridge
	Salto Grande Dam		Salto Grande Dam
Air	Buenos Aires - Montevideo	Aerolíneas Argentinas/Pluna	Aeroparque/Carrasco
	Buenos Aires - Punta del Este	Aerolíneas Argentinas/Pluna	Aeroparque /Punta del Este
	Buenos Aires - Colonia	LAPA	Aeroparque/Colonia
Railway	Salto Grande Dam		Salto Grande Dam

Approximately 4.5 million passengers crossed the Río de la Plata in 1994, using the three main modes operating between Argentina and Uruguay: river (ferry from Buenos Aires and La Plata City to Colonia and Montevideo), air (Buenos

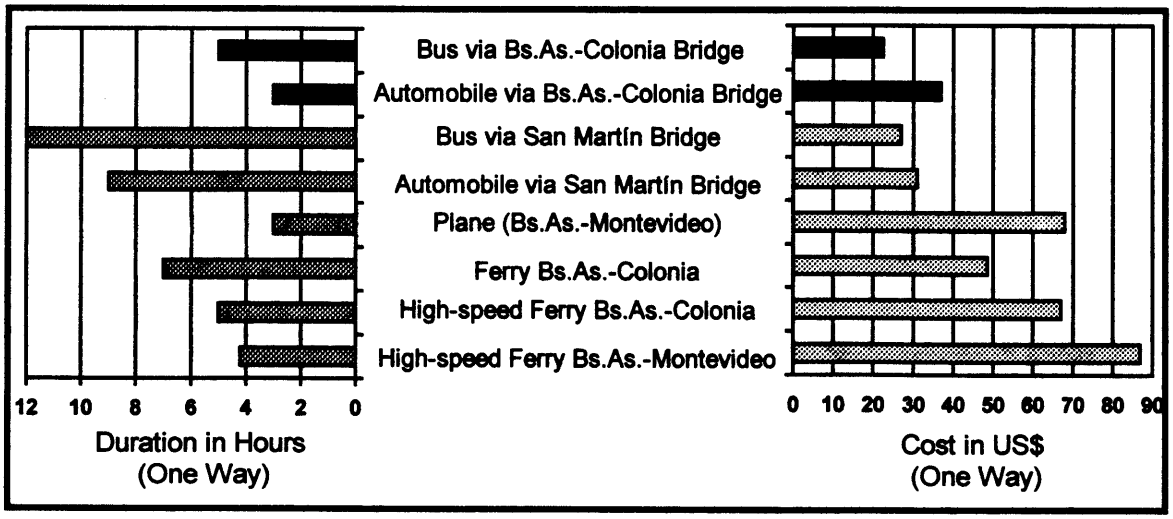
[2] Louis Berger International, Inc., et al., Preliminary Studies - Río de la Plata Crossing - Executive Summary, Argentina, June 1995.

Aires to Colonia, Montevideo and Punta del Este) and highway (via Fray Bentos, Paysandú and Salto). Over the last ten years this traffic has grown at an annual rate of 5.5%. The effect of the bridge construction will result itself in a diversion of river and air traffic towards the roadway system and in a reallocation among the routes in the latter mode.

The cargo volume currently transported between Argentina and Uruguay is approximately 535,000 tons (1992). Of this, 518,500 tons are moved through the existing bridges and ports, 16,000 tons by rail (Salto Grande) and approximately 500 tons by air. The impact of the bridge over current freight traffic will be essentially a reallocation of routes over a portion of the roadway system.

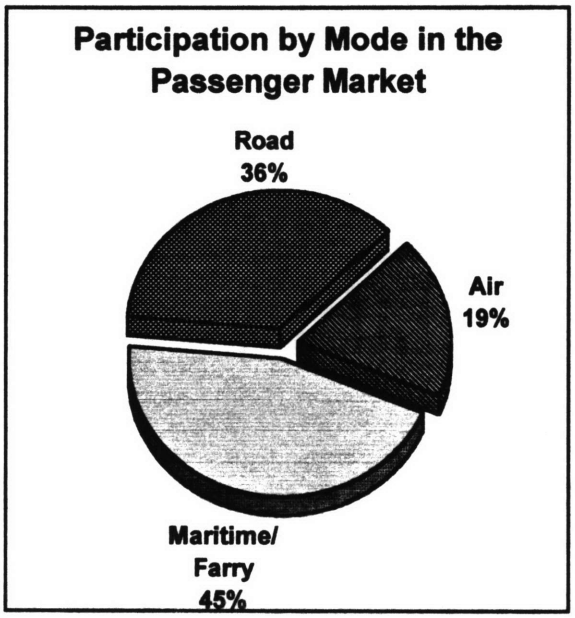
In the following figure, travel times and costs between Buenos Aires and Montevideo are compared by contrasting existing services with those that would become available through the proposed Buenos Aires-Colonia Bridge. It should be emphasized that the proposed Buenos Aires-Colonia Bridge will offer a service with drastically reduced travel time as compared with the current road service, and with significantly lower costs than existing air and rapid ferry services.

Figure 2.6. Cost and Travel-Duration Comparison of Modes of Transportation



In 1994, the maritime/ferry mode carried 45% of the passenger traffic between the two countries, while air and road had shares of approximately 36% and 19%, respectively, as it is represented in the figure below:

Figure 2.7. Participation by Mode in the Passenger Market



2.5.1. Maritime/Ferry Mode

This mode carries the highest share of the total market, with close to 45% of the passengers transported in 1994, or a total of about 2 million passengers annually. Currently, three companies offer ferry services connecting Greater Buenos Aires with Montevideo and Colonia: Ferrylíneas, Buquebus and Alíscafos (which was recently acquired by Buquebus). Other launch services connect the Delta with Carmelo.

The key features of the fleets operated by the three main companies are detailed in the following table:

Table 2.3. Technical Characteristics of the Existing Ferry System

NAME	TYPE	MAXIMUM SPEED (Knots)	CAPACITY		YEAR OF MANUFACTURE
			Passengers	Vehicles *	
BUQUEBUS					
Eladia Isabel	Catamaran	12	1200	90/4	1986
Silvia Ana	Ferry	13	700	55/12	1966
Patricia Olivia	Catamaran	39	500	60	1992
Juan L.	Catamaran	39	500	60	
FERRILINEAS					
Ciudad de Bs.As.	Ferry	11	1000	170/22	1964
Nicolás Mihanovich	Ferry	14	720	70	1961
Atlantic II	Catamaran	38	495	60	1990
ALISCAFOS					
Farallón	Hovercraft	35	134		1972
Tyrving	Hovercraft	35	134		1972
Flecha de Colonia	Hovercraft	32	140		1961
Flecha de Bs.As.	Hovercraft	32	140		1961

* *x/y = automobiles/trucks*

The three main companies provide service between Buenos Aires and Colonia, with an increase in service frequency during the peak season in summer. Only Buquebus offers a direct service between Buenos Aires and Montevideo, while the three companies compete directly for the traffic between Buenos Aires and Colonia. Generally, the high-speed ferry services have increased their share in the market. The high-speed ferry service between Buenos Aires and Montevideo provided by Buquebus is one of the best in the world, as it uses high-speed catamaran boats (39 knots per hour) and modern terminals. Buquebus has also

indicated its interest in improving its service and has added a new ship to its fleet capable of reaching speeds of 55 knots per hour

It has been estimated that the existing capacity of the three main companies' ferry fleet offers the potential to increase significantly the volume of traffic between Buenos Aires and Colonia (a potential growth of about 500%, or more than 2 million, in number of passengers, but only a 260% growth, or about 170,000, in number of cars transported during the peak season). Additionally, it was also concluded that Buquebus has significant unused capacity in its ferry service between Buenos Aires and Montevideo. It is likely that the profit margin of high-speed ferry operations are sufficiently high to allow for a fleet expansion and an increase in the level of service in the long term.

2.5.2. Air Mode

The air transportation mode represents a significant portion of the total travel market between Buenos Aires and Uruguay, with about 19% of passengers transported by air in 1994 or a total of approximately 860,000 passengers annually. The demand for air travel between Uruguay and Buenos Aires is presently met by Aerolíneas Argentinas and PLUNA (to Montevideo and Punta del Este) and LAPA (to Colonia). These routes are basically served by a narrow body of aircraft.

The main infrastructure for air connection between the two countries includes three commercial airports in Uruguay: Colonia, Carrasco (Montevideo) and Capitán Curbelo (Punta del Este) and two in Buenos Aires: Ezeiza and Aeroparque. On the Argentine side, Aeroparque is the principal airport for flights to

Uruguay. It is located on the bank of the Río de la Plata, adjacent to Buenos Aires' commercial center. PLUNA and Aerolíneas Argentinas operate a shuttle service between Aeroparque and Carrasco, which offers the option to the user of more than 8 daily flights using either one of the two companies.

The average number of daily jet takeoffs and landings at Aeroparque is 75.3; reaching as high as 83 in a peak day, which implies a moderate utilization level for a single-runway airport. To increase the capacity of this route, larger planes could be used or the number of flights could be increased. The consideration of these two factors together would result in a larger number of available seats or a significant capacity increase.

Aeroparque's primary limitation is the number of aircraft aprons (20), although there is the possibility of rapid expansion by building four new aprons on existing land. The runway's capacity poses no problem since, in a single-runway operation, a takeoff or landing can take place every two minutes, under normal conditions.

It is concluded that with a number of pragmatic improvement measures (increase in the number of ticket counters; increase in the number of flights, and in the average capacity of planes, plus the construction of four new aprons), it is possible to increase significantly the passenger traffic between Aeroparque and Uruguay, without incurring major construction expenditures.

On the Uruguayan side, the three airports have ample capacity to allow for an increase in the number of flights to Buenos Aires. About 50% of the total passenger traffic originating at Carrasco (Montevideo's airport, and Uruguay's main air facility) corresponds to the shuttle service to Buenos Aires Aeroparque.

The shuttle service has a few shortcomings, namely frequency limitations, lack of diversified ticket options (for instance, different fares for different seasons, days or hours of travel) and the excessively long time needed between arrival at the airport and aircraft boarding. Solving these problems would not be difficult and an improvement in the travel market share would be feasible. Low season tickets and reduced processing time for passengers traveling between Punta del Este and Aeroparque could also result in a larger number of users, though on a smaller scale than that of Montevideo.

In conclusion, low-cost alternatives exist that would produce an increase in the number of shuttle passengers, for those market segments which do not require travel by car, or who are very sensitive to air fare costs.

2.5.3. Highway Mode

Road transportation satisfies a significant portion of the total travel demand between Buenos Aires and Uruguay. About 36% of passengers traveled by road in 1994, or a total of about 1.6 million passengers annually. Furthermore, the majority of the freight volume moved between Argentina and Uruguay uses the Uruguay River bridges, with the exception of a small portion taken by train (through Salto Grande), plane or ferry (through the Port of Colonia).

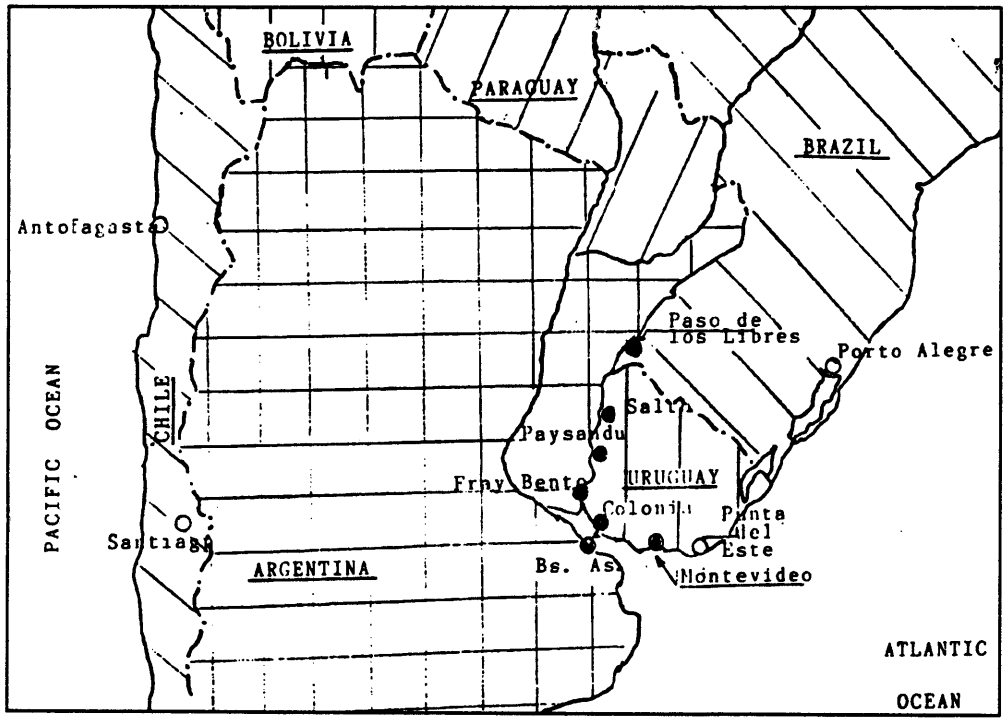
At present, there are three bridges over the Rio Uruguay connecting Argentina and Uruguay:

1) Libertador General San Martin Bridge (Fray Bentos-Puerto Unzue)
2) General Artigas Bridge (Colonia-Paysandú)

3) Salto Grande Dam Complex (Salto-Concordia).

In addition, there is the G. Vargas - A.P. Justo Bridge (Paso de los Libres - Uruguayana), connecting Argentina and Brazil, as shown in the map below:

Figure 2.8. Location of Existing Road Crossings



1) Libertador General San Martín Bridge (Fray Bentos - Port Unzué)

The General San Martín Bridge is the closest to Buenos Aires (about 230 kilometers) and represents the most direct highway route between Buenos Aires and Montevideo or Colonia. As a result, this bridge handles the majority of the

road traffic in the area surrounding the project. The average annual daily traffic (AADT) is 780 vehicles/day (1993), with 25% being heavy vehicles. The highest number of vehicles is recorded during mid-January with 3024 vehicles/day (1994). Under these conditions, there is no problem with traffic congestion; rather congestion tends to occur at the border crossing where vehicles must stop to comply with Police (Immigration) and Customs regulations.

2) General Artigas Bridge (Colón - Paysandú)

This bridge is located about 310 km. from Buenos Aires. The average daily traffic is 730 v/pd, with peaks of 2,285 v/pd recorded in January of 1994, but with a larger percentage of local vehicles than the Libertador General San Martin Bridge. The level of service is good and, as in the previous case, any delay during periods of greater demand is due to border administrative procedures which will be minimized under the MERCOSUR framework.

3) Salto Grande Complex (Salto - Concordia)

The third bridge between Argentina and Uruguay is located approximately 430 kilometers from Buenos Aires, crossing the Rio Uruguay on the crest of the Salto Grande Dam. The characteristics describing the two other crossings apply to this one as well, except that in this case there is also a train connection which affects the traffic. When a train must cross the bridge the highway traffic is interrupted for an hour, as the tracks occupy a portion of the roadway. This situation occurs only a few times a week.

4) G. Vargas - A.P. Justo Bridge (Paso de los Libres - Uruguayana)

This bridge, the first one built over the Uruguay River, joins the towns of Paso de los Libres (Argentina) and Uruguayana (Brazil). The width of the paved roadway is 6.30 meters, and the facility is almost 50 years old. The traffic volume is high due to local traffic and a large percentage of trucks. Next to the highway bridge runs an independent railway line linking the Argentine and Brazilian rail systems.

* * *

In general terms it can be said that the Argentine and Uruguayan road networks provide an adequate connection to the border crossings. They consist, for the most part, of paved 2-lane roads, whose condition varies from good to good-fair. A significant section of the Argentine network and the "Interbalnearia" (turnpike that links Montevideo and Punta del Este) in Uruguay operate under a concession system that suggests good maintenance standards for the future.

In the last five years there has been a sustained increase in the number of motor vehicles both in Argentina and Uruguay. Among the MERCOSUR countries, and among the countries in South America as a whole, Argentina and Uruguay show the highest indices of motor vehicle ownership.

International passenger bus services operate by means of a system of permits issued to private operators who serve regularly-scheduled routes. The current operators are solid, well-established companies, with a substantial fleet to provide the services. The Argentine as well as the Uruguayan companies pool their resources, supposedly to lower their costs and to improve passenger services.

Cargo is carried by private operators, with freedom to contract out, both for users and professional freight truckers. The users, and the public in general, are protected by transportation safety procedures, especially with regard to certain types of cargo. Regulations are also in place to preserve the road infrastructure (weight limits per vehicle axle, vehicle tare, type of road surface, etc.) in a manner consistent with the framework of the MERCOSUR agreements. The document known as MIC/DTA (International Cargo Manifesto/Customs Traffic Statement), currently in use by MERCOSUR and Andean Pact countries, is beginning to solve one of the most complex issues in international land transportation.

Although the volume of freight currently crossing the Río de la Plata corridor is relatively low, it is an important potential traffic source for the Buenos Aires - Colonia Bridge, particularly the freight which is to be moved between the regional ports and between Argentina and Brazil. In light of this, the following items are worthy of consideration:

- The traffic between the Montevideo and Buenos Aires ports. The impact of the Bridge on this system would emerge from the fact that one of the two ports could capture freight from the other, if costs were low enough for the cargo en route to one of the countries to be unloaded in the other country's port as transit cargo and then, on board a truck, to cross the bridge to arrive at its final destination. Currently, the volume of cargo traffic between the ports of Montevideo and Buenos Aires is minor (on the order of 50,000 tons, excluding Argentine fuel imports), and there is no present in-transit traffic between the regional ports.

- The highway freight traffic between Argentina and Brazil, presently uses the Uruguayana - Paso de los Libres crossing. In 1993 approximately 98,607 fully-loaded trucks crossed the border, or approximately 270 trucks per day. The greatest portion of transported volume currently goes from San Paulo and Curitiba to Porto Alegre; continues then to Uruguayana, and crosses the border into Argentina at Paso de los Libres, with Buenos Aires as its main final destination.

With respect to highway traffic between Argentina and Brazil, even though it is possible to travel through Uruguayan territory, vehicles do not currently exercise this option because of the negligible savings in distance difficulties, such as:

- two customs check-points to cross instead of one,

- cumbersome Uruguayan customs procedures,

- the lower transportation costs in Brazil make it less expensive for the freight owner to use Brazilian operators for a portion of the trip, instead of using an Argentine trucker for its entire length.

- the existence of freight warehouses in Uruguayana encourages the transfer of cargo, and allows the truckers to move their equipment even when the commercial documentation involved is incomplete. In addition, the no-charge policy permits the freight owners to benefit by deferring payment of duties or by waiting for better prices at the market of final destination.

The implementation of the MERCOSUR Agreement, however, should produce positive impacts on the above items: almost immediately upon the first two by elimination of customs roadblocks; later on the third one, as a consequence of the "regionalization" of the economies which would tend to generate similar costs in the participating countries; and finally, more gradually, on the last item. As a result, it is feasible to think in terms of a diversion, at least in part, of cargo shipped between Argentina and Brazil, towards the alternative routes traversing Uruguayan territory.

CHAPTER 3: SIMILAR BOT PROJECTS

The Channel Tunnel, linking the United Kingdom and France, and the Northumberland Bridge in Canada stand out as recent BOT projects with complex procurement processes. Therefore, the lessons learned from these projects can be somehow applied to the Buenos Aires-Colonia Bridge.

3.1. Channel Tunnel

The $15 billion Channel Tunnel makes the old dream of a ground link between Great Britain and continental Europe a reality for the first time since the Ice Ages. The Channel Tunnel is one of Europe's biggest infrastructure projects ever. Some facts of this project are outlined in the following points:

- The Channel Tunnel consists of a North and South running tunnel, and a Service tunnel which runs between.

- Its length is 50 Km. (31 miles), of which 37 Km. (23 miles) are underwater.

- Its average depth is 46 meters (150 feet) under the seabed.

- The channel crossing time for Eurostar is only 20 minutes. Eurostar is the company that operates train services through the Channel Tunnel. Eurostar

links three European capitals, namely Brussels, London, and Paris; it can run on various track clearances; and it can be powered by three different electrical systems (overhead wires in Belgium and France, third rail in Britain).

- 95 miles of tunnels were dug by nearly 13,000 engineers, technicians and workers.

- The volume of rubble removed from the tunnel is three times greater than that of the Cheops Pyramid in Egypt. It has increased the size of Britain by 90 acres. Equivalent to 68 football fields, this area has been made into a park.

Since the Channel Tunnel is one of the most frequently cited recent applications of Build/Operate/Transfer delivery method, a description of its characteristics and financial aspects are briefly summarized in the following sections.

3.1.1. Chronology of the Project

- March 1986: The French and the United Kingdom governments signed a 55 year Concession agreement with the Channel Tunnel Group Ltd. and France-Manche SA. The companies are now known as Eurotunnel.

- December 1993: The Channel Tunnel was designed and built for its operators, Eurotunnel, by Transmanche Link (TML), a joint venture of five

British and five French construction companies. TML formally handed over the project to Eurotunnel in December 1993.

- May 1994: The fixed link was inaugurated by Her Majesty Queen Elizabeth II, and President Francois Mitterrand on May 6, 1994. As part of the ceremony, the two heads of state each traveled by Eurostar train to the French terminal at Coquelles, where the two trains drew up nose-to-nose at the platform. The initial ribbon cutting ceremony took place in France, the parties then traveled by "Le Shuttle" to Folkestone where a further ceremony took place.

- May 1994: The HGV service began commercial operation on May 19, 1994.

- June 1994:The Freight service began operations on June 1, 1994.

- November 1994: Eurostar services began operations on November 14, 1994.

- December 1994: Eurotunnel Tourist Shuttle services began operations on December 22, 1994.

3.1.2. Eurotunnel's Financial Scheme During Construction

In 1985, the British and French governments invited proposals for a commercially managed tunnel to run beneath the English Channel. It would be developed, financed, built, and operated by the private sector without any government subsidies. The winning plans were submitted jointly by the channel

Tunnel Group and France Manche, which formed twin holding companies, Eurotunnel PLC and Eurotunnel SA, chartered in Great Britain and France, respectively. This private project operates under an Anglo-French treaty that grants a fifty-five-year concession to build and operate the tunnel and allows the consortium the right to set its own commercial policies, including pricing.

The original owner consortium included five leading French and British banks and ten construction companies, which provided $84 million in the first of three equity tranches (Equity I, II, and III) that would eventually total $1 billion raised out of 745,000 (mostly French) shareholders. This developmental financing gave the owners tight control; they divided construction contracts and the lead finance management among themselves. The initial equity investment also covered some of the credit risk during the development phase.

They subsequently obtained credit enhancement of the equity capital through a syndicated bank loan of $8.4 billion provided by some 220 banks (primarily Japanese, French, British and German). Approximately $1.68 billion of the loan was a standby agreement designed to cover possible cost overruns or unexpectedly high inflation rates. This bank loan was unique in that up to 60 percent of the loan could be taken in the form of letters of credit.

It is clear that in this project the equity and debt financing were structured to support one another. The bank loan was arranged before the bulk of the equity financing was raised, so that potential investors had confidence that the remainder of the financing required to build the tunnel was in place. The equity base was similarly essential to the debt in giving lenders confidence that the company was adequately capitalized.

As is true of any transportation project, political risk was a major concern during the construction phase. Apparently, some of the banks that took part in the syndicated loan found it hard to imagine that either government would walk away from a project in which so much political and national prestige had been invested (this assumption illustrates the de facto recourse of the lenders to the governments).

Yet, certain institutional investors who approached the second equity tranche of $346 million were concerned over the delay of legislation supporting the project in both countries. Because they were not assured of strong political backing, investors were reluctant to purchase shares in Eurotunnel even though they stood to earn a 17 percent return if they held the shares for the entire fifty-five-year concession period. Fortunately, the legislation passed and the governments indirectly ensured successful launching of Equity II.

Both lenders and equity investors in Eurotunnel assumed completion and operating risks in return for the high potential payoff. Project managers devised an elaborate structure of rewards and penalties to ensure on-time, in-budget project completion. Payment to contractors was divided into a number of tranches, reflecting the varying degrees of risk. All underground construction was based on a target cost to which a gross profit of 12.36 percent was added. If the cost was under budget, the contractor would received 50 percent of the savings; if budget was exceeded, the contractor would pay 30 percent of the overrun, up to a limit of 6 percent of the target cost. Most of the rest of the construction (e.g.: terminals) were to be paid for on a lump sum basis that emphasized the contractors' ability to benefit from good performance.

The creditors options were limited should the project got into serious trouble. Under the terms of the loan agreements, banks did not have the right to substitute a new company if the project went into default based on specified debt coverage rate. Moreover, banks managed some of their completion risk by stipulating a right to withdraw from the loans if Equity III had failed. As it turned out, the third equity tranche was fully financed.

Equity III was also contingent on the signing of contracts with the British and French state-owned railroads. Economic analyses and traffic projections during the development phase indicated that the project was highly robust with respect to the main external risk, namely revenue shortfall. Yet, given the extreme importance of cash flow in the project finance, such favorable projections did not generate as much confidence as they would have in a more traditional asset-based financing. Consequently, the railroads were convinced to shoulder more of the risk.

Approximately 41 percent of the operating revenues were expected to come from payments by the railways, which agreed to pay a minimum usage charge equivalent to the income generated by 60 percent of the projected tunnel traffic per year for the first twelve years of the concession. This effectively was to underwrite all of Eurotunnel's operating costs during this period.

In accordance with the initial projections, Eurotunnel planned for 1995 to begin dividend payments on equity and to refinance its loans with other debt instruments. These were designed to match the debt maturities to the project's long-term revenue-generating profile. As Eurotunnel cannot diversify into other business activities without permission of the Anglo-French Inter-government Commission supervising the project, and as the Tunnel would cost little to run and maintain, the

company would have no significant need to retain earnings during the operational phase of the project.

The exchange rate risk that Eurotunnel was to face in meeting its currency requirements for servicing investors was covered through a £1,000 million loan from the European Investment Bank, to be made available primarily in British sterling and French francs. The loan was to be drawn over several years at the prevailing market rates of interest for terms of up to twenty-five years.

Thus, as this project has evolved, its manager had intended to design financial arrangements that allocated each principal risk to the party best able to manage and bear it. In the process, they facilitated the self-financing of a project that had been the fancy of sovereigns and their subjects for centuries.

3.1.3. Current Status of the Venture

In 1995, Eurotunnel realized $453 million of revenues. This figure, however, is completely offset by the current company's debt which has tripled to nearly $13 billion, a whopping 13 times its current market capitalization. This debt is due to the fact, among others, that construction of the Tunnel extended one year more than the projected seven-year schedule.

In September, 1995, Eurotunnel hinted an imminence of bankruptcy when it announced an 18-month moratorium on paying its interest. Now, Eurotunnel is negotiating a restructuring of its debt with its 220 banks while interest costs are skyrocketing twice as fast as revenue.

Presently, half of Eurotunnel's equity is worth about $500 million, or 4 percent of the company's debt. In 1986, France Manche/Channel Tunnel Group's original bid was $5.6 billion. Eight years later, construction costs had doubled to $11 billion. Of that $11 billion, shareholders invested $4.6 billion, and two development banks together invested $3.4 billion. That means shareholders and junior creditors (who had no security on the assets) supplied $8 billion, or 73 percent of the project's construction costs. In contrast, the 220 banks supplied $3 billion (not including financial costs), or 27 percent of the project's construction costs. But now the banks are claiming roughly $12.8 billion in debt.

Such a financial distress is attributed mainly to revenues lower than expected, construction costs overruns, and a faulty conflict resolution system in the construction contract.

Specifically, existing ferry services over the English Channel and airlines companies servicing London-Paris pose fierce competition to Eurotunnel.

In addition, cost overruns were considerable, even though no specific problem was encountered. Roughly, seventy percent of the construction cost overruns rose from fixed equipment (rails, drainage, cooling, signals). It is believed that three reasons caused the overrun. First, the conflict resolution system established in the construction contract was a lengthy arbitration process that could be appealed, leaving it open-ended. Second, contractors could use arbitration as an excuse to stop work. And third, penalties for late delivery were lower than Eurotunnel's costs.

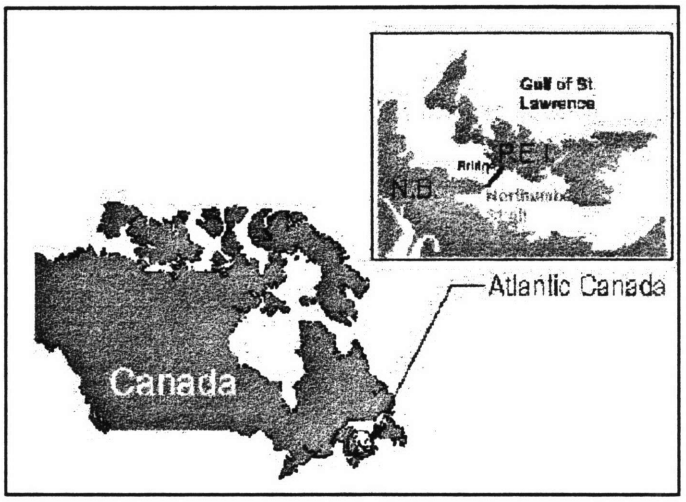
This meant delays were expensive for Eurotunnel, but not for the contractor. Delays, in turn, required bigger loans, meaning the banks could claim the deal was getting riskier and so raise their fees. During the project's life, construction costs

doubled from about $4 billion to $8 billion. Financial costs tripled from less than $5 billion to $13 billion.

As a way to palliate the current deficit, in May 1996, the French president Jacques Chirac suggested to British prime minister John Major that the two governments extend Eurotunnel's lease from 55 to 99 years. That is an important step for the crippled shareholders because it gives Eurotunnel more time to pay off its gargantuan debt.

3.2. Northumberland Bridge[3]

Figure 3.1. Map Location of the Northumberland Bridge



The Northumberland Bridge is a 13.5 km. high-level bridge structure linking Cape Tormentine in New Brunswick to Borden in Prince Edward Island. This CAN$840.0 million (1988 dollars) bridge replaces an existing ferry service between these two points that, pursuant to Project Agreements, ceased operations upon opening of the bridge facility. The bridge facility and the existing ferry service are required as a result of a constitutional obligation between the Government of Canada and the Province of Prince Edward Island which is contained in the Terms of the Union Agreement executed at the time of Prince Edward Island joining Confederation in 1873.

The Government of Canada was faced with a ferry service that resulted in ever increasing subsidy payments and periodic capital replacements. Private enterprise had approached the Federal Government suggesting a private toll bridge facility which, together with a continuation of an annual federal subsidy equal to the operating costs of the existing ferry service, would result in a cost savings and an

[3] J. David Pirie, Private/Public Partnership, Moncton, New Brunswick, Canada, March 29-30, 1994

improved level of service to the Government of Canada and the people of Prince Edward Island.

The Government listened to this proposal and issued a Request for Proposal and Prequalification in 1988 which attracted proposals from 12 international groups. The Government had clear evaluation criteria which reduced this group from 12 to 7. The remaining 7 were invited to submit preliminary designs, construction methods, a regional benefits assessment, a preliminary environment assessment and a full description of the groups' design, construction and project management capabilities. The initial proposals were not priced, though an outline of a financial plan and security package was required. The developers were also required to identify any contract terms and conditions that they would require in order to proceed with this project. Out of the seven invited bidders, six proposals were submitted.

Based on well documented evaluation criteria, a detailed evaluation process was undertaken with all six bidders and requests for clarification were made, followed by written re-submissions and a further round of discussions and clarifications. In September of 1988, the Government of Canada announced that three consortiums had been selected to submit priced proposals and a full financial plan. The submission of final pricing was delayed in 1988 by a Federal election and the replacement of several key cabinet ministers.

An environmental review process was also undertaken during this period and, after initially overcoming some environmental obstacles, a fully priced submission and details of financial and security packages were submitted in May of 1992. At this time, the Strait Crossing Consortium was declared the low bidder. Between May of 1992 and October of 1993, which was the Financial Closing, there was an

extensive environmental court action which resulted in significant delays. Also during this time period, there was extensive negotiation to finalize the contract terms and conditions.

The Northumberland Bridge represented the first significant BOT project undertaken by the Government of Canada and it was approached with considerable care and scrutiny by several government departments (Public Works, Transport, Finance, Environment, Revenue Canada and Justice).

3.2.1. Financial Aspects

There were particular concerns about the security package and the completion risk. The government's initial position was that this project was a pure privatization initiative and the Government of Canada should bear no risk whatsoever in any area.

During the course of negotiations, this position on risk was relaxed, thus enabling the project to be structured in a manner which was acceptable to the private sector and the capital markets of Canada.

The main financial criteria of evaluation was that the annual subsidy requested by the successful bidder could not be greater than CAN$35.0 million (1988 dollars). This CAN$35.0 million sum represented the government's subsidy payment in 1988 dollars and the government was prepared to commit to paying 35 annual payments fully indexed to inflation, which would commence on the estimated date of Substantial Completion and continue annually thereafter for 35 years. Also during this 35-year period, the Developer was entitled to charge toll

rates consistent with the toll rates charged for the ferry service the year before the bridge opened. During the 35-year concession period, the Developer was entitled to automatically increase toll rates up to 75% of the annual increase in the consumer price index and in the event certain costs such as insurance premiums increased beyond inflation, a further adjustment could be requested.

The toll rate structure on this project created a unique legislative problem in that the laws of Canada prohibit the creation of a monopolistic utility by the private sector and secondly, required an amendment to the Terms of Union Agreement between the Federal Government and the Province of Prince Edward Island as to the replacement of the ferry service with the ultimate bridge facility. These two issues were addressed by way of passing a constitutional amendment to the terms of the union agreement. This constitutional amendment entrenched the right to operate the bridge as a concession facility, provided for the termination of ferry service upon completion of the bridge and included non-competition covenants by the Government of Canada during the 35-year concession period.

The financial model was very interesting in that it achieved many positive results for the government of Canada and the people of Prince Edward Island and Atlantic Canada, while allowing a structure that would enable the successful Developer to obtain non-recourse project financing. In this process, the federal government achieved the following advantages:

1) The subsidy amount bid was marginally less than the CAN$35.0 million in 1988 dollars.

2) The government would save capital costs for the periodic replacement of the ferries and improvements to docking facilities. This was estimated in 1992 dollars to be worth CAN$250 million.

3) The ferries were periodically shut down due to fog and ice conditions whereas the bridge facility would provide service and, from time perspective, would change a 45-minute to one-hour ferry crossing, to a 15-minute trip across the bridge.

4) The people of Prince Edward Island and Atlantic Canada would have a more reliable and efficient service which would enhance the tourism and commercial opportunities on Prince Edward Island.

5) During the 35-year period, the automatic increase of toll rates of 75% of the consumer price index will result in a decrease in toll rates in constant dollars. At the end of the 35-year concession period, the users of the toll bridge facility could expect substantial savings as toll rates would be reduced to cover operating costs only.

6) At the end of the 35-year concession period, the Government of Canada will receive a reconveyance of the bridge for CAN$1.00 and for the 65 years left of the 100-year design life, will receive a transportation facility against which it will have to pay only operating costs (i.e.: no further subsidy to the bridge owner or continuing subsidy and capital payments had the ferry service continued).

7) The annual subsidy to be paid by the Government of Canada is the only inclusion in the national debt. By committing a stream of annual payments, the Government of Canada has established "off balance sheet financing" for this project.

8) This project will create approximately 1500 jobs which will greatly assist the Atlantic Canada region which suffers from the highest unemployment rates in the country.

3.2.2. Capital Structure

In structuring this transaction, the Developer's key goal was to create non-recourse bonds for this project. The developer, working with Gordon Capital Corporation and CIBC Wood Gundy, developed a Real Estate Bond which was issued by a company called Strait Crossing Finance Inc. This was a provincial crown corporation of the Province of New Brunswick and was created to receive the annual indexed payments from the federal government and would in turn flow these funds to a trustee for the real rate bond holders. This structure resulted in the real rate bonds not being exposed to any credit or litigation risk other than the credit risk of the Government of Canada. Because the original payment was sourced with the Government of Canada, this particular paper was rated AAA by Standard & Poor and Moodys. These real rate bonds were placed into the capital markets of Canada on a private placement basis and attracted comparable pricing to the real rate bonds issued by the Government of Canada directly. These bonds were issued on a non-recourse basis and as such, the developer achieved its goal in this area.

3.2.3. Financial Risks

In order to achieve this goal in this area, it was necessary for the Government of Canada to agree to make the first payment to bond holders on May 31, 1997, the estimated date of completion of the bridge, whether the bridge was completed or not. This put a unique pressure on the "completion risk" associated with this project. If the developer was late, the Government of Canada would find itself in the position of making the first annual indexed subsidy payment and continuing to operate the ferry service. This was not a risk that was acceptable to the Government of Canada and in the negotiation process, the developer was required to reimburse the government for operating costs associated with the ferry service in the event completion of the bridge was delayed beyond May 31, 1997. A very extensive security package comprised of parent company guarantees, a CAN$200 million performance bond and a CAN$20 million labor and material payment bond were supplied to secure the government against the completion risk.

In addition to the "completion risk", the government was very concerned about the "cost overrun risk". The government required a separate letter of credit for CAN$73.0 million to be set aside as extra protection against cost overruns. The government also hired financial advisors, Rothschild of Canada and Doane Raymond, to undertake an extensive review of the financial model. In addition to Public Works Canada's own engineers, the government had an independent engineer, Buckland & Taylor of Vancouver, to extensively review the design, construction methods, construction price, and schedule of the developer and write a detailed report approving this program prior to financial closing.

The developer had focused its main return on the concession period with the up front real rate bond financing and interest during construction covering the design and construction costs. In order to maintain a positive return, the developer had to approach the balance of the contract negotiations to ensure that no contractual terms during the 35-year concession would negatively affect the developer's ability to place toll revenue bonds on the project. The developer's financial advisors were provided with the summaries of negotiating positions and contract terms to make sure that toll revenue bond holders were not exposed to risk and credit uncertainties.

There were extensive negotiations to deal with standard and unusual contractual terms and conditions such as:

Standard	Unusual
• Applicable laws	• Public safety issues
• Subsurface and geotechnical risks	• Public policy issues
• Force Majeure	• Adjustment to toll rates
• Worker's compensation	• On-competition covenants
• Insurance program	• Fisheries compensation
• Strikes and Lockouts	• Impact on Public sector employees
• Design approval	• Impact on fisheries
• Acceptance of construction	• Income taxes and GST treatment
• Progress payments	

As noted above, the Government of Canada initially took the position that they were not prepared to accept any risk. After accepting some financial and completion risks, albeit well secured from the developer's perspective, the government was less willing to assume risk in the areas listed above.

At the end of the day, in order for this project to proceed, the Government of Canada and the developer negotiated a sharing of risk allocation which, from the developer's perspective, certainly favored the Government of Canada. The developer, during the process, attempted to focus on risk management and risk transfer techniques in order to minimize its risk, particularly in areas where it assumed greater than normal contractor risk.

3.2.4. Lessons Learned

The Northumberland Bridge should not be followed as a model of timeliness. The project took in excess of five years to finalize with a construction period of only four years.

Nevertheless, the Northumberland Bridge is the first substantial BOT project undertaken by the Government of Canada to provide an infrastructure facility. This project can be used as a model for other privatization projects in a way it has addressed the financial and completion risks together with the finalization of normal contractual terms. It clearly illustrates that each individual project must be carefully analyzed as all projects are different. All projects are not financeable to the same extent and each individual project has its own unique allocation of risk.

The lessons learned during this particular project can be summarized as follows:

1) Identify and understand the project

- Approach each project with a fresh perspective.
- Identify and discuss the project with proposed public sector partners at the earliest opportunity.

2) Identify members of the consortium at the earliest opportunity

- Ensure technical/financial capacity and capabilities.
- Build on existing working relationships and alliances.
- Ensure level of commitment is agreed to in terms of dollars and time.

3) Identify political agenda

- Proposed project must be supportable in public domain.
- Early identification of political champion for the specific process or project.

4) Identify all affected interest groups

- Pro and against.
- The need to identify at the earliest possible stage, a particular interest group or issue which may affect the project. If only anti-voices exist, it may be needed to create or sponsor a pro-business group to support the project.

- The press should be treated as a special interest group and jointly formulate, with the public sector, a Communication Plan at the early stages of the project.

5) Early finalization of legislative/regulatory requirements

- This must occur at the front end of the project in order to provide a comfort level for all participants and to establish contractual framework for the project.
- This issue is particularly important to financial lenders and given the cost of pursuing financial proposals in the capital markets of the world, there can be no room for doubt or uncertainty in this area.

6) Early finalization of timelines for the project

- The Request For Proposals or RFP process must clearly identify the deadlines associated for the project and address issues of compensation to the developer where either a project is canceled or deadlines are extended.
- In order to ensure the best quality of submissions, public sector is slowly moving towards compensation to bidders where the RFP process is complex or anticipated to be greater than six months.
- There must be an assumption of responsibility by the public sector where there is an extensive slippage in schedule due to litigation, regulatory approval or environmental challenge.

7) Shorten bidder list at first opportunity

- It is in the best interest of both the public and private sector to reduce the participants in a RFP process as soon as possible. In complex infrastructure proposals, there should not be more than two or three final bidders in order to ensure that the best effort and best price of the participants involved in the project are obtained.
- Until the rules and procedures change, the privatization process is too expensive for the private sector to participate from start to finish in all RFP opportunities.

8) Early nomination of an "empowered" negotiating committee

- It is imperative that the public sector establish a negotiating committee and empower specific individuals to make decisions. These decision makers should be known to the private sector participants. There should be no hidden agenda and there should be no "empty chair" negotiations. All affected agencies within the government must either be part of the negotiating committee or have delegated their authority to other members of the negotiating committee. This can best be achieved through the legislative or regulatory framework.
- Once established, the negotiating committee should not change until finalization of all project agreements.

9) Maintain flexibility in the financial plan

- Circumstances change, deadlines change and financial markets change.

- The developer must always have some flexibility in its financial plan to deal with the unexpected.
- The financial plan must provide an adequate rate of return to the developer and its lender to reflect assumption of risk.

10) Risk allocation

- There must be an early identification of project risks and a reasonable negotiation process that will equitably allocate these risks.
- Private sector should expect to assume a higher level of risk than a normal construction bid.
- The public sector cannot assume a zero-risk posture as this will not allow a properly priced financial proposal and will discourage participation in subsequent privatization opportunities. Certain risks such as legislative changes, acts of war, acts of God, environmental or legal injunction and the collapse of financial markets are risks that will not be accepted by the capital markets and can only be assumed by the public sector.

11) Demonstration of full government support

- In addition to providing the necessary legislative and regulatory framework, the applicable public sector participant must clearly indicate support for the project frequently throughout the RFP, contract negotiation and during the marketing of the project financing.
- There should be no policy debates or any expressions of uncertainty associated with the project once the RFP process has commenced.

12) Encourage the establishment of a relationship of trust

- The private sector is familiar with working with members of the private sector as consortium and joint venture proposals are common. These relationships are based on TRUST and based on the fact that generally, such organizations are like-thinking in their approach to the project.
- The public sector must encourage the establishment a level of TRUST with the private sector and particularly to ensure that the public sector discloses all information in its possession with respect to the proposed project.

There is substantial "common interest" that results in a successful privatization. Both the public and private sector must learn the lessons from these projects and learn to establish working relationships which, over time, can ultimately be founded in mutual respect and trust.

CHAPTER 4: FINANCIAL EVALUATION

The objective of the present analysis is to evaluate the extent to which the Bridge is financially feasible under a set of different economic and market conditions, construction and operating costs, traffic levels, financing sources, and other matters that play a significant role in the financial robustness of the project.

Since the Bridge is conceived as a Build/Operate/Transfer type of delivery method, the financial feasibility of the Bridge can be measured through the return available for the potential concessionaire. This is due to the fact that the attractiveness of the project from the financial standpoint will depend on the return it offers in compensation to the concessionaire's investment and ability to face a great deal of the risks inherent to the design, construction, operation, and maintenance of the project. In other words, any BOT project will not be financially feasible and sound unless it offers a "good" return to the concessionaire.

Therefore, the analysis will be based on a financial model that incorporates data from traffic projections, toll levels, market conditions, construction costs, sources of finance, etc., and, on the other hand, it calculates the Concessionaire's Net Present Value (NPV) and Internal Rate of Return (IRR) over the net cash flows as a measure of the financial strength of the project. Such net cash flow or dividends may then be subject to corporate taxes at the concessionaire's home country. The financial model does not asses the impact of corporate taxes on the cash-flow analysis because it is presently unknown the nationality of the future concessionaire.

The financial model is based on a set of assumptions that will need to be adjusted in the future according to such factors as sources of financing resorted by the concessionaire; its risk appetite; market conditions; and final terms and conditions imposed by the governments of Argentina and Uruguay at the time of signing the concession contract; among other variables.

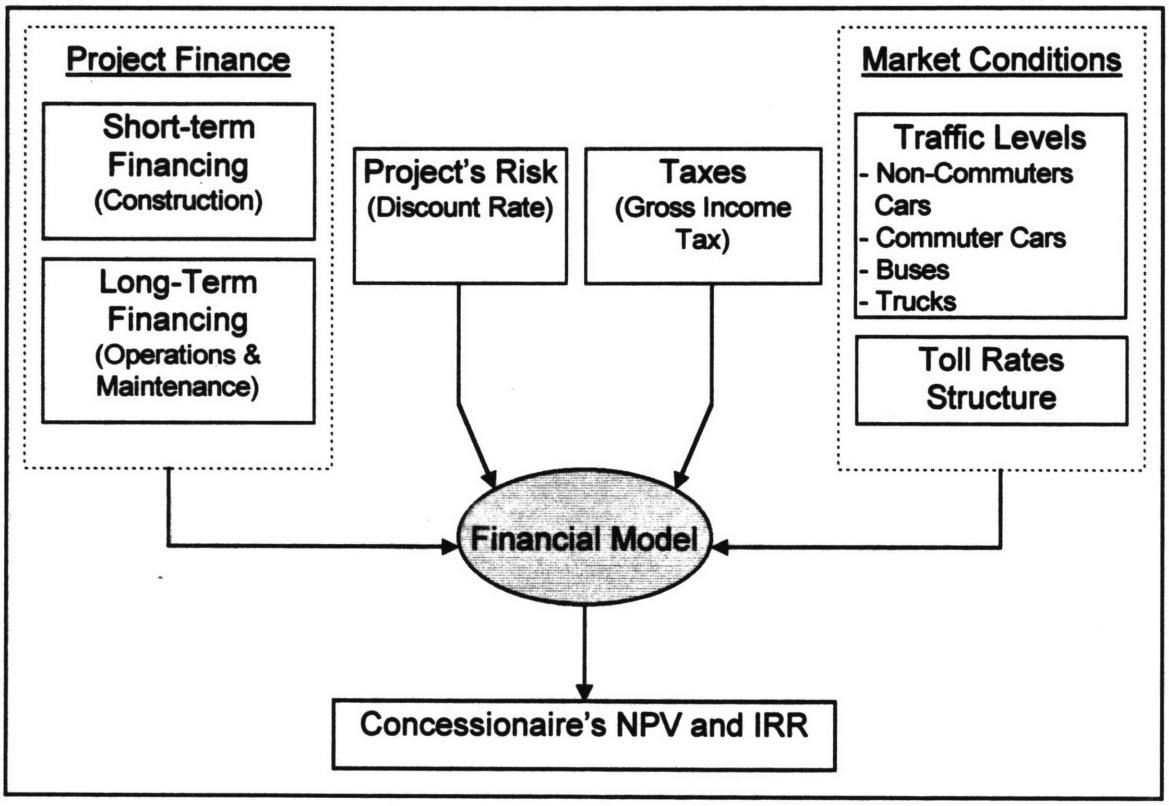
Additionally, the model assumes conditions such as economic growth trends in Argentina and Uruguay, stable inflation rate, currencies vis-à-vis the US Dollar, sound banking systems, democratic political systems, etc. Disruptions in any of this presupposed conditions will clearly and adversely impact upon the willingness of investors and concessionaires to bid and/or invest in this major infrastructure project.

4.1. Description

The financial model comprises a series of spreadsheets where input data and a series of formulas interact and produce a set of results. On the basis of these results, judgments can be made as to the likelihood that the Bridge can be financed under a variety of traffic projections, economic conditions, financial arrangements and legal framework.

The diagram below summarizes the input and output data of the financial model:

Figure 4.1. Architecture of the Financial Model



4.2. Base-Case Scenario: Assumptions[4]

Since the Treaty for the construction of the Bridge establishes a concession period of up to 35 years [Annex 1], the model basically assumes that the concession contract will be signed by the beginning of 1998; construction of the Bridge will last five years, from 1998 through the end of 2002; and that concessionaire's operations of the Bridge will span from year 2003 through late 2032. It is assumed that the end of the concession agreement will take place by early 2033, when the Bridge will be transferred to the Governments of Argentina and Uruguay.

Below, various other assumptions of the financial model are described. Such assumptions are identified in the financial analysis as part of a Base-Case Scenario.

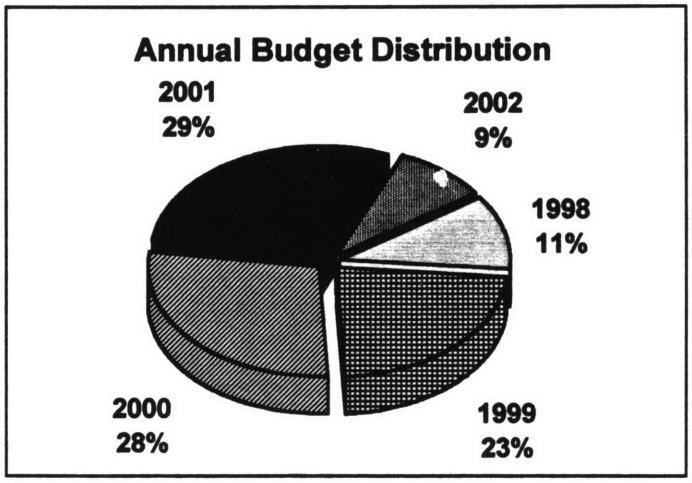
4.2.1. Construction Expenses

It has been assumed that total construction costs will be of $946.37 million (late-1994 US Dollars) for a 4-lane alternative.

[4] Louis Berger International, Inc., et al., Preliminary Studies - Río de la Plata Crossing - Executive Summary, Argentina, June 1995.

The figure below shows the project construction breakdown in terms of budget percentages to be spent in a five-year period:

Figure 4.2. Construction Expenditures Breakdown



Specifically, annual construction expenses are estimated to be as follows:

Table 4.1. Annual Construction Expenses

Annual Construction Expenses
(in US$ millions)

Items	1998	1999	2000	2001	2002	Total
Bridge Construction	75.000	210.955	244.688	240.284	72.299	843.226
Bridge Construction-Supervision	21.081	10.548	12.234	12.014	7.365	63.242
Approaches			8.070	16.140	2.690	26.900
Approaches-Supervision			0.810	1.620	0.270	2.700
Expropriation	4.200					4.200
Investment in Equipment				6.104		6.104
TOTAL	100.281	221.503	265.802	276.162	82.624	$946.372

The estimates above are based on the structural configurations described in section 2.3 and include expenses in the construction of the Bridge infrastructure, access routes for interconnection with the existing highway network, construction and equipment for the border facilities in both countries, as well as the provision of the necessary equipment for the operation of toll facilities and traffic control systems.

4.2.2. Sources of Financing

Given the amount of capital required to construct the Bridge, it is extremely unlikely that any government, financial institution or concessionaire will provide absolute assurance of capital availability. Particularly, the Governments of Argentina and Uruguay have clearly stated in Art. 15 of the Treaty that they will not issue any kind of subsidies or guarantees on behalf of the concessionaire. This means that various risks will need to be allocated among different parties and that the financing for the Bridge will be heavily structured, negotiated and crafted in response to the perceptions of these risk-bearing parties and those of potential investors. In addition, given the magnitude of the undertaking and its context within emerging markets, it is likely that foreign investors will perceive a high degree of risk.

Other important factor will be the assurance of construction completion and price. It is expected that investors will focus closely on this risk in their decision making process. Assurances in this area will include time, price, force majeure events, inflation, environmental compliance, milestone achievement and all other events controllable by the builder or insurable. Normally, these assurances are provided through a turnkey contract, but the length of the construction period, the

size of the Project, the historic volatility of inflation and currency values and the bi-national nature of the undertaking may significantly reduce the number of bidders/constructors willing to undertake these risks.

A third important consideration is the bi-national structure of the project. While a Treaty between the nations mitigates certain risks, building a Bridge between two countries significantly increases the risks of inflation, currency convertibility, political disruption and adverse changes in law. This represents another uniqueness to the transaction which could make investors more cautious on this venture than on other comparable financing.

Below, specific issues concerning the proposed structure are discussed in order to clearly state the assumptions that have been made and the reasons for the selection of certain structures.

4.2.2.1. Short-term or Construction Financing

As a Base-Case Scenario, it is assumed that approximately 32% of the construction costs ($946.37 Dollars) will be financed with equity provided by the concessionaire and that the latter will raise debt to finance the remaining 68% through a loan arranged with a syndicate of commercial banks. Thus, the financial model assumes that the concessionaire will establish the following schedule of equity investment:

Table 4.2. Concessionaire's Equity Investment Schedule

Year	Percentage	Amount (in US$ millions)
1998	11%	32.9
1999	23%	73.0
2000	28%	87.6
2001	29%	91.0
2002	9%	27.2
TOTAL	100%	$311.7

With respect to the construction-debt financing, this aspect of capital raising will mean an enormous challenge for the concessionaire since it cannot be certain to find commercial banks willing to syndicate this loan, or that they can negotiate a business arrangement with the selected concessionaire. In this regard, commercial banks may require some assurance which will depend on the creditworthiness of the particular concessionaire.

Additionally, economic growth and inflation during the construction period will impact on any toll and traffic projections; the Bridge itself has little value as a security other than its ability to attract toll-paying travelers. The concessionaire may try to shift some of these risks to other parties, such as turnkey contractors, but this could increase the capital costs well above projected levels.

The Channel Tunnel's debt financing is a good example of a syndicated loan similar to the assumption made for this project. In the Channel Tunnel project, the concessionaire, Eurotunnel, arranged a syndicated loan for $7.5 Billion (in 1987 US Dollars) which would be available for drawing down during a period spanning

from mid-1988 (early stages of Tunnel's construction) through seven years thereafter (mid-1995). Repayment of the syndicated loan would commence after this availability period, and the principal would be fully repaid by late-2005. Thus, the syndicated loan's maturity would be of 10 years approximately.

In the case of the Buenos Aires-Colonia Bridge, like in the Channel Tunnel project, the concessionaire's ability to raise debt on the terms assumed earlier represents a significant risk. Therefore, such a risk has been accounted for by assuming that the syndicate loan will have a coupon rate of 14%, which represents a rate significantly higher than the floating rate quoted by Argentine banks in January of 1995 for the construction period of the *Western Access to Buenos Aires* project (LIBOR of 6.25% + 625 basis points or 12.5%), significantly higher than a similar floating rate quotation from the International Finance Corporation (LIBOR of 6.25% + 350 basis points or 9.75%), and higher than Channel Tunnel's interest rates for the syndicated loan (LIBOR of 9% at that time + 125 basis points or 10.25%).

4.2.2.2. Long-term Financing

The model assumes that the concessionaire will refinance the entire construction debt amount, including all capitalized interest and fees, upon completion of the Bridge. This may result from conditional commitments by multilateral agencies or export credit agencies (ECAs) such as the US. Ex-Im Bank, development banks, and other financial institutions. However, it is not expected that these ECAs or other financing sources will commit definitely and irrevocably to provide an eventual long-term refinancing prior to the construction completion.

For a venture of this size, it is common to employ more than one source of capital. Therefore, three possible sources for long-term debt refinancing have been identified:

(i) Export Credit Agencies (ECAs)
(ii) International Financial Corporation (IFC)
(iii) Other Syndicated Banks and Financial Institutions

(i) Export Credit Agencies (ECAs)

Many countries should be willing to provide incentives to the concessionaire to use equipment, steel, toll facilities and similar goods. ECAs such as the US. Ex-Im Bank compete by offering below-market interest rates and longer than typical maturities for debt if the proceeds are used to buy manufactured goods from the source country.

The US. Ex-Im Bank, for instance, has manifested an interest in considering acceptable forms of limited recourse project finance in Argentina where reasonable assurance of repayment is based on the project's cash flow rather than a guarantor. The official lending rates of the US. Ex-Im Bank for loans of maturities over 8.5 years ranged from 6.54% through 7.83% during the period spanning from mid-January 1996 to mid-May 1997. In addition, the maximum repayment term is ten years for relatively poor countries.

It has therefore been assumed that up to 30% of the long-term debt financing for the Bridge would be obtained from ECAs, at a below-market coupon rate of 10% and at the maximum OECD maturity of ten years for non-power projects. It is assumed that various ECAs will commit to finance at the outset of construction, but they would not fund until completion so that the concessionaire would reap the

maximum benefit for servicing the debt under the 10-year maximum maturity constraint.

(ii) International Financial Corporation (IFC)

The IFC is regarded by both borrowers and lenders as an institution that represents worldwide investors in a special way. The IFC has experienced default rates below those of commercial banks because of its perceived special status. In many instance, the IFC acts as the lender of record on the entire loan amount.

The IFC has a very active local presence in Argentina. It has a local office and extensive exposure to many Argentine and Uruguayan issuers (e.g.: *Aguas Argentinas*, the *Ricchieri* toll road, and others). The Bridge, which will unite two countries to the benefit of the economic and social development of both Argentina and Uruguay, is within the mission of the IFC.

Specifically, Aguas Argentinas is an international consortium which runs a 30-year private concession of Greater Buenos Aires water and sewerage systems. Assisted in part by broad-based assistance from IFC over an extended period, Aguas Argentinas has engineered an extraordinary turnaround of a state enterprise in decay into an efficient, viable private company. IFC's financial support to the company's capital investment programs consisted of "A" loans amounting $80 million and syndicated "B" loans totaling $375 million, among other contributions made.

Therefore, the financial model assumes as a base-case scenario that the IFC will provide an "A" Loan, with maturity of 12 years, from its own funds and it will be also the sole lender of record for a "B" Loan, with maturity of 10 years, syndicated

among international financial institutions. These "A" and "B" loans will account for 10% and 30% of total construction debt, respectively.

Since IFC loans has a "halo effect" similar to political risk insurance, it has therefore been assumed a coupon rate of 11%, which is significantly a below market rate when compared to the 12.5% quoted by Argentine banks in the *Western Access to Buenos Aires* project. This lower spread reflects the fact that lenders would be prepared to receive a lower return as they believe they are protected from political risk. It also reflects the tax exemption granted to IFC loans.

With respect to loan maturities, the IFC offers loans with typical maturities of 8 to 12 years, with grace periods and repayment schedules determined on a case-by-case basis in accordance with the borrower's cash flows needs. Therefore, it has been assumed maturities for the "A" and "B" Loans of 12 and 10 years, respectively.

(iii) Other Syndicated Banks and Financial Institutions

It is anticipated that these funds could be raised from a variety of sources including commercial banks, capital markets, Inter-American Development Bank (IDB), and others.

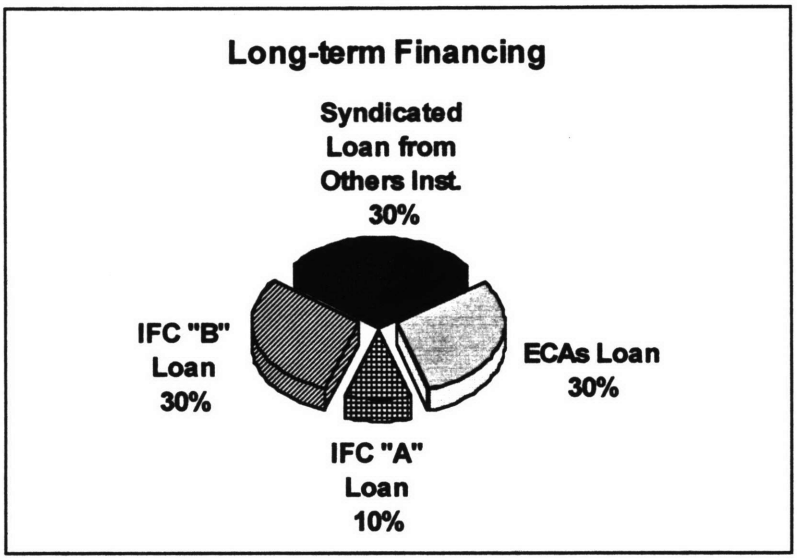
In the specific case of the IDB, it can lend directly to the private sector without government guarantees for infrastructure projects, whenever greenfield or refurbishing operations, as a means to encourage other investors and lenders to participate in energy, transportation, water supply, waste management and telecommunications. The IDB's participation in a single project is limited to $75 million or 25% of the project's total cost, whichever is lower. Though pricing follows commercial terms, these loans can have up to 20-year maturities.

Therefore, as a base-case scenario, it has conservatively assumed a loan from these variety of financial sources at a 14% interest rate and, like in the Channel Tunnel project, a 10-year maturity. This loan would account for 30% of total construction debt. These assumptions reflect uncertainty concerning the source of this final tranche.

* * *

In short, the base-case analysis assumes that the three sources above (ECAs, IFC and others) should provide all of the permanent financing in the proportions shown below:

Figure 4.3. Sources of Long-term Financing



Credit assurance to these sources of finance are accounted for in the financial model by assuming an annual debt service coverage ratio [revenues - (operating expenses + sustaining capital expenses + tax) ÷ debt service] greater or equal to 1.2. This coverage ratio is guaranteed by an annual Debt Reserve Fund in the amount of 20% of annual debt service.

The model also assumes that the concessionaire will cover the balance of any shortfall in the annual reserve fund with its own equity should the debt coverage ratio falls below 1.2.

4.2.3. Toll Rates Structure and Traffic Levels Projections

4.2.3.1. Toll Rates Structure

Various toll scenarios were considered within a range of possible values. This allows for the definition of several toll combinations by vehicle type and travel purpose, such as commuting, permitting an analysis of toll effects on total traffic.

The following toll rates in Table 4.3. are the key values used in the financial sensitivity analysis. Tolls rates in bold are applied to the base-case scenario. The growth rate applied to the tolls structures is 4% in all of the cases.

Table 4.3. Toll Rates Structure

Vehicle Type	Toll per Vehicle (in 1997 US$)							
Non-commuter cars	30	45	60	**75**	90	110	115	120
Commuter cars	4	6	8	**10**	12	15	15.5	16
Buses	120	180	240	**300**	360	440	460	480
Trucks	275	275	275	**275**	275	275	275	275

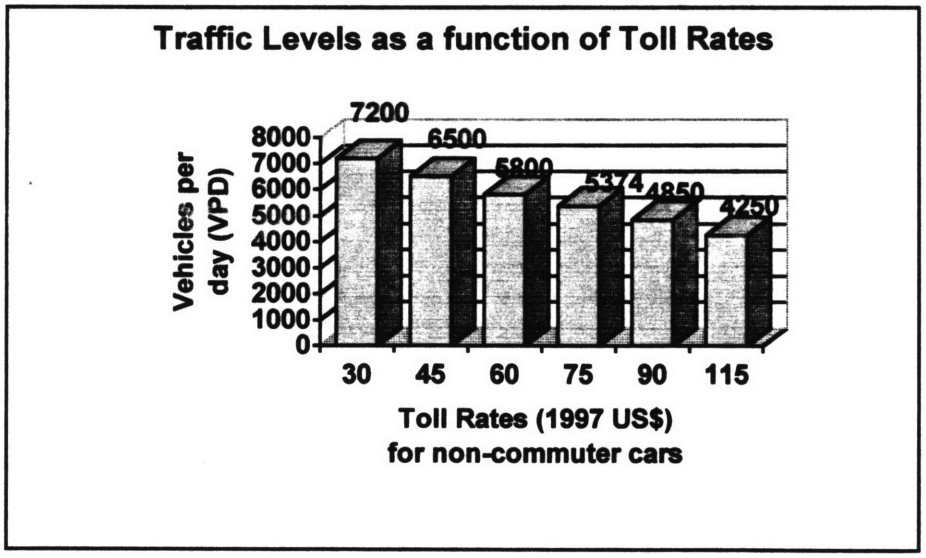
These toll levels analyzed appear to be relatively high. Traffic levels are linked inextricably to economic conditions, wealth levels, inter-country relationships and

similar factors which can change quickly over the study horizon, or even over the construction period. Even if growth rates, inflation, and other indices rise and economic conditions change for the worse, it is expected that toll rates could be increased commensurably without significant impacts on traffic levels.

4.2.3.2. Traffic Level Projections

The following figure describes the relationship between traffic levels and toll rates utilized in the financial model:

Figure 4.4. Traffic Levels Projections vs. Toll Rates Structure



In the financial model, The above VPD-Toll relationship has been incorporated into the financial model through the following polynomial function:

$$VPD = 9830 - 328.11T + 19.23T^2 - 0.59T^3 + 0.009T^4 - 6x10^{-5}T^5 + 1.8x10^{-7}T^6$$

where:

VPD = Total Vehicles per Day in Year 2000 (average);

T= Non-commuter car's toll (year 1997 US$) ; 30 < T < 115

Note: The traffic levels resulting from the formula above may not correspond to those shown in Figure 4.4. due to rounding errors.

Additionally, the financial model assumes the following growth rates and composition of traffic throughout the 35-year concession period:

Table 4.4. Traffic Composition and Traffic and Tolls Growth Rates

Vehicle Type	Traffic Composition	Traffic Growth Rates		Tolls Growth Rates
		2000-2005	2006-2035	
Commuter Cars	16%	9.60%	1.70%	4%
Non-commuter cars	74%	6.10%	4.80%	4%
Buses	3%	4.30%	3.40%	4%
Trucks	7%	8.00%	2.70%	4%

All of the relationships and percentages above are part of the results obtained from analyses and forecasts of future demand projections of various market segments defined by passengers and cargo to be serviced by the Bridge. Those market segments and their respective subdivisions are the following:

- Passenger traffic diverted to the Bridge (traffic currently crossing the river using other means), subdivided into the following sub-segments:

  * Airplanes
  * Buses, using the Uruguay River Bridges
  * Cars, using the Uruguay River Bridges
  * Passenger (without a car) using the Colonia ferry
  * Passengers (without a car) using the Montevideo ferry
  * Cars using the Colonia ferry
  * Cars using the Montevideo ferry

- Generated passenger traffic (traffic induced to use the Bridge as a result of several factors, including reduction in travel costs and time) subdivided into three sub-segments:

  * increase in the frequency of trips made by current travelers
  * commuting related to residential and commercial development of the Uruguayan side or the river delta area (if the toll is sufficiently low)
  * new trips generated by those who do not presently cross the river and would change their behavior due to the existence of the Bridge

- Cargo, subdivided into the following sub-segments:

  * medium and long distance transportation (freight between Argentina and Uruguay, and Argentina and Brazil)
  * transportation related to the regional port system

* short distance movements (related to urban development in Colonia, or the delta area as part of the Buenos Aires metropolitan area)

Based on this segmentation, traffic demand projections take into account various tolls and rates of competitive means of transportation.

4.2.4. Supplementary Project Revenues

In accordance to Art. 18 of the Treaty (see Annex 1), the financial model assumes that the Bridge will generate, apart from toll revenues, potential income streams from roadside ancillary services such as service stations, hotels, restaurants, and duty free shops.

These incomes have been estimated as follows, and then escalated with a growth factor of 3.50% over the full concession period:

Table 4.5. Supplementary Project Revenues

Year 2003 Revenues (in US$ millions)

Duty Free Shops.....	$1.801
Gas Stations.....	$0.448
Restaurants.....	$0.448
Hotels.....	$0.303
TOTAL.....	$3.000

These levels of income are quite modest because they do not account for other sources of revenues such as right-of-way fees charged to utilities companies for

laying pipelines or telecommunication conduits along the Bridge. It is clear, however, that even higher levels of revenues from these services will not have a significant incidence in total revenues.

4.2.5. Operations and Maintenance Expenses

4.2.5.1. Operations

The financial model assumes that total first-year operations expenses will amount to $11.1 million. Then, an escalation factor of 4% has been applied throughout the concession period.

4.2.5.2. Maintenance

Basically, maintenance activities has been divided into two categories:

- routine maintenance
- periodic maintenance

Routine maintenance accounts for those activities such as minor repair, crack sealing, cleaning, painting, and so forth. For simplicity, it has been assumed that this type of maintenance will commence in the second year of operations (year 2004) and will cost $4 millions. Thereafter, the annual expenditure of this item will escalate by 4%.

On the other hand, periodic maintenance refers to activities such as major repairs, resurfacing, delineation, and so forth. For simplicity, it has been assumed that this type of maintenance will take place in the seventh year of operations (year 2010) and will cost $6 millions. Thereafter, periodic maintenance will be held every other six years, and its cost will escalate by 5%.

4.2.6. Taxes and Disbursements:

In order to encourage the development of the Bridge, the Governments of Argentina and Uruguay have established in the Treaty that they will not charge the concessionaire with value-added taxes on construction materials or services and toll revenues (Art. 16-1).

Nevertheless, Art. 16-4 sets forth that toll revenues will be subject to gross income taxes. Therefore, total revenue streams in the financial model are subject to 5% gross income tax.

Art. 30-2 sets forth that the concessionaire should finance the Management Commission of the Bridge, which will be the bi-national governmental authority representing both Argentina and Uruguay [Annex 1]. However, this expenditure has not been included in the financial model since it is considered that its incidence on the financial scheme is negligible.

4.2.7. Risk Assessment and Concessionaire's Hurdle Discount Factor

4.2.7.1. Risk Assessment

Only 20 percent of the projects that are seriously considered are successfully completed. Some of the causes for this high failure rate are delays in adoption and completion (with consequent delays in the contemplated revenue flow), technical failure, poor management, and legislative or regulatory changes. The key to accurate forecasting and successful project finance, then, is to identify and manage these risks.

Although little can be done to alter the underlying risk of a project, allocation of the various types of risk to those participants best able to handle them does reduce a project's overall riskiness. It is expected, therefore, that the concessionaire would comprise a group of reputable companies which will apportion the investment into separate and distinct "shares" according to each partner's ability to deal with any particular risk.

Several key risks to be borne primarily by the concessionaire group are summarily identified below. A risk analysis will cover all phases of the project, namely development, construction, and operations. By assessing these risks, it will then be possible to account them for in the NPV and IRR analysis through adequate risk-adjusted discount factor.

4.2.7.1.1. Risks at Development Phase

Because funding is essentially venture capital at this stage, commercial banks are reluctant to provide seed money. It has been assumed in section 2.4.4.1 that

up to 30% of construction expenses will be funded with equity provided by the concessionaire.

Therefore, the main risk identified in this stage is credit risk which has to do with the creditworthiness of the individual concessionaire and the project as a whole. It is expected that this risk will be minimum since there are presently indications that reputable companies are interested in bidding on this project.

4.2.7.1.2. Risks at Construction Phase

Interruptions at any point during construction may delay the revenue flow and hence jeopardize completion of the project and timely repayment of its debt.

In the case of the Bridge, these issues may mainly arise from the following uncertainties:

Completion risk: typically, the trend is to assign the risk that the project may never reach the operating stage to engineering and construction (E&C) contractors. The contractors, in turn, allocate segments of completion risk to equipment and material suppliers. The concessionaire may prefer a turnkey arrangement in which the primary E&C contractor assumes responsibility for completion of the entire project, but this will be difficult to obtain.

One alternative to minimize this risk, though, would be that the primary E&C contractor had vast experience in this sort of Bridge construction and that it also were part of the concessionaire group. This way will give further incentive to the E&C contractor's performance and the consortium will benefit from the expertise of one of its members in handling this risk.

Cost overrun risk: Any cost overrun will ultimately be borne by the concessionaire. Due to the magnitude of the project, it is highly unlikely that any commercial bank or financial institution may pre-commit cost overrun financing.

Like before, the concessionaire would minimize this risk by counting on a sound and reputable E&C contractor as part of the joint venture.

Even though fixed-price construction contract may not be available at the start of the project, such an arrangement may be negotiated later if subcontractor bids can be obtained on that basis. This would also help to minimize this risk.

Political risk: Included here are legislative or regulatory changes that occur during project construction – particularly tax laws and environmental regulations, as well as the possibility that governments will disallow repatriation of funds. In the case of the Bridge, political risk is mitigated by the political commitment demonstrated by the governments of Argentina and Uruguay in signing a Bi-national Treaty that grants an institutional support to the initiative. Specifically, this support is materialized by the fact that both governments have committed in the Treaty to charge no value-added taxes to the concessionaire and to allow no construction of a competitive fixed crossing over the Río de la Plata during the concession period.

As for environmental regulations, Art. 10 of the Treaty establishes that the concessionaire is responsible for carrying out a permanent environmental protection program in accordance to existing environmental regulations of both countries. Therefore, there are some provisions in this respect even though they seem to be vague. From the perspective of the concessionaire, this fact poses another responsibility that undoubtedly increments the political risk of the project.

Other political factor that favors the construction of the Bridge is the MERCOSUR agreement which will bring the Bridge's area of influence to a more regional preponderance both economically and socially.

It is expected that the concessionaire could hedge against political risk by joint venturing with an experienced local partner and by eventually purchasing insurance from financial institutions such as the Overseas Private Investment Corporation (OPIC).

4.2.7.1.3. Risks at Operations Phase

Once the project has been successfully completed, the financing terms of the debt portion of the capital can normally be more favorably negotiated. Also, some of the risks have been resolved, since the project is operational at this stage. The following risk remain, however:

Off-take risk: this refers to the risk that the project may not meet revenue projections due to market price changes and actual traffic below to forecast levels.

This is the most important risk that the concessionaire has to deal with since there will be no guarantees provided by the Governments of Argentina and Uruguay. To make things worse, it is obvious that there is no possibility for potential bidders to directly gauge actual traffic because there is no Bridge. Therefore, bidders are to conduct thorough and comprehensive traffic analysis in order to whether validate or not the financial viability of the venture.

In a broader sense, it is expected that this risk will be mitigated by offering to the users excellent support services and a competitive alternative when compared to other existing means of transportation.

Currency Risk: foreign exchange rate fluctuations may affect project revenues or expenses paid out in foreign currency.

Since 1991 the Argentine Peso is tied up to the US Dollar on a one-to-one basis. It is expected, therefore, that this parity continues at least throughout construction.

To mitigate this risk, mainly in recurring transactions such as collecting revenues, the concessionaire may recur to hedge with either a series of long-date forward currency contracts or swaps.

This risk cannot be reliably estimated and are not commonly provided for contractually. The concessionaire should assume this risk itself, though there might be growing pressure for lenders to assume some portion of the currency risk's cost.

4.2.7.2. Concessionaire's Hurdle Discount Factor

At this point, it is important to make a distinction between (risk-adjusted) discount factor and internal rate of return.

Discount factor - *r* - is the expected rate of return offered by other investments equivalent in risk to the project evaluated. It is established in the capital markets.

Internal rate of return - IRR, in contrast, is the particular discount factor that makes NPV=0. Therefore, it is a profitability measure which depends solely on the amount and timing of the project cash flows.

Therefore, if *r* is less than IRR, then the project is viable since its NPV is positive. This means that the investor would realize a higher rate of return out of the project than what other asset or securities of equivalent risk would have otherwise reported. If *r* is equal to IRR, the investor is indifferent as to invest in either the project evaluated or other market securities or assets of equivalent risk. If *r* is higher than IRR, the project definitely offers a lower rate of return than what the investor would realize by investing in securities of equivalent risk.

It is then clear that an important component of the financial evaluation of the project is to adopt an adequate *r* that reflects the overall riskiness of it. In other words, *r* will depend on the particular willingness of each bidder to undertake the risks poised by the venture in exchange of the return they could realize out of it.

Since there is little antecedent as to how investors and bidders would rate a project similar to the characteristics of and conditions posed by the Bridge, it has arbitrarily been assumed that the concessionaire's hurdle rate of return will be 20%. This rate is well above the current returns offered by equity and bond markets.

4.3. Components of the Financial Model

The following tables comprise the financial model:

- Base-Case Scenario's Assumptions and Concessionaire's NPV and IRR
- Project's Cash Flow (1997-2002)
- Project's Cash Flow (2003-2008)
- Project's Cash Flow (2009-2014)
- Project's Cash Flow (2015-2020)
- Project's Cash Flow (2021-2026)
- Project's Cash Flow (2027-2032)
- Traffic Levels and Toll Rates
- Debt and Interest Schedule
- Export Credit Agencies Debt and Interest Schedule
- IFC - Tranche-A Debt and Interest Schedule
- IFC - Tranche-B Debt and Interest Schedule
- Syndicate of Banks Debt and Interest Schedule
- Capital Expenditure and Depreciation Schedule

4.4. Base-Case Scenario: Results

The concessionaire's NPV and IRR as well as the results derived from the base-case scenario's assumptions are tabulated below:

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

ASSUMPTIONS AND CONCESSIONAIRE'S NPV and IRR

Short-term Debt Financing

Total Construction Costs =	$ 946.37	100.00%	
construction increase=	0%		
Interest Costs=	$ 282.22		
Financing costs=	$ 33.12	3.50%	of Const. costs
Equity investment=	$ 311.70		
equity %(base:const. costs)=	33%		
Interest Rate=	14.00%	100.00%	

	Const.Cost Schd.		Equity Inv.Schd.	
	%tage	Actual	%tage	Actual
1998	10.60%	$100.28	10.56%	$32.90
1999	23.41%	$221.50	23.42%	$73.00
2000	28.09%	$265.80	28.10%	$87.60
2001	29.18%	$276.16	29.19%	$91.00
2002	8.73%	$82.62	8.73%	$27.20

Long-term Debt Financing

Complementary Project Income(yr. 2003)=	$3.00	
Growth Rate Compl. Project Income=	3.50%	
Total Const.Debt Financing=	$950.01	100%
Min.Debt Coverage Ratio=	1.2	

Institution	Share	Actual	Int. rate	Maturity
Ex-Im Bank debt	30%	$ 285.00	10%	10
IFC-Tranche A Debt	10%	$ 95.00	11%	12
IFC-Tranche B Debt	30%	$ 285.00	11%	10
Syndicate of Banks	30%	$ 285.00	14%	10

O & M expenses

operation expenses (1st. year operations)=	$	11.10
operating exp. growth rate=		4%
maintenance expenses (3rd. year operations)=	$	4.00
routine maintenance growth rate=		4%
periodic maint. expenses (1st. periodic maint.)=	$	6.00
periodicity span=		6 years
periodic maint. growth rate=		5%

RESULTS

Consortia's construction investment=	**$311.70**
Consortia's equity @ Debt Reserve Fund=	**$3.33**
Total Consortia's Equity Investment=	**$315.03**
Discount Factor=	**20%**
NPV=	**$268.41**
IRR=	**28.2772%**
Payback Period=	**15 Years**

traffic growth rate increase= 0%

Traffic and Toll levels

Non-commuter cars' toll= $75.00 (in 1997 US$)
Total VPD (year 2000)= 5,374 100.00%

	Tolls (in US$)			Traffic (year 2000)			
	base-case: non-comm. cars					Growth Rate	
	%tage	Actual	Growth	%tage	Actual	2000-2005	2006-2036
Cars: commuter=	13.33%	$10.00	4.00%	16.06%	863	9.60%	1.70%
Cars: non-commuter=	0.00%	$75.00	4.00%	74.08%	3,981	6.10%	4.80%
Buses=	400.00%	$300.00	4.00%	3.13%	168	4.30%	3.40%
Trucks=	366.67%	$275.00	4.00%	6.74%	362	8.00%	2.70%

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

PROJECT'S CASH FLOW (1997-2002)

Year	1997	1998	1999	2000	2001	2002
Index	0	1	2	3	4	5
GROSS REVENUES						
Toll Revenues						
Complementary Project Income						
Total Gross Revenues						
Gross Income Tax @ 5%						
O&M EXPENSES						
Operating Expenses						
Maintenance Expenses						
Total O&M Expenses						
Operating Cash Flow		0.00	0.00	0.00	0.00	0.00
CONSTRUCTION FINANCING						
Construction Costs		100.28	221.50	265.80	276.16	82.62
Equity financing		32.90	73.00	87.60	91.00	27.20
Financing Fees		33.12				
Total Interest Expenses		7.04	25.45	51.88	84.58	113.26
Construction-debt Financing		107.54	173.95	230.08	269.74	168.69
LONG-TERM FINANCING						
Ex-Im Bank Debt Amortization						
IFC-Tranche A Debt Amortization						
IFC-Tranche B Debt Amortization						
Syndicate of Banks Debt Amortization						
Total interest expenses						
Total Debt Amortization						
Total Debt Service						
Debt Service Reserve Fund @ 20%						
Dividends		(32.90)	(73.00)	(87.60)	(91.00)	(27.20)
PV dividends		(27.42)	(50.69)	(50.69)	(43.89)	(10.93)
Acummulated PV		(27.42)	(78.11)	(128.81)	(172.69)	(183.62)

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

PROJECT'S CASH FLOW (2003-2008)

Year	2003	2004	2005	2006	2007	2008
Index	6	7	8	9	10	11
GROSS REVENUES						
Toll Revenues	254.28	281.42	311.50	337.24	365.14	395.39
Complementary Project Income	3.00	3.11	3.21	3.33	3.44	3.56
Total Gross Revenues	257.28	284.53	314.71	340.57	368.58	398.95
Gross Income Tax @ 5%	12.86	14.23	15.74	17.03	18.43	19.95
O&M EXPENSES						
Operating Expenses	11.10	11.54	12.01	12.49	12.99	13.50
Maintenance Expenses		4.00	4.16	4.33	4.50	4.68
Total O&M Expenses	11.10	11.54	12.01	12.49	12.99	13.50
Operating Cash Flow	233.31	258.76	286.97	311.05	337.17	365.50
CONSTRUCTION FINANCING						
Construction Costs						
Equity financing						
Financing Fees						
Total Interest Expenses						
Construction-debt Financing						
LONG-TERM FINANCING						
Ex-Im Bank Debt Amortization	28.50	28.50	28.50	28.50	28.50	28.50
IFC-Tranche A Debt Amortization	4.11	4.57	5.09	5.66	6.30	7.01
IFC-Tranche B Debt Amortization	28.50	28.50	28.50	28.50	28.50	28.50
Syndicate of Banks Debt Amortization	28.50	28.50	28.50	28.50	28.50	28.50
Total interest expenses	107.60	97.16	86.67	76.12	65.50	54.81
Total Debt Amortization	89.61	90.07	90.59	91.16	91.80	92.52
Total Debt Service	197.21	187.23	177.25	167.28	157.30	147.33
Debt Service Reserve Fund @ 20%	39.44	37.45	35.45	33.46	31.46	29.47
Dividends	(3.33)	34.08	74.26	110.32	148.40	188.70
PV dividends	(1.12)	9.51	17.27	21.38	23.97	25.40
Acummulated PV	(184.74)	(175.23)	(157.96)	(136.58)	(112.61)	(87.21)

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

PROJECT'S CASH FLOW (2009-2014)

Year	2009	2010	2011	2012	2013	2014
Index	12	13	14	15	16	17
GROSS REVENUES						
Toll Revenues	428.17	463.72	502.25	544.04	589.35	638.49
Complementary Project Income	3.69	3.8	4.0	4.1	4.2	4.4
Total Gross Revenues	432	468	506	548	594	643
Gross Income Tax @ 5%	21.59	23	25	27	30	32
O&M EXPENSES						
Operating Expenses	14.05	14.6	15.2	15.8	16.4	17.1
Maintenance Expenses	4.87	11.36	11.82	12.29	12.78	13.29
Total O&M Expenses	14.05	26.0	27.0	28.1	29.2	30.4
Operating Cahs Flow	396.22	418	454	493	535	580
CONSTRUCTION FINANCING						
Construction Costs						
equity financing						
Financing Fees						
Total Interest Expenses						
Construction-debt Financing						
LONG-TERM FINANCING						
Ex-Im Bank Debt Amortization	28.50	28.50	28.50	28.50	0.00	0.00
IFC-Tranche A Debt Amortization	7.81	8.69	9.67	10.77	11.98	13.34
IFC-Tranche B Debt Amortization	28.50	28.50	28.50	28.50	0.00	0.00
Syndicate of Banks Debt Amortization	28.50	28.50	28.50	28.50	0.00	0.00
Total interest expenses	44.05	33.19	22.23	11.16	2.46	1.11
Total Debt Amortization	93.31	94.19	95.17	96.27	11.98	13.34
Total Debt Service	137.35	127.38	117.40	107.43	14.45	14.45
Debt Service Reserve Fund @ 20%	27.47	25.48	23.48	21.49	2.89	2.89
Dividends	231.40	265.33	313.00	363.72	517.36	563.01
PV dividends	25.95	24.80	24.38	23.61	27.98	25.38
Acummulated PV	(61.26)	(36.46)	(12.08)	11.53	39.51	64.89

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

PROJECT'S CASH FLOW (2015-2020)

Year	2015	2016	2017	2018	2019	2020
Index	18	19	20	21	22	23
GROSS REVENUES						
Toll Revenues	691.78	749.58	812.28	880.29	954.07	1,034.11
Complementary Project Income	4.5	4.7	4.9	5.0	5.2	5.4
Total Gross Revenues	696	754	817	885	959	1,039
Gross Income Tax @ 5%	35	38	41	44	48	52
O&M EXPENSES						
Operating Expenses	17.8	18.5	19.2	20.0	20.8	21.6
Maintenance Expenses	20.4	27.8	29.0	30.1	31.3	32.6
Total O&M Expenses	38.2	46.3	48.2	50.1	52.1	54.2
Operating Cahs Flow	623	670	728	791	859	933
CONSTRUCTION FINANCING						
Construction Costs						
equity financing						
Financing Fees						
Total Interest Expenses						
Construction-debt Financing						
LONG-TERM FINANCING						
Ex-Im Bank Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
IFC-Tranche A Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
IFC-Tranche B Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Syndicate of Banks Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Total interest expenses	0.00	0.00	0.00	0.00	0.00	0.00
Total Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Total Debt Service	0.00	0.00	0.00	0.00	0.00	0.00
Debt Service Reserve Fund @ 20%	0.00	0.00	0.00	0.00	0.00	0.00
Dividends	623.30	670.24	728.10	790.95	859.20	933.33
PV dividends	23.41	20.98	18.99	17.19	15.56	14.09
Acummulated PV	88.30	109.28	128.27	145.46	161.03	175.11

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

PROJECT'S CASH FLOW (2021-2026)

Year	2021	2022	2023	2024	2025	2026
Index	24	25	26	27	28	29
GROSS REVENUES						
Toll Revenues	1,120.96	1,215.19	1,317.44	1,428.41	1,548.84	1,679.54
Complementary Project Income	5.6	5.8	6.0	6.2	6.4	6.6
Total Gross Revenues	1,127	1,221	1,323	1,435	1,555	1,686
Gross Income Tax @ 5%	56	61	66	72	78	84
O&M EXPENSES						
Operating Expenses	22.5	23.4	24.3	25.3	26.3	27.4
Maintenance Expenses	33.9	42.1	43.8	45.6	47.4	49.3
Total O&M Expenses	56.4	65.5	68.1	70.9	73.7	76.6
Operating Cahs Flow	1014	1094	1189	1292	1404	1525
CONSTRUCTION FINANCING						
Construction Costs						
equity financing						
Financing Fees						
Total Interest Expenses						
Construction-debt Financing						
LONG-TERM FINANCING						
Ex-Im Bank Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
IFC-Tranche A Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
IFC-Tranche B Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Syndicate of Banks Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Total Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Total interest expenses	0.00	0.00	0.00	0.00	0.00	0.00
Total Debt Service	0.00	0.00	0.00	0.00	0.00	0.00
Debt Service Reserve Fund @ 20%	0.00	0.00	0.00	0.00	0.00	0.00
Dividends	1013.85	1094.40	1189.11	1292.00	1403.78	1525.21
PV dividends	12.75	11.47	10.39	9.41	8.52	7.71
Acummulated PV	187.87	199.34	209.73	219.13	227.65	235.36

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

PROJECT'S CASH FLOW (2027-2032)

Year	2027	2028	2029	2030	2031	2032
Index	30	31	32	33	34	35
GROSS REVENUES						
Toll Revenues	1,821.41	1,975.40	2,142.57	2,324.04	2,521.06	2,734.98
Complementary Project Income	6.8	7.1	7.3	7.6	7.9	8.1
Total Gross Revenues	1,828	1,982	2,150	2,332	2,529	2,743
Gross Income Tax @ 0%	91	99	107	117	126	137
O&M EXPENSES						
Operating Expenses	28.5	29.6	30.8	32.0	33.3	34.6
Maintenance Expenses	51.3	60.5	62.9	65.4	68.1	70.8
Total O&M Expenses	79.7	90.1	93.7	97.4	101.3	105.4
Operating Cahs Flow	1657	1793	1949	2118	2301	2501
CONSTRUCTION FINANCING						
Construction Costs						
equity financing						
Financing Fees						
Total Interest Expenses						
Construction-debt Financing						
LONG-TERM FINANCING						
Ex-Im Bank Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
IFC-Tranche A Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
IFC-Tranche B Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Syndicate of Banks Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Total Debt Amortization	0.00	0.00	0.00	0.00	0.00	0.00
Total interest expenses	0.00	0.00	0.00	0.00	0.00	0.00
Total Debt Service	0.00	0.00	0.00	0.00	0.00	0.00
Debt Service Reserve Fund @ 20%	0.00	0.00	0.00	0.00	0.00	0.00
Dividends	1657.14	1793.27	1948.71	2117.61	2301.14	2500.56
PV dividends	6.98	6.30	5.70	5.16	4.67	4.23
Acummulated PV	242.34	248.63	254.34	259.50	264.17	268.41

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)

TRAFFIC LEVELS AND TOLL RATES

Non-commuter cars' toll=	$75.00	(in 1997 US$)
Total VPD (year 2000)=	5,374	100.00%

	Tolls (in US$)			Traffic (year 2000)			
	base-case: non-comm. cars					Growth Rate	
	%tage	Actual	Growth	%tage	Actual	2000-2005	2006-2032
Cars: commuter=	13.33%	10.00	4.00%	16.06%	863	9.60%	1.70%
Cars: non-comm.=	0.00%	75.00	4.00%	74.08%	3981	6.10%	4.80%
Buses=	400.00%	300.00	4.00%	3.13%	168	4.30%	3.40%
Trucks=	366.67%	275.00	4.00%	6.74%	362	8.00%	2.70%

Year	Index	Number of Vehicles (per type)				Total Vehicles	Toll per vehicle				Total Toll Revenues
		Cars: Comm.	Cars: Non-Comm.	Buses	Trucks		Cars: Comm.	Cars: Non-Comm.	Buses	Trucks	
1997	0										
1998	1										
1999	2										
2000	3										
2001	4										
2002	5										
2003	6	414,707	1,735,551	69,576	166,448	2,386,282	12.65	94.90	379.60	347.96	254,277,855
2004	7	454,519	1,841,419	72,568	179,764	2,548,270	13.16	98.69	394.78	361.88	281,421,404
2005	8	498,153	1,953,746	75,688	194,145	2,721,732	13.69	102.64	410.57	376.36	311,498,502
2006	9	506,621	2,047,526	78,262	199,387	2,831,796	14.23	106.75	426.99	391.41	337,240,390
2007	10	515,234	2,145,807	80,923	204,770	2,946,734	14.80	111.02	444.07	407.07	365,141,572
2008	11	523,993	2,248,806	83,674	210,299	3,066,772	15.39	115.46	461.84	423.35	395,385,513
2009	12	532,901	2,356,748	86,519	215,977	3,192,146	16.01	120.08	480.31	440.28	428,171,439
2010	13	541,960	2,469,872	89,461	221,809	3,323,102	16.65	124.88	499.52	457.90	463,715,697
2011	14	551,173	2,588,426	92,502	227,798	3,459,899	17.32	129.88	519.50	476.21	502,263,243
2012	15	560,543	2,712,671	95,647	233,948	3,602,809	18.01	135.07	540.28	495.26	544,039,258
2013	16	570,073	2,842,879	98,900	240,265	3,752,116	18.73	140.47	561.89	515.07	589,350,898
2014	17	579,764	2,979,337	102,262	246,752	3,908,115	19.48	146.09	584.37	535.67	638,489,211
2015	18	589,620	3,122,345	105,739	253,414	4,071,118	20.26	151.94	607.74	557.10	691,781,206
2016	19	599,643	3,272,218	109,334	260,256	4,241,451	21.07	158.01	632.05	579.38	749,582,115
2017	20	609,837	3,429,284	113,051	267,283	4,419,456	21.91	164.33	657.34	602.56	812,277,847
2018	21	620,205	3,593,890	116,895	274,500	4,605,489	22.79	170.91	683.63	626.66	880,287,659
2019	22	630,748	3,766,396	120,870	281,911	4,799,925	23.70	177.74	710.98	651.73	954,067,059
2020	23	641,471	3,947,184	124,979	289,523	5,003,156	24.65	184.85	739.41	677.80	1,034,110,969
2021	24	652,376	4,136,648	129,229	297,340	5,215,593	25.63	192.25	768.99	704.91	1,120,957,156
2022	25	663,466	4,335,207	133,622	305,368	5,437,664	26.66	199.94	799.75	733.10	1,215,189,975
2023	26	674,745	4,543,297	138,165	313,613	5,669,821	27.72	207.94	831.74	762.43	1,317,444,428
2024	27	686,216	4,761,376	142,863	322,081	5,912,535	28.83	216.25	865.01	792.93	1,428,410,594
2025	28	697,881	4,989,922	147,720	330,777	6,166,300	29.99	224.90	899.61	824.64	1,548,838,436
2026	29	709,745	5,229,438	152,743	339,708	6,431,634	31.19	233.90	935.60	857.63	1,679,543,035
2027	30	721,811	5,480,451	157,936	348,880	6,709,078	32.43	243.25	973.02	891.93	1,821,410,284
2028	31	734,082	5,743,513	163,306	358,300	6,999,200	33.73	252.99	1,011.94	927.61	1,976,403,083
2029	32	746,561	6,019,201	168,858	367,974	7,302,595	35.08	263.10	1,052.42	964.72	2,142,568,081
2030	33	759,253	6,308,123	174,600	377,909	7,619,884	36.48	273.63	1,094.51	1,003.30	2,324,043,003
2031	34	772,160	6,610,913	180,536	388,113	7,951,722	37.94	284.57	1,138.29	1,043.44	2,521,064,634
2032	35	785,287	6,928,237	186,674	398,592	8,298,789	39.46	295.96	1,183.83	1,085.17	2,734,977,495

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(In Millions of US$, except where indicated)

DEBT AND INTEREST SCHEDULE

Total Const. Debt Finance= $ 950.01

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Index	0	1	2	3	4	5	6	7	8	9	10	11
Beginning Debt												
Construction		0.00	107.54	281.49	511.58	781.32						
Ex-Im							285.00	256.50	228.00	199.50	171.00	142.50
IFC - Tr.A							95.00	90.89	86.32	81.24	75.57	69.27
IFC - Tr.B							285.00	256.50	228.00	199.50	171.00	142.50
Others							285.00	256.50	228.00	199.50	171.00	142.50
Total		0.00	107.54	281.49	511.58	781.32	950.01	860.40	770.33	679.74	588.58	496.78
Amortization												
Construction (interest and financing fees included)		107.54	173.95	230.08	269.74	168.69	0.00	0.00	0.00	0.00	0.00	0.00
Ex-Im							28.50	28.50	28.50	28.50	28.50	28.50
IFC - Tr.A							4.11	4.57	5.09	5.66	6.30	7.01
IFC - Tr.B							28.50	28.50	28.50	28.50	28.50	28.50
Others							28.50	28.50	28.50	28.50	28.50	28.50
Total		107.54	173.95	230.08	269.74	168.69	89.61	90.07	90.59	91.16	91.80	92.52
Ending Debt												
Construction		107.54	281.49	511.58	781.32	950.01	0.00	0.00	0.00	0.00	0.00	0.00
Ex-Im							256.50	228.00	199.50	171.00	142.50	114.00
IFC - Tr.A							90.89	86.32	81.24	75.57	69.27	62.26
IFC - Tr.B							256.50	228.00	199.50	171.00	142.50	114.00
Others							256.50	228.00	199.50	171.00	142.50	114.00
Total		107.54	281.49	511.58	781.32	950.01	860.40	770.33	679.74	588.58	496.78	404.26
Financing Fees 3.50% of Construction Costs		33.12										
Interest Expenses												
Construction		7.04	25.45	51.88	84.58	113.26	0.00	0.00	0.00	0.00	0.00	0.00
Ex-Im							27.79	24.94	22.09	19.24	16.39	13.54
IFC - Tr.A							10.34	9.88	9.36	8.78	8.14	7.43
IFC - Tr.B							30.57	27.43	24.30	21.16	18.03	14.89
Others							38.90	34.91	30.92	26.93	22.94	18.95
Total		7.04	25.45	51.88	84.58	113.26	107.60	97.16	86.67	76.12	65.50	54.81
Debt Service Reserve												
Total Debt Service							197.21	187.23	177.25	167.28	157.30	147.33
Required Debt service Fund @ 20%							39.44	37.45	35.45	33.46	31.46	29.47

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/32
Index	12	13	14	15	16	17	18	19	20	21	22	23 to 35
Beginning Debt												
Construction												
Ex-Im	114.00	85.50	57.00	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IFC - Tr.A	62.26	54.45	45.76	36.09	25.32	13.34	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
IFC - Tr.B	114.00	85.50	57.00	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Others	114.00	85.50	57.00	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	404.26	310.95	216.76	121.59	25.32	13.34	0.00	0.00	0.00	0.00	0.00	0.00
Amortization												
Construction (interest and financing fees included)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ex-Im	28.50	28.50	28.50	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IFC - Tr.A	7.81	8.69	9.67	10.77	11.98	13.34	0.00	0.00	0.00	0.00	0.00	0.00
IFC - Tr.B	28.50	28.50	28.50	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Others	28.50	28.50	28.50	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	93.31	94.19	95.17	96.27	11.98	13.34	0.00	0.00	0.00	0.00	0.00	0.00
Ending Debt												
Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ex-Im	85.50	57.00	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IFC - Tr.A	54.45	45.76	36.09	25.32	13.34	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
IFC - Tr.B	85.50	57.00	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Others	85.50	57.00	28.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	310.95	216.76	121.59	25.32	13.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Financing Fees 3.50% of Construction Costs												
Interest Expenses												
Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ex-Im	10.69	7.84	4.99	2.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IFC - Tr.A	6.64	5.76	4.77	3.68	2.46	1.11	0.00	0.00	0.00	0.00	0.00	0.00
IFC - Tr.B	11.76	8.62	5.49	2.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Others	14.96	10.97	6.98	2.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	44.05	33.19	22.23	11.16	2.46	1.11	0.00	0.00	0.00	0.00	0.00	0.00
Debt Service Reserve												
Total Debt Service	137.35	127.38	117.40	107.43	14.45	14.45	0.00	0.00	0.00	0.00	0.00	0.00
Required Debt service Fund @ 20%	27.47	25.48	23.48	21.49	2.89	2.89	0.00	0.00	0.00	0.00	0.00	0.00

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

EXPORT CREDIT AGENCIES DEBT AND INTEREST SCHEDULE

Total Debt Financing=	$	950.01	
Principal=	$	285.00	30.00% of total debt
Interest=		10.00%	
Financing Fee @=		$0.00	
Maturity (Yrs.)=		10	
Payment method=		semi-annual installments	

Year	Index	First Semester			Second Semester			Interest Exp.	Annual	Debt
		Beginning	Amort.	Ending	Beginning	Amort.	Ending	(Annual)	Amort.	Service
1997	0									
1998	1									
1999	2									
2000	3									
2001	4									
2002	5									
2003	6	285.00	14.25	270.75	270.75	14.25	256.50	27.79	28.50	56.29
2004	7	256.50	14.25	242.25	242.25	14.25	228.00	24.94	28.50	53.44
2005	8	228.00	14.25	213.75	213.75	14.25	199.50	22.09	28.50	50.59
2006	9	199.50	14.25	185.25	185.25	14.25	171.00	19.24	28.50	47.74
2007	10	171.00	14.25	156.75	156.75	14.25	142.50	16.39	28.50	44.89
2008	11	142.50	14.25	128.25	128.25	14.25	114.00	13.54	28.50	42.04
2009	12	114.00	14.25	99.75	99.75	14.25	85.50	10.69	28.50	39.19
2010	13	85.50	14.25	71.25	71.25	14.25	57.00	7.84	28.50	36.34
2011	14	57.00	14.25	42.75	42.75	14.25	28.50	4.99	28.50	33.49
2012	15	28.50	14.25	14.25	14.25	14.25	0.00	2.14	28.50	30.64
2013	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2014	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2015	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2016	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2017	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2018	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2031	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2032	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(In Millions of US$, except where indicated)

IFC - TRANCHE-A DEBT AND INTEREST SCHEDULE

Total Debt Financing=	$ 950.01	
Principal=	$ 95.00	10.00% of total debt
Interest=	11.00%	
Financing Fee @=	$0.00	
Maturity (Yrs.)=	12	
Payment method=	fixed semi-annual installments	

Year	Index	First Semester			Second Semester			Interest Exp.	Annual	Debt
		Beginning	Amort.	Ending	Beginning	Amort.	Ending	(Annual)	Amort.	Service
1997	0									
1998	1									
1999	2									
2000	3									
2001	4									
2002	5									
2003	6	95.00	2.00	93.00	93.00	2.11	90.89	10.34	4.11	14.45
2004	7	90.89	2.22	88.67	88.67	2.35	86.32	9.88	4.57	14.45
2005	8	86.32	2.48	83.85	83.85	2.61	81.24	9.36	5.09	14.45
2006	9	81.24	2.76	78.48	78.48	2.91	75.57	8.78	5.66	14.45
2007	10	75.57	3.07	72.51	72.51	3.24	69.27	8.14	6.30	14.45
2008	11	69.27	3.41	65.86	65.86	3.60	62.26	7.43	7.01	14.45
2009	12	62.26	3.80	58.46	58.46	4.01	54.45	6.64	7.81	14.45
2010	13	54.45	4.23	50.22	50.22	4.46	45.76	5.76	8.69	14.45
2011	14	45.76	4.71	41.05	41.05	4.97	36.09	4.77	9.67	14.45
2012	15	36.09	5.24	30.85	30.85	5.53	25.32	3.68	10.77	14.45
2013	16	25.32	5.83	19.49	19.49	6.15	13.34	2.46	11.98	14.45
2014	17	13.34	6.49	6.85	6.85	6.85	0.00	1.11	13.34	14.45
2015	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2016	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2017	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2018	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2031	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2032	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

IFC - TRANCHE-B DEBT AND INTEREST SCHEDULE

Total Debt Financing=	$ 950.01	
Principal=	$285.00	30.00% of total debt
Interest=	11.00%	
Financing Fee @=	0	
Maturity (Yrs.)=	10	
Payment method=	semi-annual installments	

Year	Index	First Semester			Second Semester			Interest Exp.	Annual	Debt
		Beginning	Amort.	Ending	Beginning	Amort.	Ending	(Annual)	Amort.	Service
1997	0									
1998	1									
1999	2									
2000	3									
2001	4									
2002	5									
2003	6	285.00	14.25	270.75	270.75	14.25	256.50	30.57	28.50	59.07
2004	7	256.50	14.25	242.25	242.25	14.25	228.00	27.43	28.50	55.93
2005	8	228.00	14.25	213.75	213.75	14.25	199.50	24.30	28.50	52.80
2006	9	199.50	14.25	185.25	185.25	14.25	171.00	21.16	28.50	49.66
2007	10	171.00	14.25	156.75	156.75	14.25	142.50	18.03	28.50	46.53
2008	11	142.50	14.25	128.25	128.25	14.25	114.00	14.89	28.50	43.39
2009	12	114.00	14.25	99.75	99.75	14.25	85.50	11.76	28.50	40.26
2010	13	85.50	14.25	71.25	71.25	14.25	57.00	8.62	28.50	37.12
2011	14	57.00	14.25	42.75	42.75	14.25	28.50	5.49	28.50	33.99
2012	15	28.50	14.25	14.25	14.25	14.25	0.00	2.35	28.50	30.85
2013	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2014	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2015	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2016	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2017	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2018	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2031	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2032	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

SYNDICATE OF BANKS DEBT AND INTEREST SCHEDULE

Total Debt Financing=	$	950.01	
Principal=	$	285.00	30.00% of total debt
Interest=		14.00%	
Financing Fee @=		0	
Maturity (Yrs.)=		10	
Payment method=		semi-annual installments	

Year	Index	First Semester			Second Semester			Interest Exp.	Annual	Debt
		Beginning	Amort.	Ending	Beginning	Amort.	Ending	(Annual)	Amort.	Service
1997	0									
1998	1									
1999	2									
2000	3									
2001	4									
2002	5									
2003	6	285.00	14.25	270.75	270.75	14.25	256.50	38.90	28.50	67.40
2004	7	256.50	14.25	242.25	242.25	14.25	228.00	34.91	28.50	63.41
2005	8	228.00	14.25	213.75	213.75	14.25	199.50	30.92	28.50	59.42
2006	9	199.50	14.25	185.25	185.25	14.25	171.00	26.93	28.50	55.43
2007	10	171.00	14.25	156.75	156.75	14.25	142.50	22.94	28.50	51.44
2008	11	142.50	14.25	128.25	128.25	14.25	114.00	18.95	28.50	47.45
2009	12	114.00	14.25	99.75	99.75	14.25	85.50	14.96	28.50	43.46
2010	13	85.50	14.25	71.25	71.25	14.25	57.00	10.97	28.50	39.47
2011	14	57.00	14.25	42.75	42.75	14.25	28.50	6.98	28.50	35.48
2012	15	28.50	14.25	14.25	14.25	14.25	0.00	2.99	28.50	31.49
2013	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2014	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2015	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2016	19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2017	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2018	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019	22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2024	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2025	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2029	32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2031	34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2032	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Buenos Aires - Colonia Bridge Project
35 Year Financial Model (Base Case)
(in Millions of US$, except where indicated)

CAPITAL EXPENDITURE AND DEPRECIATION SCHEDULE

Total Construction Costs =	$	946.37	100.00%
Interest Costs=	$	282.22	
Financing costs=	$	33.12	3.50% of Construction costs
Equity Investment=	$	311.70	100.00%
Total Const. Debt Financing=	$	950.01	
Interest Rate=		14.00%	

	Const'n Debt Schd.		Equity Investment Schd.	
	%tage	Actual	%tage	Actual
1998	10.60%	$100.28	10.56%	$32.90
1999	23.41%	$221.50	23.42%	$73.00
2000	28.09%	$265.80	28.10%	$87.60
2001	29.18%	$276.16	29.19%	$91.00
2002	8.73%	$82.62	8.73%	$27.20

Straight-Line Depreciation Years=

Total Construction Costs =	30
Interest Costs=	30
Financing costs=	10

Year	Index	Construction Costs	Equity Investment	Financing Costs	Capital Interest Costs	Construction Debt Financing	Depreciation Schedule: Const. Costs	Depreciation Schedule: Interest Costs	Depreciation Schedule: Financ. Costs	Total Depreciation
1997	0									0.00
1998	1	100.28	32.90	33.12	7.04	107.64				0.00
1999	2	221.50	73.00		25.45	173.95				0.00
2000	3	265.80	87.60		51.88	230.06				0.00
2001	4	276.16	91.00		84.58	269.74				0.00
2002	5	82.62	27.20		113.26	168.69				0.00
2003	6						31.55	9.41	3.31	44.27
2004	7						31.55	9.41	3.31	44.27
2005	8						31.55	9.41	3.31	44.27
2006	9						31.55	9.41	3.31	44.27
2007	10						31.55	9.41	3.31	44.27
2008	11						31.55	9.41	3.31	44.27
2009	12						31.55	9.41	3.31	44.27
2010	13						31.55	9.41	3.31	44.27
2011	14						31.55	9.41	3.31	44.27
2012	15						31.55	9.41	3.31	44.27
2013	16						31.55	9.41		40.95
2014	17						31.55	9.41		40.95
2015	18						31.55	9.41		40.95
2016	19						31.55	9.41		40.95
2017	20						31.55	9.41		40.95
2018	21						31.55	9.41		40.95
2019	22						31.55	9.41		40.95
2020	23						31.55	9.41		40.95
2021	24						31.55	9.41		40.95
2022	25						31.55	9.41		40.95
2023	26						31.55	9.41		40.95
2024	27						31.55	9.41		40.95
2025	28						31.55	9.41		40.95
2026	29						31.55	9.41		40.95
2027	30						31.55	9.41		40.95
2028	31						31.55	9.41		40.95
2029	32						31.55	9.41		40.95
2030	33						31.55	9.41		40.95
2031	34						31.55	9.41		40.95
2032	35						31.55	9.41		40.95

CHAPTER 5: SENSITIVITY ANALYSIS

The present analysis intends to understand why and how the project could fail from the financial standpoint. Such a failure could stem from undesirable combinations of high toll rates structure; traffic growth below to expected rates; unexpected construction delays and overrun costs; higher interest rates than expected; and the like.

The effect of those combinations can be evaluated by changing the input variables of the financial model and assessing the consequent variation of the output parameters, namely the concessionaire's NPV or IRR. Therefore, an IRR higher than the risk-adjusted discount factor would mean that the project is still viable financially in spite of unexpected contingencies. This way, it will be possible to assess the project's financial robustness and identify those factors that may negatively impact on the venture.

This analysis is entirely subject to the assumptions made in Chapter 4 and will need to be adjusted to the final terms of the concession agreement and to peculiarities of the concessionaire.

5.1. Scenarios

The sensitivity analysis was basically based on two different scenarios:

- Scenario I: Base-Case
- Scenario II: One-year Construction Delay

In scenario I, all of the assumptions made previously in the base-case analysis has been used.

Instead, Scenario II only differs with Scenario I in the fact that the former assumes a one-year delay in the construction of the Bridge. Therefore, the following table illustrates the construction cost breakdown and equity investment schedule assumed for this scenario:

Table 5.1. Construction Expenditures and Equity Investments Schedules in Scenario II

Year	Construction Costs Schedule		Equity Investment Schedule	
	%	Total	%	Total
1998	5%	47.320	5%	15.590
1999	20%	189.270	20%	62.340
2000	25%	236.590	25%	77.930
2001	25%	236.590	25%	77.930
2002	20%	189.270	20%	62.340
2003	5%	47.320	5%	15.590
TOTAL	100%	946.360	100%	311.720

It can be noted above that total construction expenses and concessionaire's equity investment are the same as those assumed in Scenario I.

5.2. Input Variables

In the sensitivity analysis, the financial model was subject to variations of the input variables described below.

5.2.1. Toll Rates Structure

They have been set according to the types of vehicles, namely non-commuter cars, commuter cars, buses, and trucks. As in the base-case scenario, tolls for commuter cars and buses are 13.33% and 40.00% of the toll for non-commuter cars, respectively. Then, sensitivity analysis was performed for non-commuter cars' toll of $30, $60, $75, and 90$ (1997 US Dollars). Toll for trucks was set at a fixed price of $275.

In short, the following values for this input variable has been utilized in the sensitivity analysis:

Table 5.2. Toll Rates Structure by Traffic Composition

VEHICLES TYPES	TOLL PER VEHICLE (1997US$)			
Non-commuter cars	30	60	75	90
Commuter cars	4	8	10	12
Buses	120	240	300	360
Trucks	275	275	275	275

5.2.2. Traffic Level Forecasts

It has been used the same traffic composition as in the base-case scenario. However, sensitivity analysis was performed for two possible traffic growth rates structures. One such structures is equal to that assumed in the base-case scenario and the other is equal to 50% of the latter, as shown in the following table:

Table 5.3. Traffic Growth Rates

Vehicle Type	Traffic Composition	Growth Rate = 100% Base-Case Scenario		Growth Rate = 50% Base-Case Scenario	
		(2000-2005)	(2006-2032)	(2000-2005)	(2006-2032)
Non-commuter Cars	74.08%	6.10%	4.80%	3.05%	2.4%
Commuter Cars	16.06%	9.60%	1.70%	4.80%	0.85%
Buses	3.13%	4.30%	3.40%	2.15%	1.70%
Trucks	6.73%	8.00%	2.70%	4.00%	1.35%
TOTAL	100.00%	6.73%	4.12%	3.37%	2.06%

Like in the Base-Case Scenario, daily traffic volume corresponding to year 2000 is related to the toll rates structure through the following polynomial function:

$$VPD = 980 - 328.11T + 19.22T^2 - 0.59T^3$$

where:

VPD = Total Vehicles per Day in Year 2000 (average);

T= Non-commuter car's toll (year 1997 US$) ; $30 < T < $90

Note: The traffic levels resulting from the formula above may not correspond to those shown in Figure 4.4. due to rounding errors.

5.2.3. Construction Costs

The sensitivity analysis contemplated a 10, 20, and 30% increase of the base-case scenario's construction costs ($946.37 millions; late-1994 US Dollars).

5.2.4. Capital Structure at Construction Stage

Equity/debt of 20%/80%, 40%/60%, and 50%/50% were incorporated in the sensitivity analysis as possible capital structure proportions. Such proportions are calculated with respect to construction costs. However, the equity proportion does not include any further investment made by the concessionaire so as to prevent an eventual fall of the debt coverage ratio below 1.2, as assumed in section 4.2.2.2.

5.2.5. Construction Debt's Interest Rate

14% is the interest rate utilized in the base-case scenario. The sensitivity analysis not only includes this rate but also 16%, 18%, and 20%.

5.2.6. Long-term Debt's Interest Rates and Maturities

Various interest rates and maturities were introduced in the sensitivity analysis as shown in the following table:

Table 5.4. Variation of Long-term Debt's Coupon Rates and Maturities

Source	Interest Rates				Maturities (years)	
	No Δ	Δ +2%	Δ +3%	Δ +4%	No change	2 years earlier
ECAs	10%	12%	13%	14%	10	8
IFC's Debt-A	11%	13%	14%	15%	12	10
IFC's Debt-B	11%	13%	14%	15%	10	8
Syndicate	14%	16%	17%	18%	10	8

5.3. Concessionaire's IRRs Under Scenarios I and II

The following figures summarize the results of various runs of the financial model in which the input variables were changed in order to assess their degree of incidence in the concessionaire's IRR. Thus, it will be possible to evaluate the criticality of such variables in the financial scheme of the venture.

5.3.1. Incidence of Toll Rates Structure and Traffic Levels

Figure 5.1. Toll Rates Structure Variation

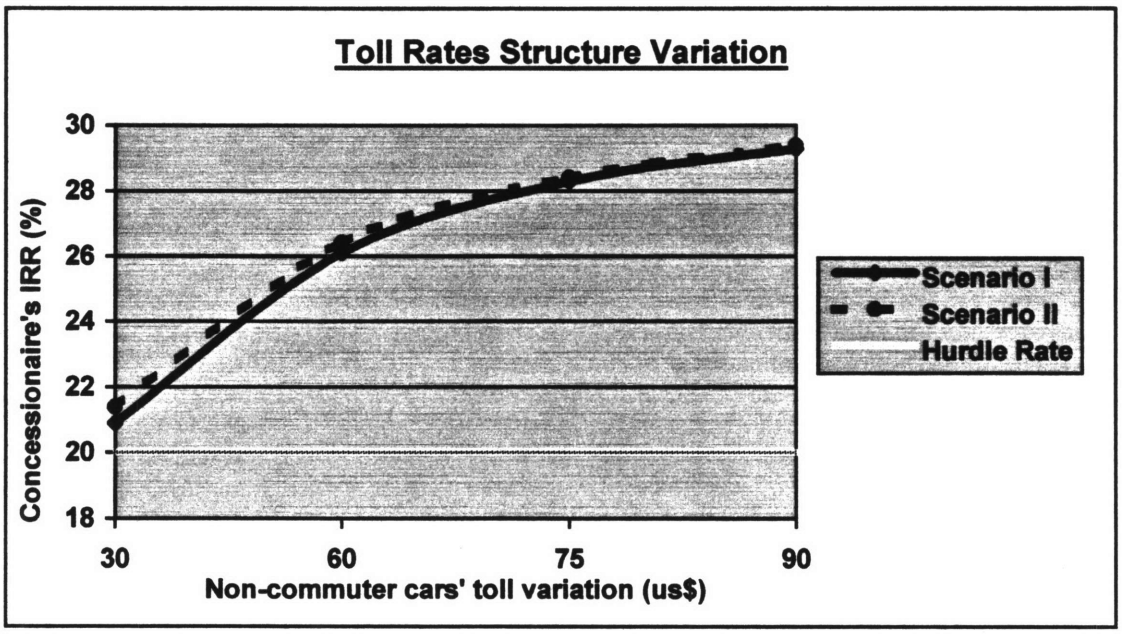
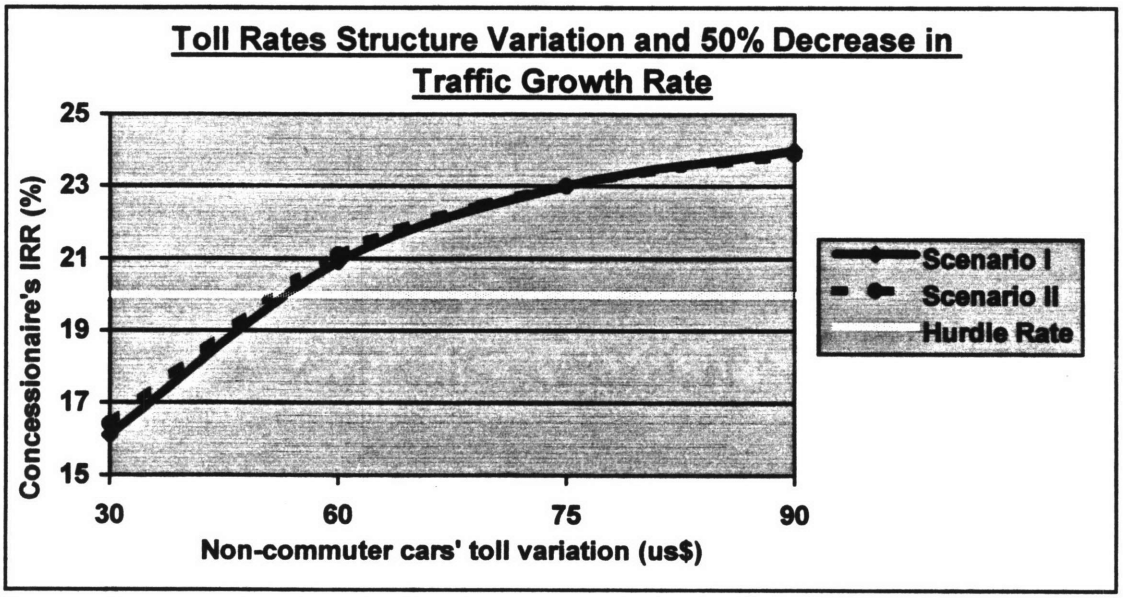


Figure 5.2. Toll Rates Structure Variation and 50% Decrease in Traffic Growth Rate



5.3.2. Incidence of Construction Cost Increases

Figure 5.3. Increase in Construction Costs - Scenario I

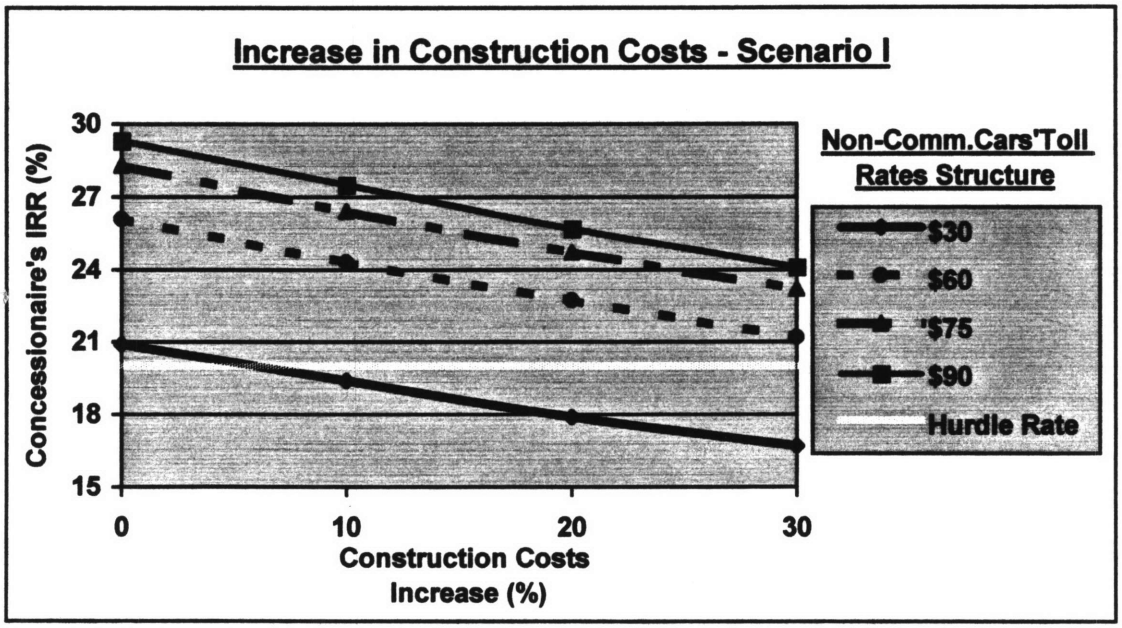


Figure 5.4. Increase in Construction Costs - Scenario II

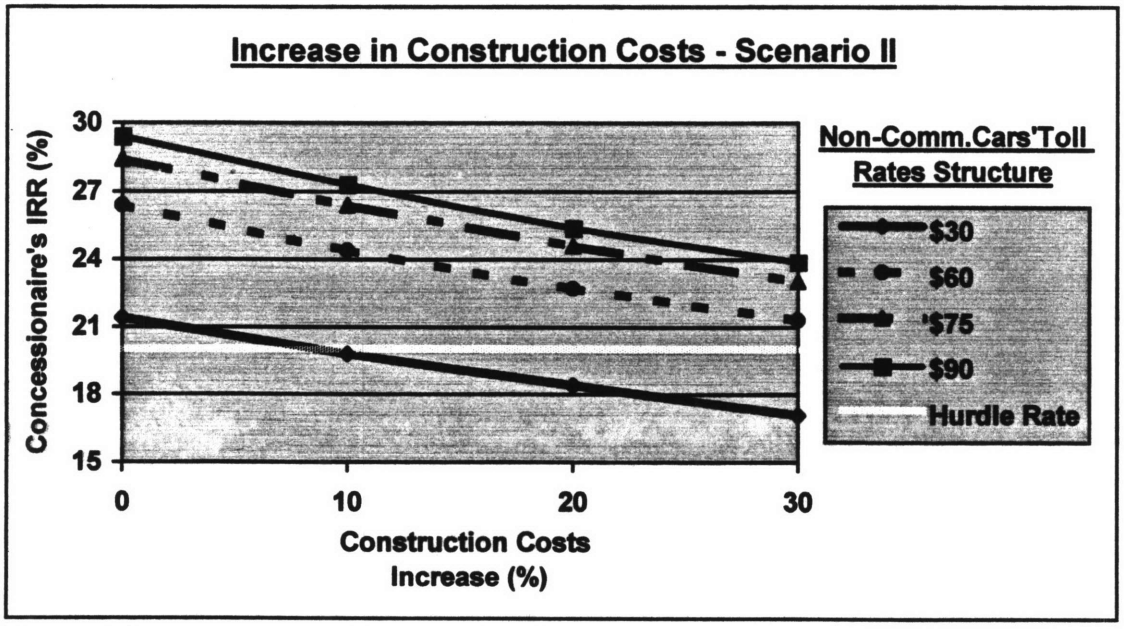


Figure 5.5. Increase in Construction Costs and 50% Decrease in Traffic Growth Rate - Scenario I

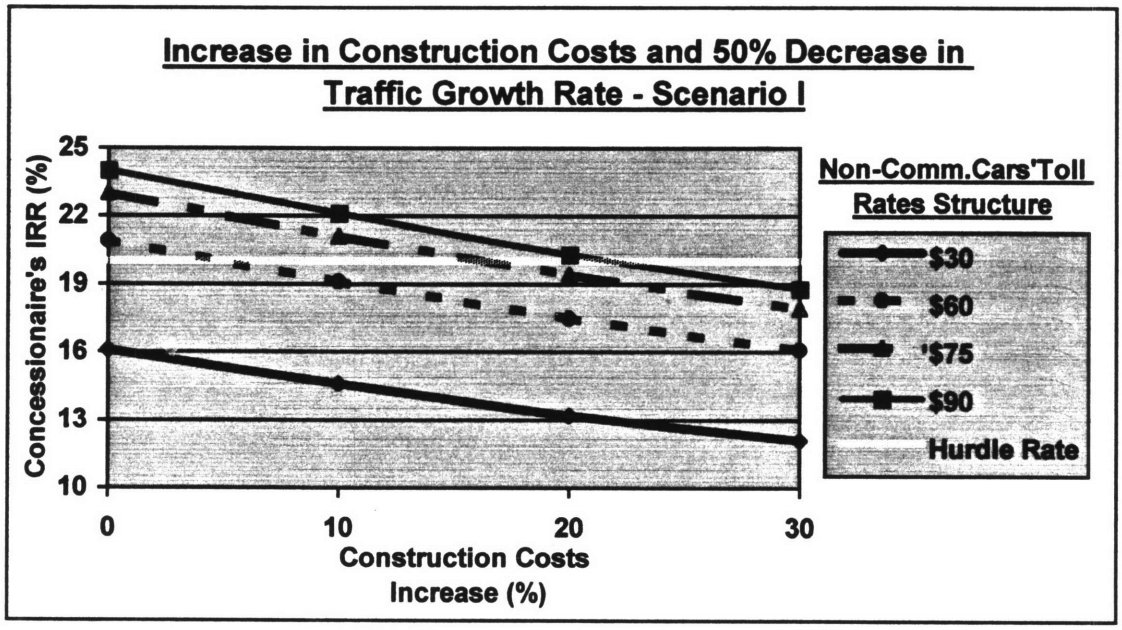
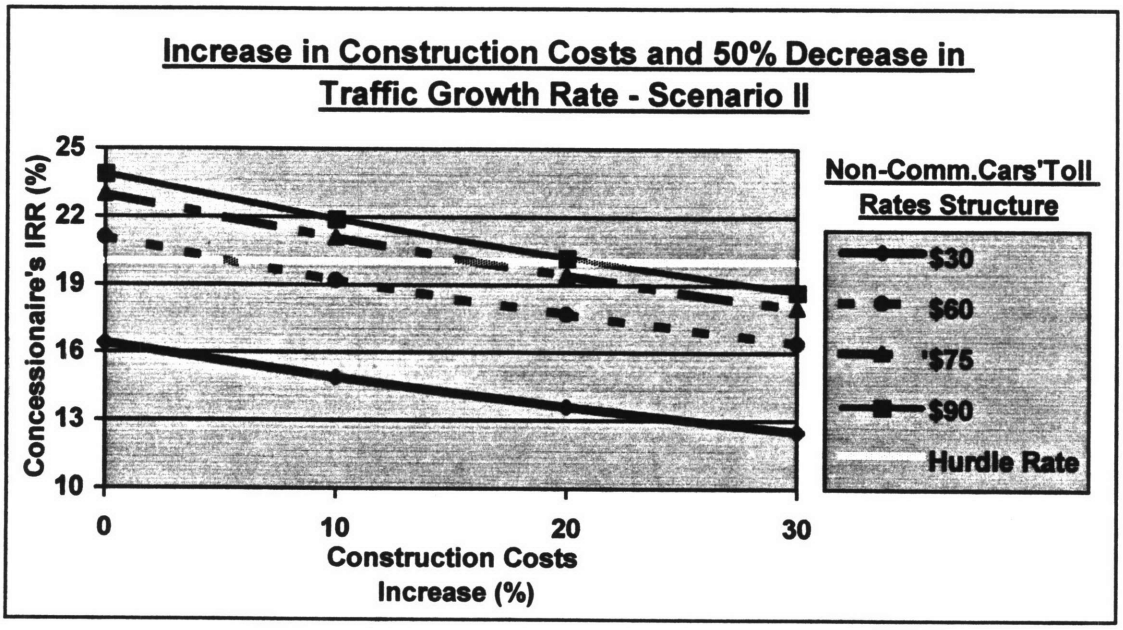


Figure 5.6. Increase in Construction Costs and 50% Decrease in Traffic Growth Rate - Scenario II



5.3.3. Incidence of Capital Structure Composition

Figure 5.7. Variation of Capital Structure Composition per Toll Rates Structure - Scenario I

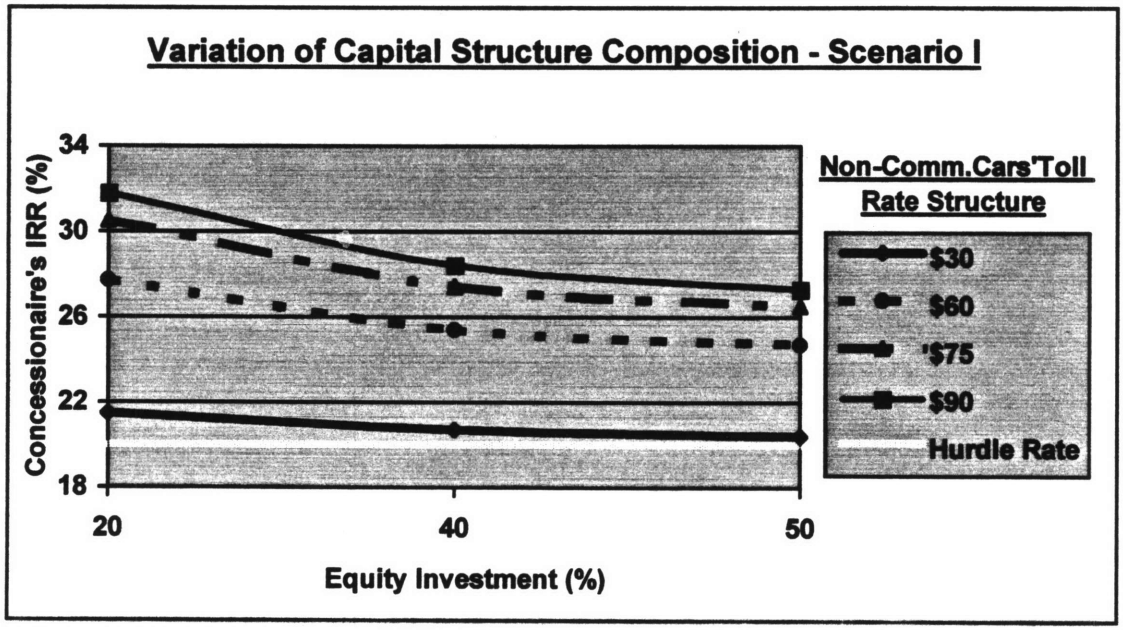


Figure 5.8. Variation of Capital Structure Composition and 50% Decrease in Traffic Growth Rate per Toll Rates Structure - Scenario I

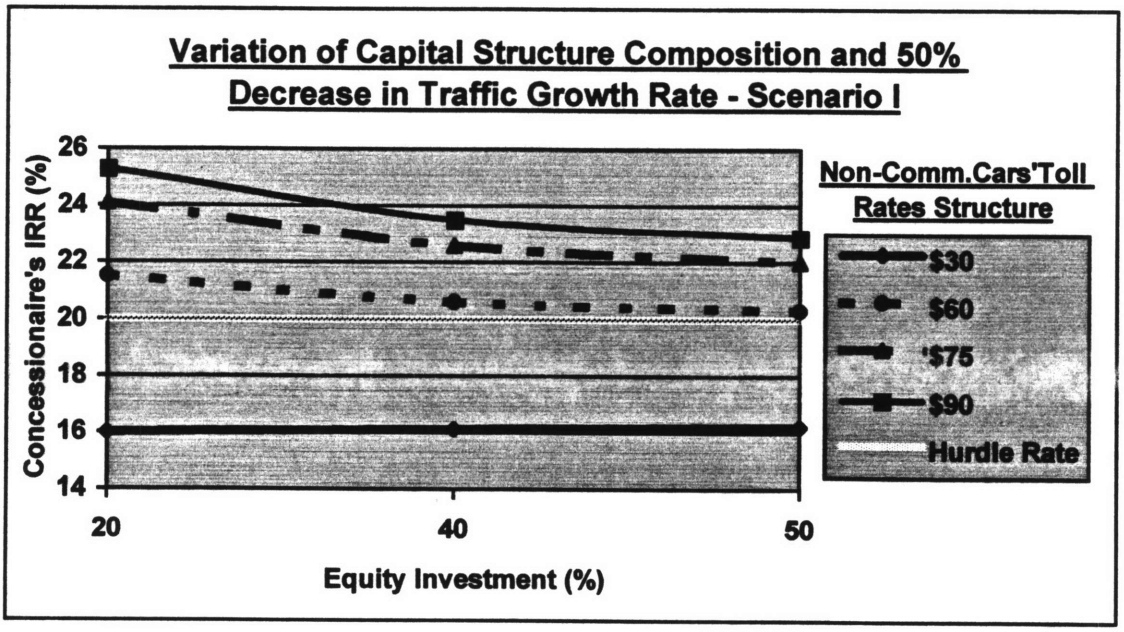


Figure 5.9. Variation of Capital Structure Composition per Increase in Construction Costs - Scenario I

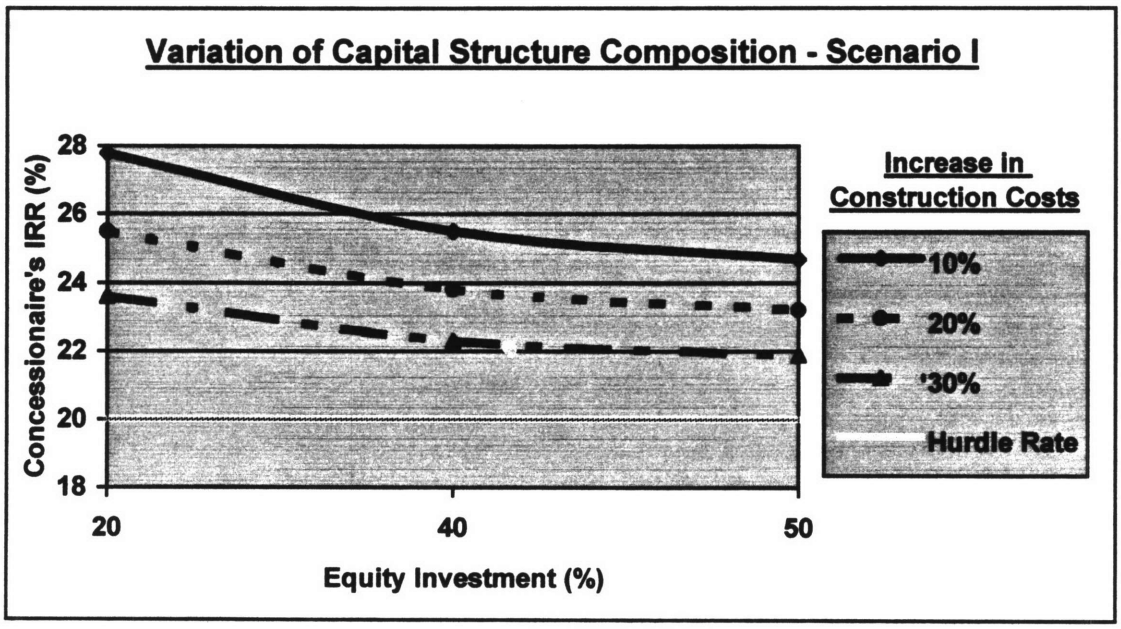


Figure 5.10. Variation of Capital Structure Composition and 50% Decrease in Traffic Growth Rate per Increase in Construction Costs- Scenario I

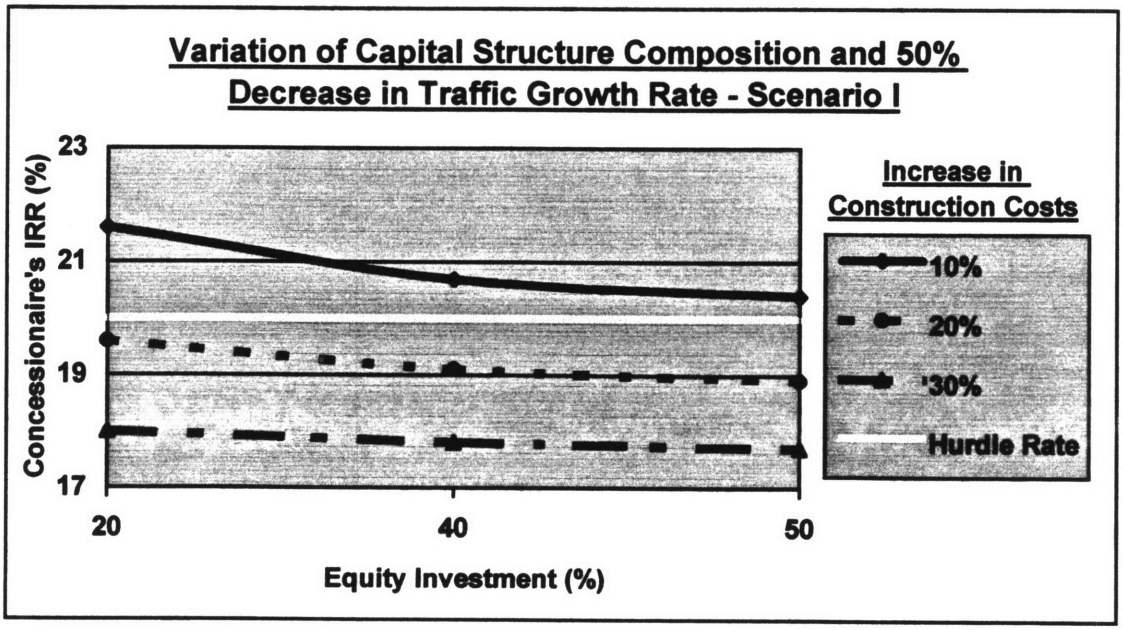


Figure 5.11. Variation of Capital Structure Composition per Toll Rates Structure - Scenario II

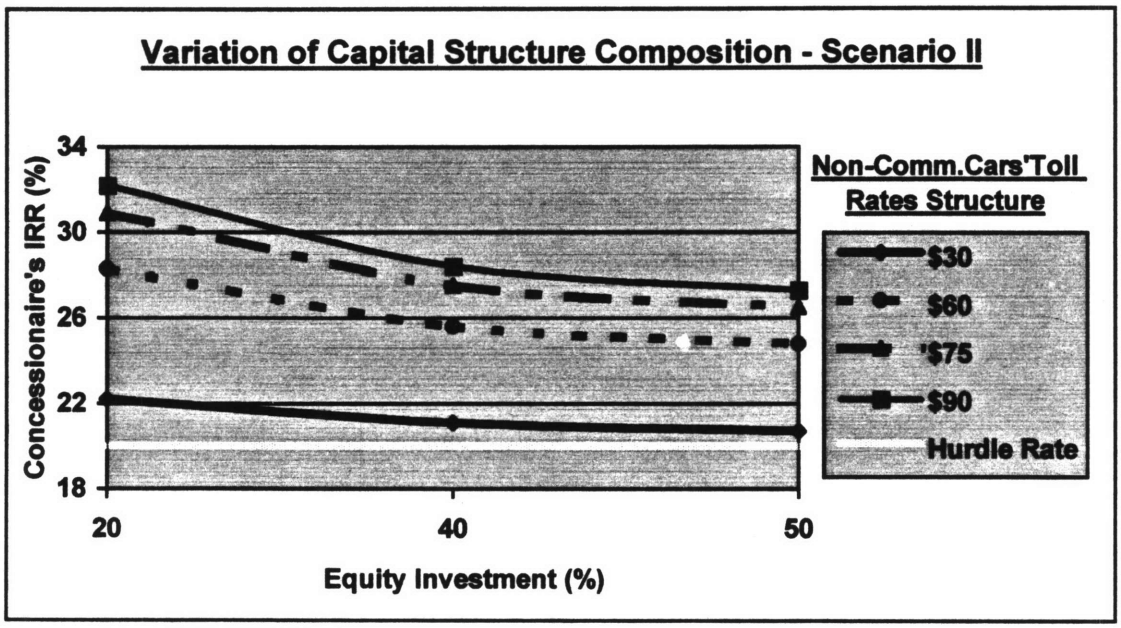


Figure 5.12. Variation of Capital Structure Composition and 50% Decrease in Traffic Growth Rate per Toll Rates Structure - Scenario II

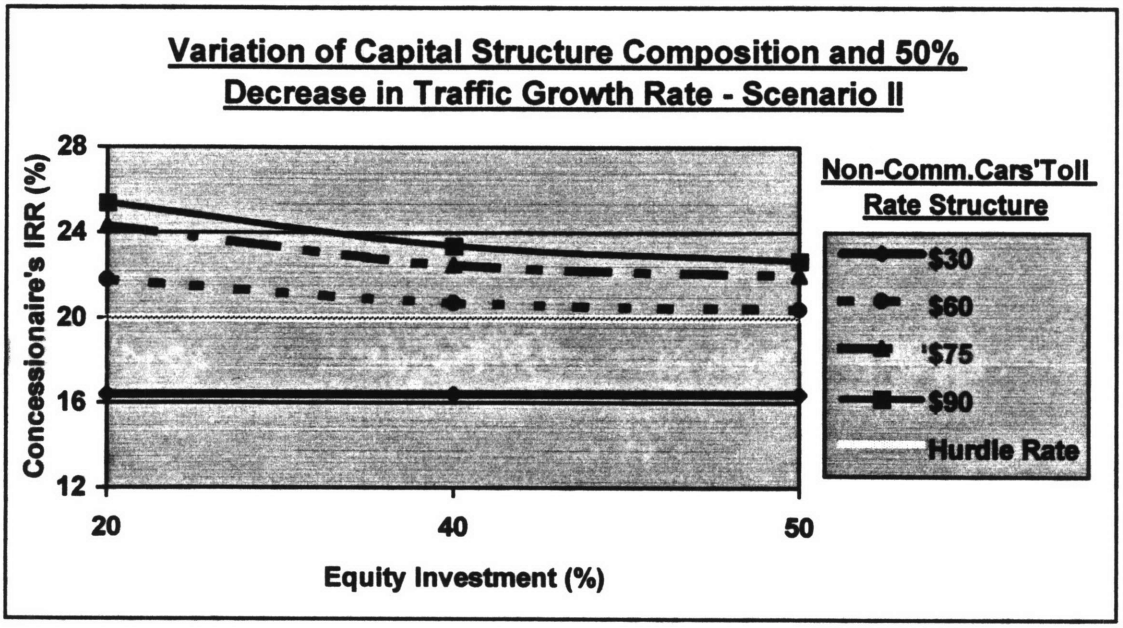


Figure 5.13. Variation of Capital Structure Composition per Increase in Construction Costs - Scenario II

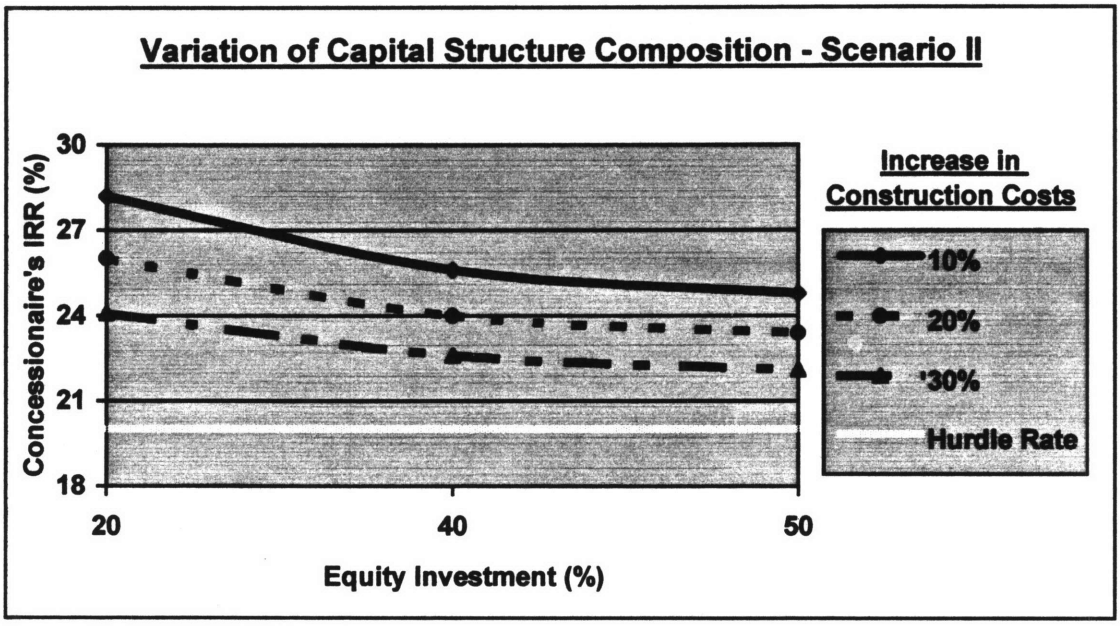
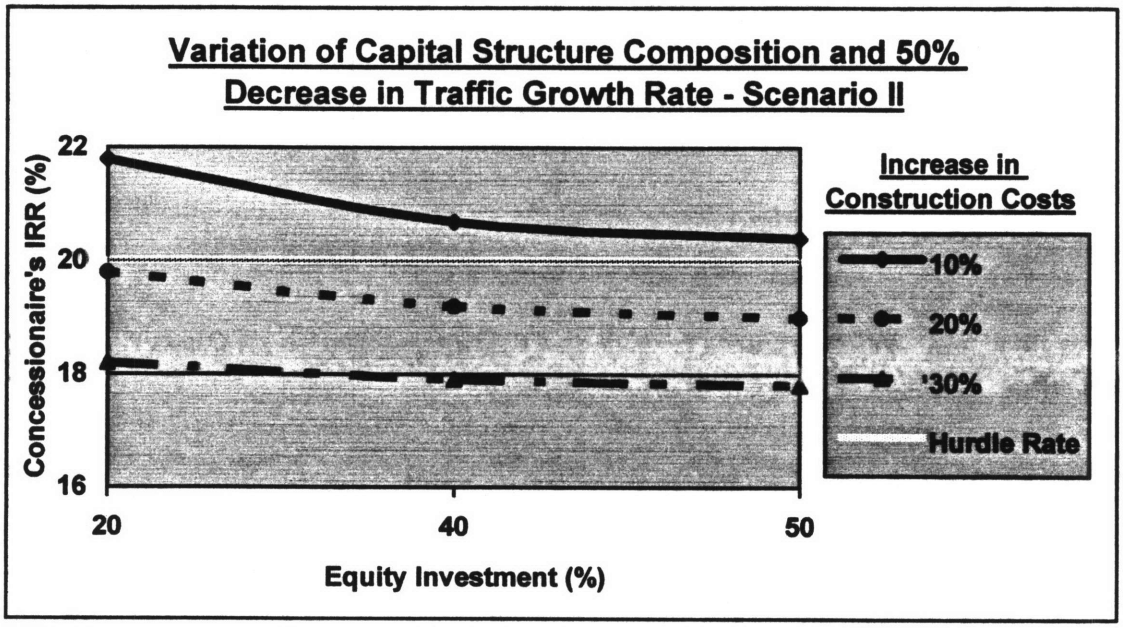


Figure 5.14. Variation of Capital Structure Composition and 50% Decrease in Traffic Growth Rate per Increase in Construction Costs-Scenario II



5.3.4. Incidence of Construction Debt's Interest Rate

Figure 5.15. Increase in Construction Debt's Interest Rate - Scenario I

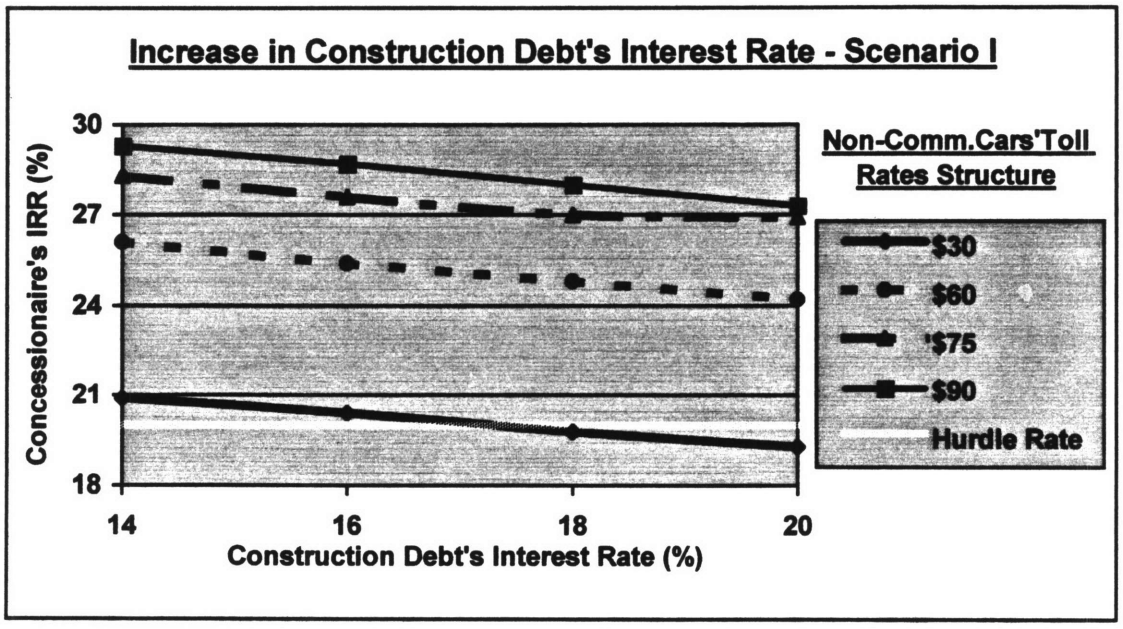


Figure 5.16. Increase in Construction Debt's Interest Rate and 50% Decrease in Traffic Growth Rate - Scenario I

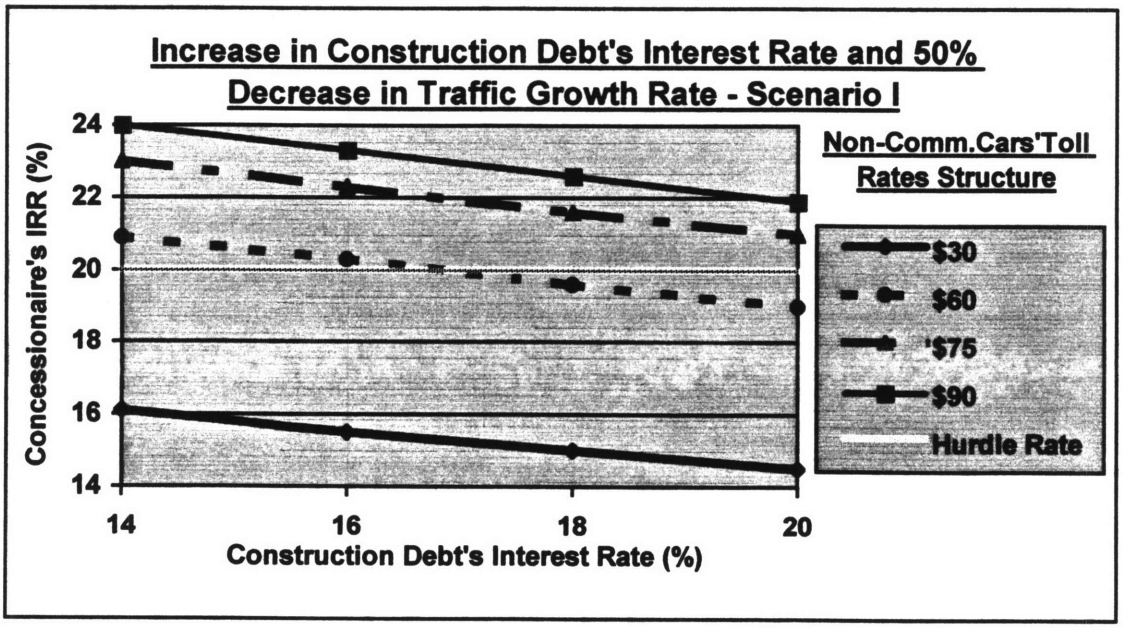


Figure 5.17. Increase in Construction Debt's Interest Rate - Scenario II

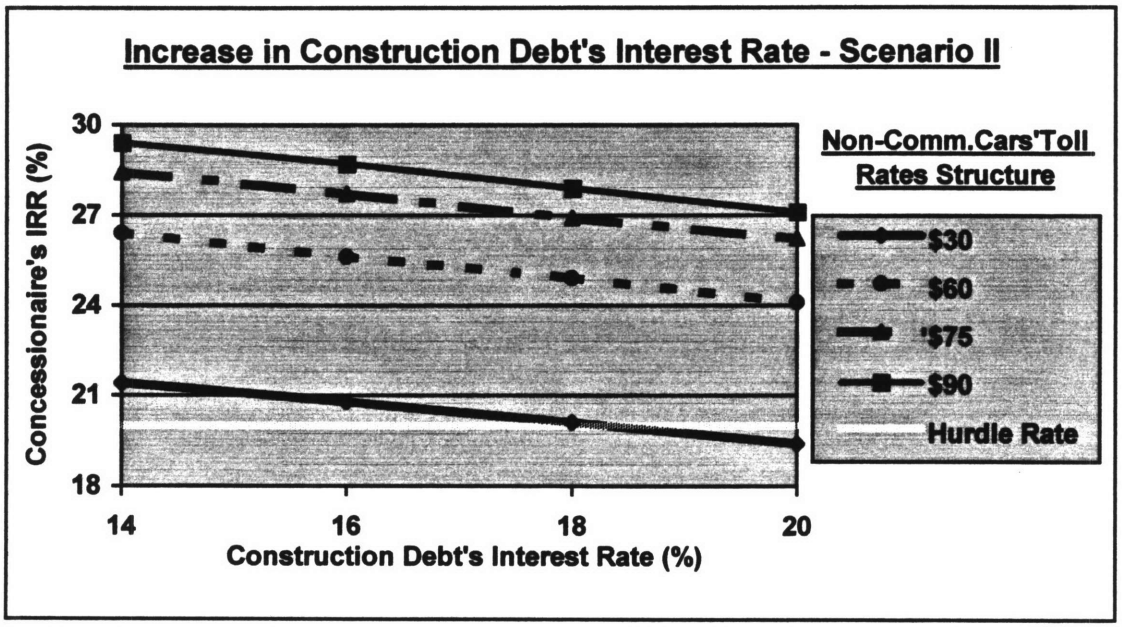
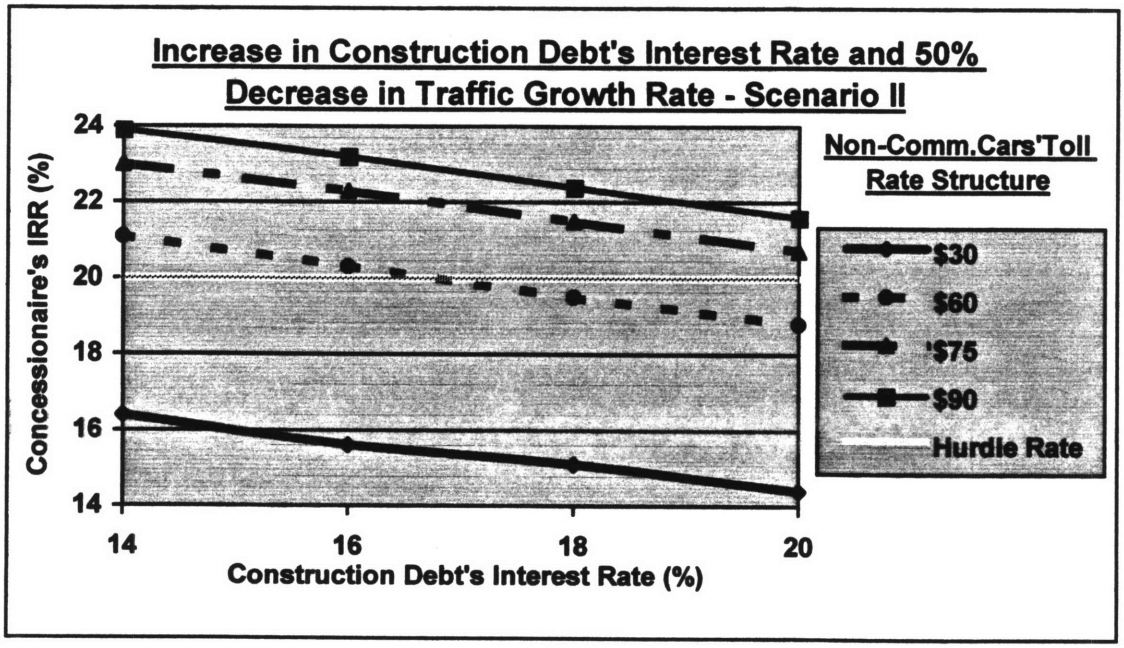


Figure 5.18. Increase in Construction Debt's Interest Rate and 50% Decrease in Traffic Growth Rate - Scenario II



5.3.5. Incidence of Long-term Debt's Interest Rates Structure and Maturities

Figure 5.19. Increase in Long-term Debt's Interest Rates Structure-Scenario I

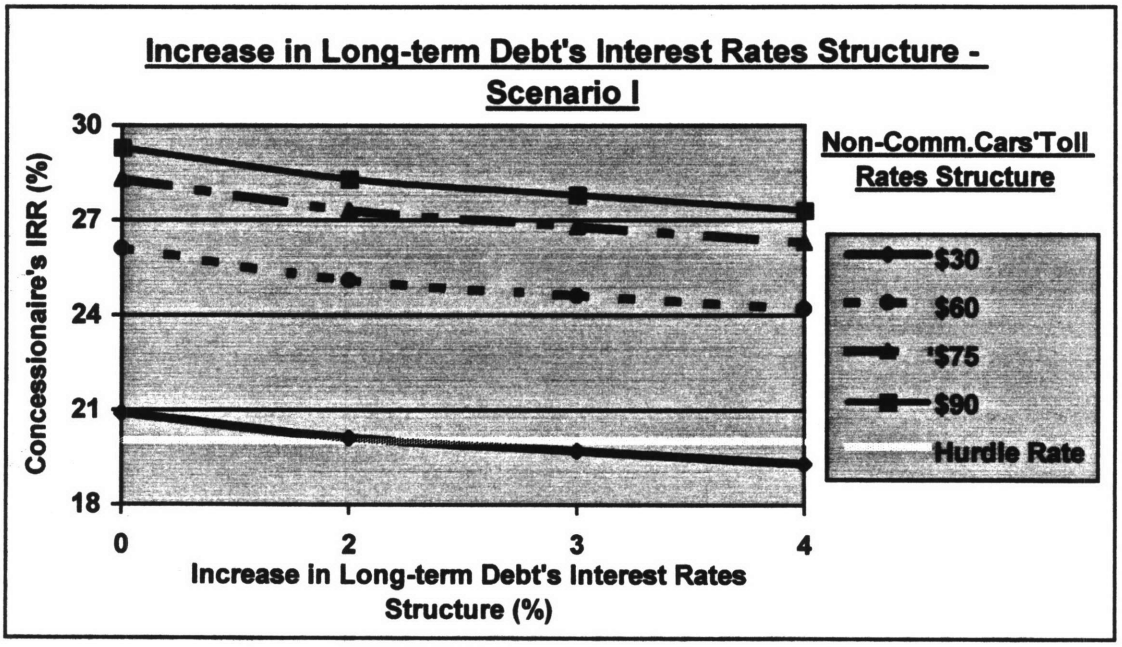


Figure 5.20. Increase in Long-term Debt's Interest Rates Structure and 50% Decrease in Traffic Growth Rate - Scenario I

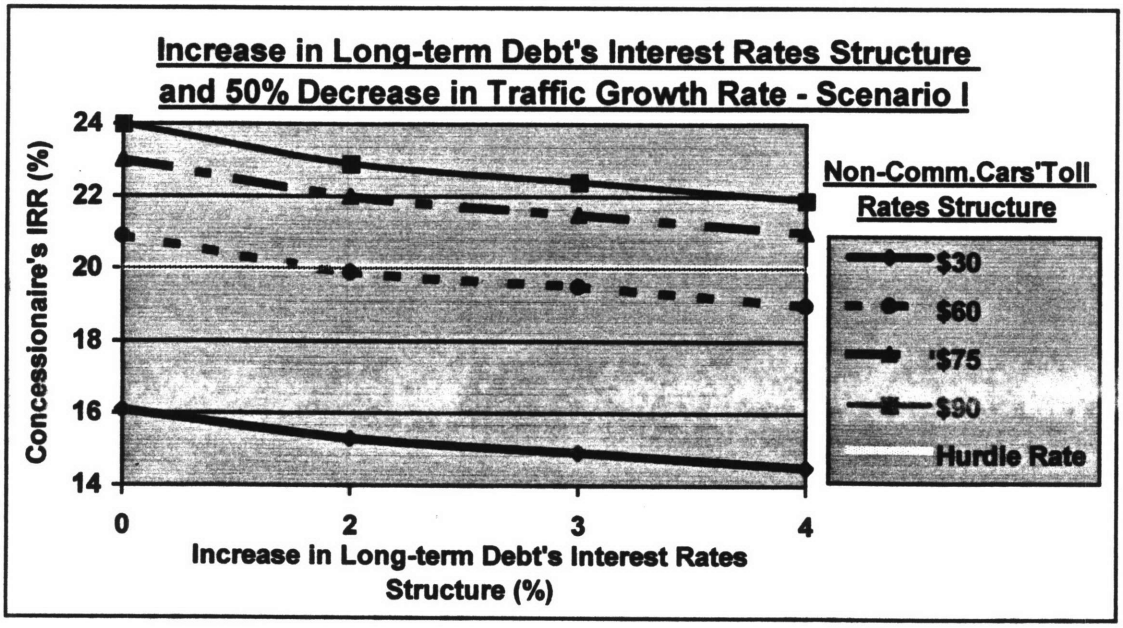


Figure 5.21. Increase in Long-term Debt's Interest Rates Structure and Maturities 2 Years Earlier - Scenario I

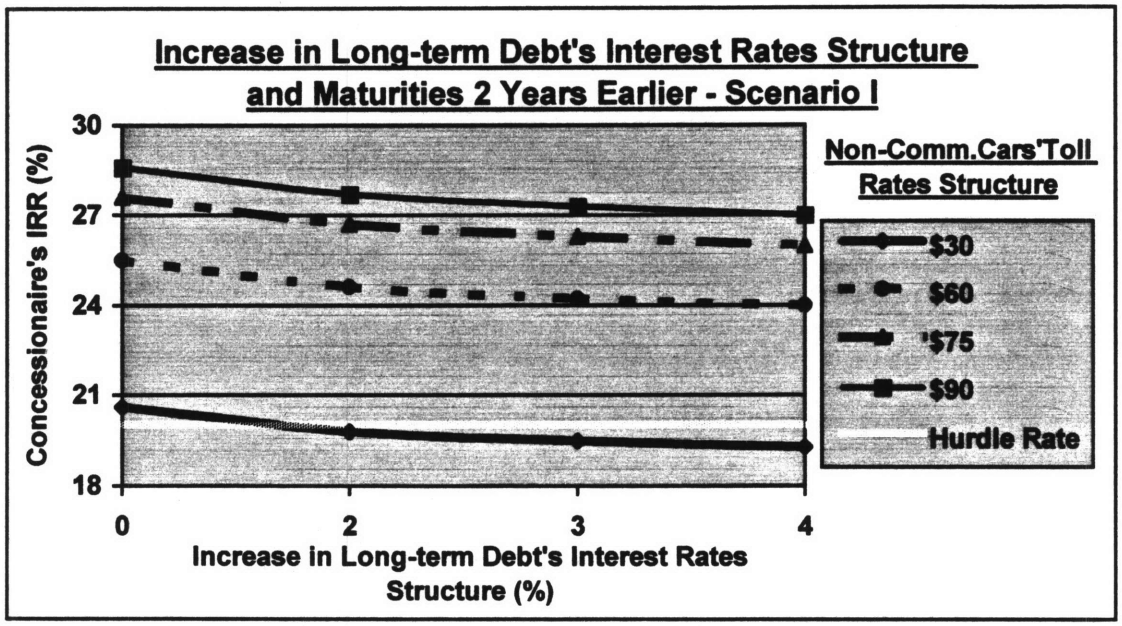


Figure 5.22. Increase in Long-term Debt's Interest Rates Structure and Maturities 2 Years Earlier - 50% decrease in Traffic Growth Rate - Scenario I

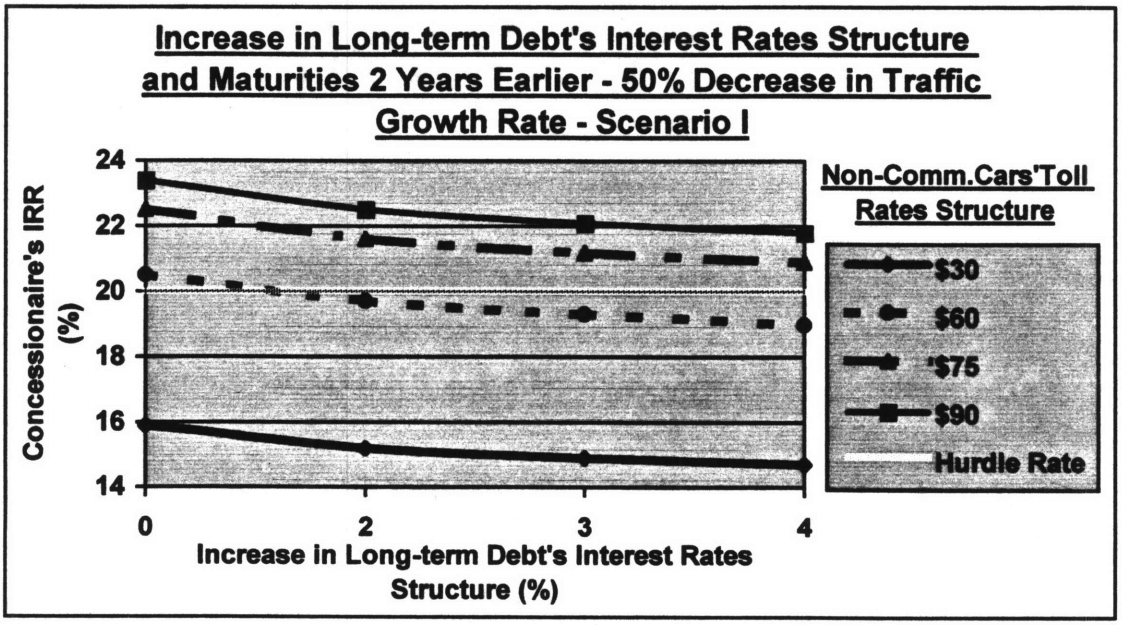


Figure 5.23. Increase in Long-term Debt's Interest Rates Structure-Scenario II

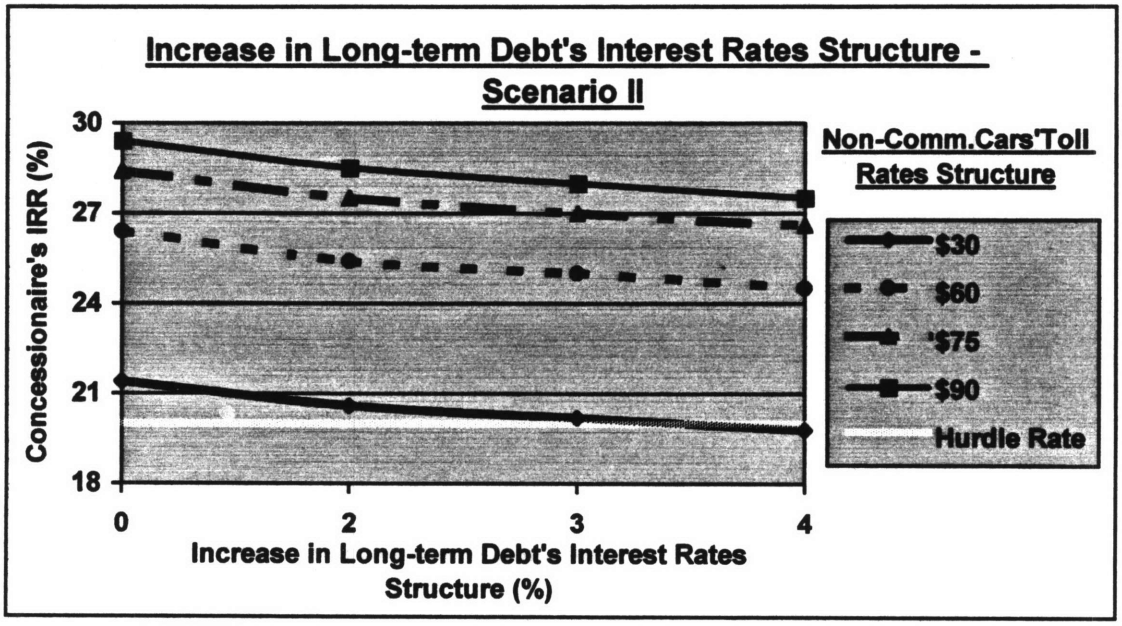


Figure 5.24. Increase in Long-term Debt's Interest Rates Structure and 50% Decrease in Traffic Growth Rate - Scenario II

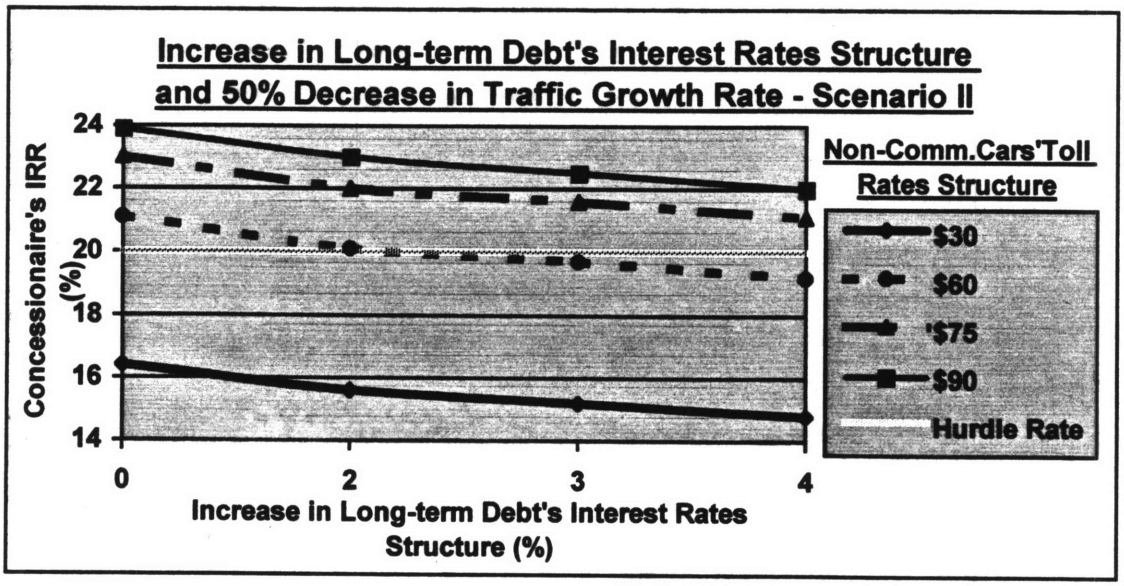


Figure 5.25. Increase in Long-term Debt's Interest Rates Structure and Maturities 2 Years Earlier - Scenario II

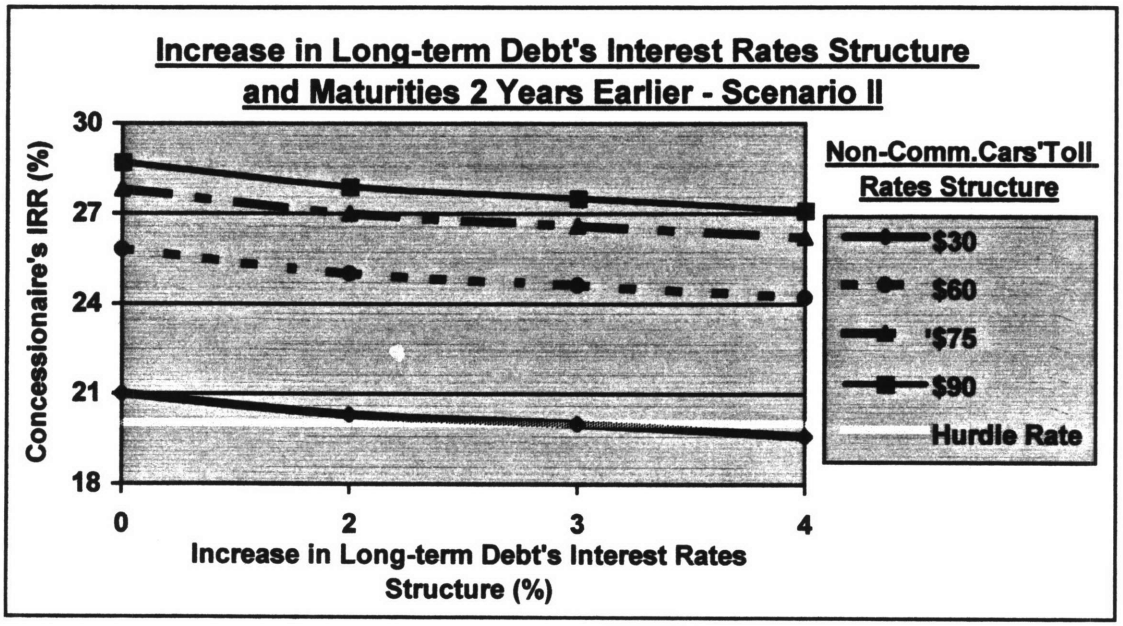
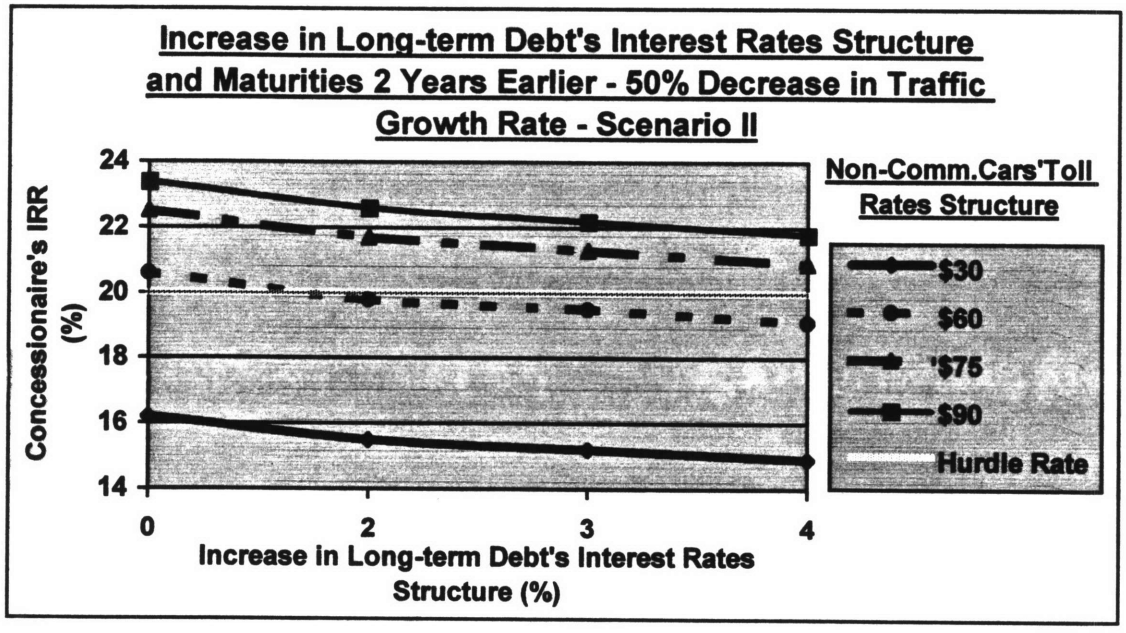


Figure 5.26. Increase in Long-term Debt's Interest Rates Structure and Maturities 2 Years Earlier - 50% decrease in Traffic Growth Rate - Scenario II

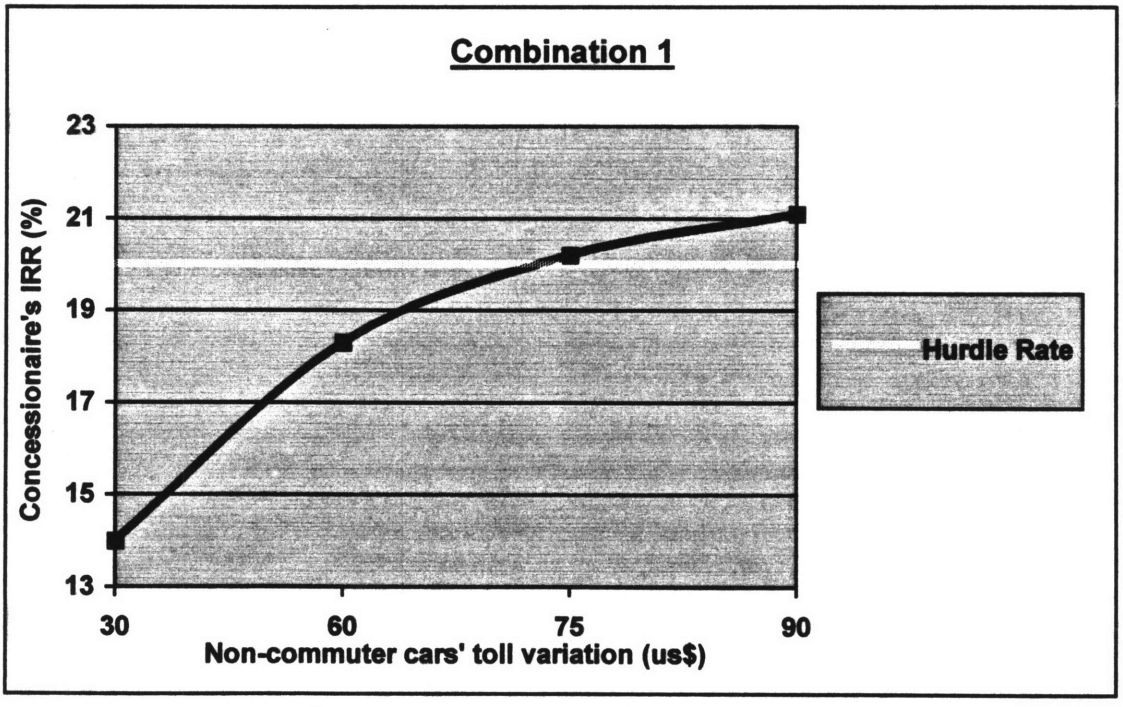


5.3.6. Incidence of Worst-Case Combinations

5.3.6.1. Combination 1

- Scenario I (base-case)
- 50% decrease in traffic growth rates
- 10% increase in construction costs
- 1% increase in construction debt's interest rate (i = 15%)
- 1% increase in long-term debt's interest rates structure

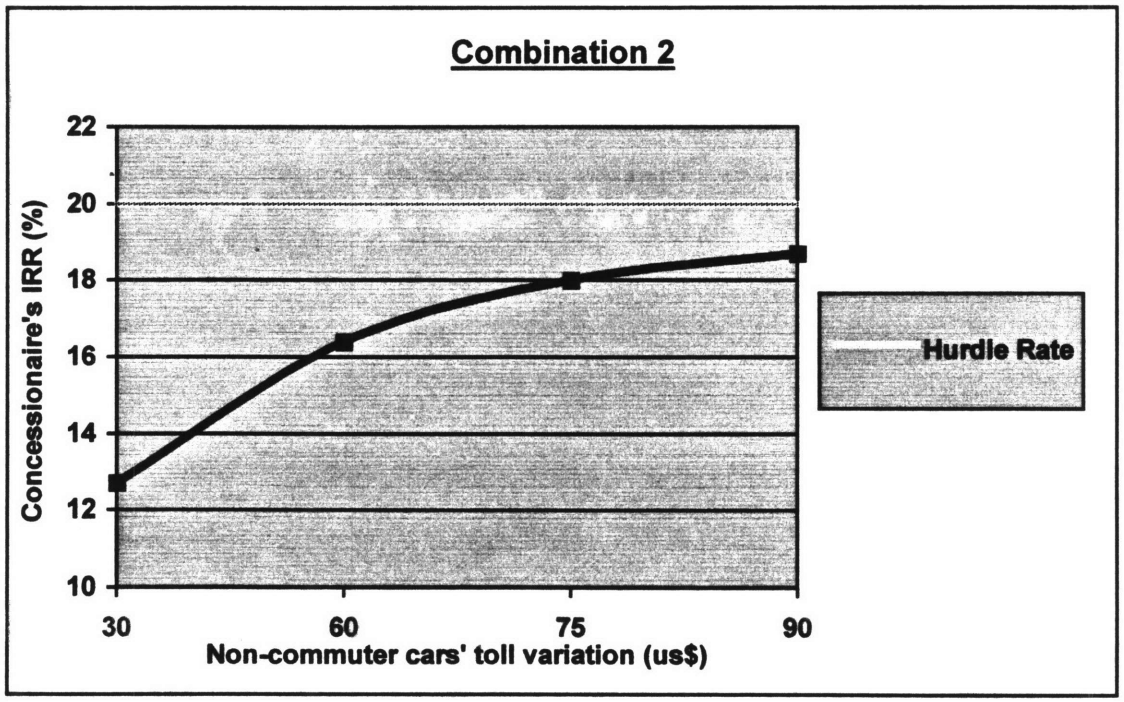
Figure 5.27. Combination 1



5.3.6.2. Combination 2

- Scenario II (1-year construction delay)
- 50% decrease in traffic growth rates
- 20% increase in construction costs
- 1% increase in construction debt's interest rate (i = 15%)
- 2% increase in long-term debt's interest rates structure and maturities 2 years earlier than base-case

Figure 5.28. Combination 2



5.4. Evaluation of the Results

In order to be attractive to potential bidders, a project of this magnitude should be flexible enough to allow for the concessionaire to still earn a reasonable profit despite negative contingencies affecting the financial structure of the venture. That structure is certainly subject to a number of factors ranging from peculiarity of the concessionaire to final terms of the concession contract and arrangement of financing sources; to even ultimate changes in the scope of the project yet unknown at the time of conducting the present thesis research.

The following points summarize some findings of the sensitive analysis. Despite they do not cover all of the myriad of uncertainties, important conclusions concerning the financial viability of the project can later be drawn.

When reading the following section, it is important to bear in mind that an increase (decrease) of the IRR refers to its relative increment (decrement) produced by the change in the value of the particular input variable analyzed.

5.4.1. Scenario I versus Scenario II

All of the runs of the sensitivity analysis calculated almost equivalent IRRs in both scenarios regardless the value assumed for any of the input variables of the financial model.

This fact does not imply, however, that an eventual one-year delay in the completion of the project would not affect the financial scheme of the venture. The

delay will inevitably bring an increase of construction costs which are unlikely to occur in Scenario I (no-delay base case). Such an increase may be due to overhead costs overrun, among other expenses. Therefore, the IRR for a particular run of the model will invariably be lower in Scenario II.

As an example of the above, a 10% increase in construction costs under Scenario II would determine an IRR approximately equal to 24% for a $60 toll rate (Figure 5.4). Instead, in Scenario I, where no increase is expected, the IRR would be over 26% for the same toll rate (Figure 5.1).

5.4.2. Increase in Construction Costs

As pointed out before, Scenario II is inexorably linked to an increase in construction costs. As reflected in Figure 4, this contingency – up to a 30% increase, could lower the IRR up to 5% with respect to Scenario I (no-construction-costs-increase case) regardless of the toll rate structure in use.

5.4.3. Increase in Equity Investment Proportion

An unexpected increase in construction costs under Scenario II is likely to cause a corresponding increment of equity investment. As shown in Figures 5.7 and 5.11, an equity investment proportion ranging from 20 to 50% could lower the IRR from 2 to 5%, depending upon the toll rate structure applied. The higher the toll rates, the higher the drop. Should 50% decrease in projected traffic growth rates came along, then the IRR would decrease only up to 2% (Figures 5.8 and 5.12).

5.4.4. Toll Rates Structure and Traffic Levels Forecasts

Toll rates structure and traffic levels forecasts impact the most on the financeability of the project.

Toll rates structures based on tolls ranging from $30 to $90 for non-commuter cars are correlated with an increase in the IRR of up to 8%, apparently regardless of traffic growth rates or scenarios (Figures 5.1 and 5.2), increase in construction costs (Figures 5.3 through 5.6), or short- and long-term debt's interest rates and maturities (Figures 5.15 through 5.26). However, an increase of equity investment proportion from 33% (assumption of base-case scenario) through 50% would bring such an increase in the IRR down from 8 to 7% (Figures 5.7 and 5.11, and 5.8 and 5.12).

Concurrently, a 50% decrease in projected traffic growth rates may cause the IRR to fall up to 5%, apparently regardless of toll rates structure or scenarios (Figures 5.1 and 5.2), construction costs increase (Figures 5.3 and 5.5, and 5.4 and 5.6), or short- or long-term debt's interest rates and maturities (Figures 5.15 and 5.16, 5.17 and 5.18, 5.19 and 5.20, 5.21 and 5.22, 5.23 and 5.24, and 5.25 and 5.26). Such a decrement in the IRR, however, would fall up to 4% should the equity investment proportion soar from 33 to 50% (Figures 5.7 and 5.8, and 5.11 and 5.12).

Lastly, toll rates structures ranging from a little below $60 to $90 toll for non-commuter cars consistently yield an IRR above 20% which is the assumed concessionaire's hurdle rate or risk-adjusted discount factor (Figures 5.1 through 5.8, 5.11 and 5.12, and 5.15 through 5.26). This trend, however, is not true for all

the spectrum of the values of input variables analyzed (Figures 5.5, 5.6, 5.16, 5.18, 5.20, 5.22, 5.24, 5.26, and 5.27). Furthermore, even the highest toll rates structures analyzed (based on $90 toll for non-commuter cars) cannot yield an IRR above the concessionaire's hurdle rate in worst-case combinations of contingencies (Figure 5.28).

5.4.5. Short- and Long-term Debt's Coupon Rates and Maturities

Short-term debt's interest rate ranging from 14% to 18% determines a decrease in the IRR of up to 2% approximately, regardless of toll rates structures, traffic growth rates or scenarios (Figures 5.15 through 5.18). The same is true for long-term debt's coupon rates increasing up to 4%, also regardless of maturities (Figures 5.19 through 5.26).

5.5 Implications

5.5.1. Implications of the Sensitive Analysis

In Chapter 4, a financial evaluation of the Buenos Aires-Colonia Bridge Project was performed by utilizing a model that incorporates parameters such as capital expenditures and structures, traffic level forecasts, toll rates schedules, and financing sources.

The financial model, under a base-case scenario of assumptions, calculated the developer or concessionaire's Internal Rate of Return (IRR). The

concessionaire's IRR is the parameter that best gauges the financial strength of the venture due to the fact that the Bridge will be delivered as a Build/Operate/Transfer (BOT) project. This is true since, under a BOT scheme, the concessionaire is responsible for the design, construction, financing, operation, and maintenance of the facility for a 35-year long concession period. Therefore, the financial feasibility of the project will depend upon the return it offers to the concessionaire.

All of the risks borne by the concessionaire were accounted for in the financial model by accordingly adjusting the discount rate to 20%. Such a rate represents the return that the bidders expect to realize should they undertake the project.

In a base-case scenario, an IRR equal to 28.3% proves that the Bridge is financially feasible.

The sensitivity analysis proved that the project is financially viable under certain conditions which are summarized as follows:

- A one-year delay will invariably lower the concessionaire's IRR, thus jeopardizing the whole financial scheme of the project. This contingency would bring an increase in construction costs, higher equity investment proportion, and eventual escalation of long-term debt's coupon rates.

- An eventual increase in construction costs up to 30% could lower the IRR up to 5%. By completing the project on or before schedule, the concessionaire would considerably better its IRR.

- Potential increment of equity investment up to 50% could lower the IRR 2 to 5%, depending on toll rates structure in use and actual traffic growth rates. Once again, timely completion of the project is critical to minimize the equity investment. Thus, the concessionaire might be able to set competitive toll rates and maintain the IRR well above its hurdle rate.

- Toll rates structure should range from below $60 up to $90 toll for non-commuter cars. The increment of the tolls from $60 to $90 would make the IRR to increase accordingly up to 3% (Figures 5.1 and 5.2).

- The project could endure a 50% decrease in traffic growth rates forecasts if other contingencies were either minimal or nonexistent.

- Since the IRR decrease up to 2% should actual debt's interest rates are higher than expected, the concessionaire have room to negotiate with the financing sources, acceptable coupon rates and maturities for either the construction or long-term loans.

5.5.2. Economic Implications

In terms of competitiveness with other modes of transportation, the Bridge offers an attractive alternative for a toll rate structure based on a $75 toll for non-commuter cars (base-case scenario). This is illustrated in the following generic and simple example:

A family comprising two adults and two children aged between 2 and 9 years travel from Buenos Aires to Montevideo by car through the existing high-speed

ferry that links both cities. The actual fares for economic class are $46 per adult and $29 per child, respectively. The fare for the car (weight under 1,200 Kg.) is $97 (all the prices are denominated in 1997 US Dollars).

In consequence, the family would incur in the following travel cost:

$$C_1 = \{2 * [0.8 * (46 + 29)] + 0.8 * 97\} = \$197.6$$

The 0.8 factor accounts for a possible fare discount made by the owner of the ferry system in response to the existence of the Bridge.

If the same family traveled by car from Buenos Aires to Montevideo through the Bridge, it is assumed that they should only pay for the Bridge's toll on their way to Montevideo. In this case, the family would incur in a lower travel cost, as shown in the following table ("Other costs" is an arbitrary assumption) :

Table 5.5. Cost of Travel From Buenos Aires to Montevideo by Car Using the Bridge Option

Bridge's toll	=	$ 75
Gasoline = 258 Km. x $0.14/Km.	=	$ 36
Other costs (e.g.: car's depreciation, maintenance, etc.)	=	$ 20
	C_2 =	**$131**

The cost differential between C_1 and C_2 could even absorb extra travel cost originated by future toll-roads servicing the Bridge.

In this example, the family would spend a similar amount of travel time in using either alternative; that is, three hours time approximately. There are of course other examples in which the high-speed ferry may outperform the Bridge. Nevertheless, the example above serve to show the potential competitiveness of the latter.

However, it always exists the possibility that the owner of the ferry services enjoys a profit margin high enough to lower the ferry's fares to the point that the Bridge becomes an expensive option for travel. Therefore, the concessionaire should pay close attention to this fact and attempt to hedge somehow against this potential threat to the financial scheme of the venture.

5.5.3. Implications of the Financial Model

The following section sets forth the strengths and weaknesses of the financial model in order to properly assess the reliability of the results obtained in the present analysis.

The financial model is based on a series of financial and economic assumptions. The financial analysis concluded that there are several economic and financial conditions under which the Bridge could be self-sustaining, making private financing in the form of a concession feasible.

Economic changes can take place quickly and, if unanticipated, could have a significant impact on the ability of borrowers to repay dollar loans. Certain aspects of the analysis should be identified as assumptions, subject to imaginable but unforeseeable changes. These aspects include:

(i) the anticipation of economic and political stability during an extended construction period;

(ii) the assumption of many years of sound economic growth without remarkable increase of inflation or significant devaluation;

(iii) confidence in the results of a complex traffic model to forecast traffic levels in a new river crossing;

(iv) the assumption that political risks such as expropriation, legislative changes and similar events do not occur over the 35-year time horizon; and

(v) the assumption that this project will attract bidders who would be willing to provide over $300 million in equity plus any extra investment to cover an eventual shortfall of the debt service reserve fund as well as to undertake the risk of a turnkey operation (and other significant risks), while earning an IRR of 20 to 32% and endure, in a base-case scenario, a payback period of 15 years.

Each of these assumptions could prove to be incorrect, thus causing an adverse effect on the project's feasibility.

Nevertheless, there are many reasons to support the suitability of the present financial analysis.

First, the scope and flexibility of the financial model allow for the generation of results projected across a wide range of variables.

Second, there are traffic studies indicating that a significant demand exists, with a much higher toll rate than the one currently anticipated as the initial toll level (US$75). This fact would make a toll rates structure more flexible in order to countervail the effects of a series of adverse events on the project's implementation.

Third, not all of the possible sources of project income have been included. Revenues such as ad-valorem taxes, proceeds from land sales/lease around or near the landfalls of the Bridge, increases in tolls or taxes on other river crossings, and other similar sources of potential income could be used to provide additional funds to the concessionaire.

Finally, all of the assumptions concerning coupon rates, maturities and other financial parameters are somehow conservative, so that it is more likely that there will be decreases in costs rather than increases.

The results of the financial model, therefore, represent only one of the factors that would determine the possible financing of the project. The risk level associated with the financing, construction, and operation of the Bridge is high. Consequently, it cannot be concluded with total certainty that the proposed facility is financeable since all of the scenarios are ultimately based on highly volatile variables. Furthermore, the risk level that must be assumed by the concessionaire may reduce the number of potential bidders to reputable corporations and firms grouped in few joint-ventures.

Nonetheless, facts such as the importance of the Bridge, its high profile as an infrastructure project within the MERCOSUR Agreement, and its potential positive impact on both Argentina and Uruguay determine that the Bridge is financially feasible under a Build/Operate/Transfer delivery scheme.

CHAPTER 6: FINAL CONCLUSIONS

6.1. Introduction

The Buenos Aires-Colonia Bridge is deemed to be the paradigm of the MERCOSUR agreement in the dawn of the 21st century. This project, meant to be one of the longest bridges of the world, will represent the materialization of many attempts to physically link Argentina and Uruguay over the Río de la Plata.

However, this one-billion-dollar undertaking poses many challenges. The most salient of them is the fact that the project will be delivered through a Build/Operate/Transfer (BOT) method in which a private concessionaire will design, build, finance, operate and maintain the facility for a period of up to 35 years at its entire risk since there will be no subsidies nor profitability guarantees from any of the governments. In return, the consortium will be entitled to charge tolls to every vehicle using the Bridge in order to recoup its investment plus a reasonable profit. Upon the end of the concession period, operations of the Bridge shall turn over to the Governments of Argentina and Uruguay.

The idea of delivering a fixed road link over the Río de la Plata as a BOT type of project is due to three factors. The first one is the fact that the Governments of Argentina and Uruguay do not have the resources to undertake a project of this magnitude.

Secondly, both countries are experiencing since the early 1990's a wave of privatization of deficitary state-owned enterprises with a great deal of success.

Thirdly and most importantly, is that the MERCOSUR agreement fosters a trend of regional integration that accelerates the demand for better infrastructure among the Southern Cone countries. This fact requires a degree of efficiency in the management of resources widely found in the private sector.

As a part of the dynamics created by the MERCOSUR, the Bridge would complement an existing range of other modes of transportation in the Río de la Plata region, namely ferry/maritime services, other road bridges along the Uruguay River, and air traffic.

From the political standpoint, both countries' governments have clearly stated their commitment to move this project forward. In this sense, they signed a specific Treaty on September, 1996. Previously, an ad-hoc bi-national governmental commission, COBAICO, and private consultants arrived to the conclusion that the facility is feasible to be delivered as a BOT project under certain economic, political, and financial conditions.

In January 1997, COBAICO issued the Request for Proposals. It is expected that the bidding call and awarding process take place between late 1997 and early 1998; that construction spans from mid-1998 through late 2002; and that operations begin in 2003.

6.2. Comparison With Similar BOT Projects

In many features, the Buenos Aires-Colonia Bridge resembles other projects such as the Channel Tunnel and the Northumberland Bridge in Canada. Therefore, many conclusions can be drawn from the experience achieved in these projects.

The Channel Tunnel unfolded a complex yet formidable financial scheme that involved 220 banks and 745,000 equity shareholders. Despite it turned out to be a technical success from the engineering point of view, two factors were identified as possible causes of the present financial distress of the venture.

The first one is that actual toll revenues were simply lower than expected owing mainly to the competition of existing ferry services and airline companies.

Secondly, construction overruns stemmed from a one-year delay in the scheduled completion of the project. Paradoxically, it seems that construction delays were not principally because of technical difficulties encountered during construction but to a faulty conflict resolution system. Since this system allowed for lengthy arbitration process, many argue that contractors used the threat of arbitration – and arbitration itself– as a financial weapon whenever a conflict arose. To make things even worse, penalties for late delivery were seemingly lower than the concessionaire's costs.

With regard to the Northumberland Bridge, it will be operational as of mid-1997. Therefore, it is difficult to assess the take-out stage of the 35-year concession period.

However, this project stands out as an example of private sector's efficiency in building a segmented precast concrete bridge in a short construction time schedule and adverse climate conditions.

One shortfall of this project, although necessary, was the long time it demanded for getting all of the environmental studies and clearances done at the development stage. Many negotiations and public hearings took place in order to reach consensus among a great deal of interested groups.

In addition, this project presents an interesting and sound financial package. Here, the construction cost of the Bridge has been fully financed in Canadian capital markets by the concessionaire through the issue of real rate bonds which are fully indexed to inflation with a guaranteed rate of return. The only public funding committed to the project is the annual payment by the Government to the bondholders of $42 million (1992 CAN$) to pay for the Bridge over 35 years. This amount is equal to the annual operation and maintenance costs of the existing ferry system which will be stopped once the Bridge becomes operational.

Also, a very extensive security package has been established to protect bondholders from the risk of construction delays and cost overruns. The package is comprised of a $200 million performance bond, a $20 million labor and material payment bond, and a comprehensive insurance package. In addition to the securities, a letter of credit for $73 million and parent company Joint and Several Guarantees were required as an extra protection for bondholders against project risks. Thus, the concessionaire bears 100% of the project cost and completion risk.

It can be noted, then, the flexibility of the project's financial plan to adapt to unexpected changes.

The Northumberland Bridge made it possible to identify the following points that both public and private sectors may take into consideration while planning a BOT project of similar characteristics:

a) Identify and understand the project
b) Identify members of the consortium at the earliest opportunity
c) Identify political agenda
d) Identify all affected interest groups
e) Early finalization of legislative/regulatory requirements
f) Early finalization of timelines for the project
g) Shorten bidder list at first opportunity
h) Early nomination of an empowered negotiating committee
i) Maintain flexibility in the financial plan
j) Establish a reasonable risk allocation
k) Demonstration of full government support
l) Encourage the establishment of a relationship of trust

Points such as a), c), and k) have already occurred in the procurement of the Buenos Aires-Colonia Bridge; others, like e), are underway; and the remainder of the list will be subject to the particular awarded bidder and other future events and terms of the concession agreement.

6.3. Financial Evaluation

Based on the premise that the Bridge will be delivered as a BOT type of project, its financial feasibility can be measured through the concessionaire's Internal Rate of Return (IRR). This is due to the fact that the project will not be financed unless the Bridge offers an attractive return to the concessionaire.

On the other hand, a project like the Buenos Aires-Colonia Bridge can be funded through combinations of many financial instruments which will depend on the concessionaire's ability and capability to package them. In turn, factors such as stable inflation rates and currencies in both Argentina and Uruguay, considerable market demand for the Bridge, permanent political and institutional predisposition to the project, technical contingencies during construction, and the like, will be determinants to the financial success of the venture.

Therefore, the financial model analyzed in this thesis does not attempt to show ways for engineering the financing of the Bridge. It only intends to demonstrate that the Bridge is feasible to be delivered, under certain conditions, as a BOT project. Further adjustments to the assumptions of the model will need to be made according to factors and conditions yet unknown in the present.

The financial model – and the sensitivity analysis performed on it, revealed that the Bridge is self-financeable under a relatively high toll rates structure (e.g.: toll for non-commuter cars ranging from $60 to $90), even in cases of traffic growth rates below than expected, cost overruns, and construction delays up to one year.

In spite of this apparent high toll rates structure, the Bridge appears to be, in many cases, quite price competitive as compared to other modes of transportation. For instance, the Bridge would permit a family, comprised of two adults and two children, to save around 30% of the expenses it would have otherwise incurred had the family traveled from Buenos Aires to Montevideo by car and used the high-speed ferry to link both cities over the Río de la Plata. Nevertheless, the concessionaire should be aware of the fact that, for instance, the owners of the ferry systems may enjoy a high profit margin that would allow them to lower the fares to a point that the Bridge becomes an expensive option for travel.

These conclusions cannot be taken as certain due to the riskiness of the venture which may cause adverse disruptions in the assumptions of the financial model.

Nevertheless, factors such as a current worldwide trend to privatization – particularly manifested in Argentina and Uruguay, the need of these countries to enhance their regional highway infrastructure as an strategy to strengthen the MERCOSUR Agreement, the potential increase of economic development in the Río de la Plata area, and the financial feasibility to deliver the project under a BOT scheme, are positive indicators that the Buenos Aires-Colonia Bridge may be a challenge worth to undertake.

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APPENDIX 1

Treaty Between The Republic Of Argentina And The Oriental Republic Of Uruguay For The Construction Of A Bridge Over The Río De La Plata [5]

I) DEFINITIONS

Article 1:

For the purpose of this Treaty, it is understood that:

a) "Contracting Parties" are the Republic of Argentina and the Oriental Republic of Uruguay;

b) "Concessionaire" is either the private juridical entity or the association of private juridical entities awarded with the concession contract;

c) "Management Commission" is the Management Commission of the Buenos Aires-Colonia Bridge referred to in Article 25;

d) "Bridge" is the project described in Article 3;

[5] The present Appendix only intends to convey the contents and spirit of the Treaty governing the construction of the Buenos Aires-Colonia Bridge. Therefore, this Appendix cannot be deemed as a formal legal translation into the English language of the original text of the Treaty in the Spanish language.

e) "Bidding Documents" are the concession contract and its annexes, the proposal documents, their clarifications, the Usage of the Bridge Regulations, and the awarding instruments, in compliance to the contents of the present Treaty.

II) OBJECTIVE

Article 2:

The Contracting Parties agree upon the construction of a Bridge linking their respective territories over the Río de la Plata; that it will be accomplished by rule of concession in which its holder will be selected from an international public bid of proponents.

Article 3:

The elements integrating the Bridge are the following:

a) a fixed road link that will unite the territory of the Contracting Parties through and over the Río de la Plata, between the area of Punta Lara in the Republic of Argentina and the proximity of the airport located to the east of the City of Colonia del Sacramento in the Oriental Republic of Uruguay;

b) the totality of the road connections to the nearest principal route of each of the Contracting Parties;

c) the facilities located within the area to be determined in accordance with Article 6 - §2, that are necessary for the functions of customs, immigration, sanitation, security, and other authorities;

d) the facilities located within the area to be determined in accordance with Article 6 - §2, that are affected to toll collection;

e) additional structures, constructions, and facilities located within the area to be determined in accordance with Article 6 - §2, that are necessary for the development of activities and services described in Article 18 - §1 and §2 of this Treaty.

Article 4:

The Contracting Parties agree to be responsible for having the segments of the main routes linking the road connections of the Bridge and the respective capital cities and corresponding interchanges, open to public use on the date of construction completion of the Bridge indicated in the concession contract. Such segments will have sufficient capacity to bear, at least, the Bridge's traffic capacity and level of service.

Article 5:

The construction and existence of the Bridge will not affect either the freedom of navigation on the Río de la Plata (in accordance with treaties in force signed by both Contracting Parties or by either of them with third States) nor the rights or obligations of the Contracting Parties as provided in the *Tratado del Río de la*

Plata y su Frente Marítimo (Treaty of the Río de la Plata and its Maritime Waterfront) of November 19, 1973.

Article 6:

1) All of the area occupied by the elements of the Bridge indicated in Article 3 - §a, §b, §c, and §d as well as such elements and those provided in §e of the same Article, that form a material unit, constitute an international condominium of equal parts between the Contracting Parties.

2) The area occupied in the territory of each of the Contracting Parties by the elements integrating the international condominium, will be determined by the respective Contracting Party, based on the recommendation to be made by the Management Commission. Such a determination will be formalized by Exchange of Notes.

Article 7:

In compliance with Article 6, the Contracting Parties agree on distributing the exercise of jurisdiction according to the following rules:

a) As of the date of the signature of the concession contract, each Contracting Party will exercise jurisdiction over the part of the project referred to in Article 3 - §a, near to its territory;

b) Each Contracting Party will hold jurisdiction over the acts that solely affect its security or that cause effects exclusively in its territory, regardless of the place of the Bridge where such acts occurred;

c) The jurisdiction over acts occurring on the Bridge that bring about consequences in the waters, riverbed, or subsoil of the Río de la Plata, is subject to the clauses of the *Tratado del Río de la Plata y su Frente Marítimo* (Treaty of the Río de la Plata and its Maritime Waterfront) of November 19, 1973;

d) As for civil liability for traffic accidents, the *Convenio sobre Responsabilidad Emergente de Accidentes de Tránsito* (Agreement of Emerging Liability for Traffic Accidents) signed by the Contracting Parties on June 8, 1991, will be applied.

Article 8:

1) The Contracting Parties are liable for timely declaring the necessity or public use, subject to expropriation, of the areas located in their respective territories that are determined in Article 6 - §2, as well as for exercising in their respective jurisdictions those legislative, administrative, and judicial acts to expropriate or affect such areas and their improvements, or constitute right-of-way over them.

2) The indemnity amounts for expropriations and expenses of right-of ways will be for the account of the Concessionaire.

Article 9:

1) The controls of customs, police, immigration, sanitation, and others to be established by both Contracting Parties, will be regulated by the norms of

the Accord of Recife for the Application of Integrated Border Control among the MERCOSUR Countries.

2) The Contracting Parties commit themselves to ensure that the flow of traffic through these controls will be as fluid as possible, in accordance to the provisions set forth in the concession contract.

III) THE CONCESSION

Article 10:

1) The concession will be for the executive design and construction of the Bridge, as well as its operation and maintenance in the condition to be established in the concession contract. The concession will be for a maximum term of up to thirty five (35) years at the exclusive cost, charge, and risk of the Concessionaire. The definitive term of the concession will be established by the Contracting Parties in the Exchange of Notes.

2) The Concessionaire shall execute a permanent program of environmental protection, in accordance with enforcing norms of both Contracting Parties.

Article 11:

The Concessionaire shall have a legal domicile in the territory of each of the Contracting Parties.

Article 12:

1) The Concessionaire shall make use of all of the elements of the Bridge defined in Article 3 - §a, §b, and §d until the end of the concession, upon which the Concessionaire shall turn them over to the Contracting Parties in good state of preservation, and without owing the latter to the former any kind of payment or service provision.

2) The concession contract will establish the rules to be applied to the elements defined in Article 3 - §e.

Article 13:

1) The operation of the Bridge and its utilization by the users will be subject to the Usage of the Bridge Regulations which shall be part of the concession contract.

2) The Bridge will be open on a permanent basis and its use only might be interrupted by causes as foreseen in the Usage of the Bridge Regulations.

Article 14:

The Concessionaire shall have the right to collect tolls from every vehicle using the Bridge.

Article 15:

1) The Contracting Parties will not grant subsidies, guarantees or any other type of assurances for the construction, operation or maintenance of the Bridge, nor they shall be responsible for levels of traffic or profitability of the concession.

2) The Contracting Parties guarantee that the Management Commission will not alter the validity nor the contents of any of the concession contract clauses agreed upon. In turn, the Contracting Parties commit themselves not to pass any bill, decree, executive order, or other legal regulation in their respective juridical ambits that modify the concession contract.

3) The Contracting Parties will abstain from any acts causing the interruption of the construction of the Bridge as well as taxing or restricting the vehicular circulation on the Bridge, except in cases related to safety reasons or police enforcement.

Article 16:

1) The Contracting Parties agree that the design, construction, operation, and maintenance of the Bridge carried out by the Concessionaire will be exempted from the Value Added Tax otherwise applicable.

2) The Contracting Parties agree on reimbursing to the Concessionaire the Value Added Tax included in the real estate acquisition, constructions, leases, services and other taxable resources utilized in the design, construction, operation, and maintenance of the Bridge. For such purpose,

the contractors, subcontractors and suppliers will separately itemize the corresponding tax in their invoices for services provided to the Concessionaire.

3) exports bound to the Concessionaire and that will be utilized in the Bridge, by no means will give rise to incentives or export reimbursement from any of the Contracting Parties.

4) In regard to the activities referred to in §1 of the present Article, the Concessionaire shall be solely subject to the following taxation:

   a) Gross income tax, which will be determined in each Contracting Party as a function of the receipts collected from trips originated at that Contracting Party. The deductions will be computed in proportion to the aforementioned receipts and in accordance to the applicable legislation of each Contracting Party;

   b) Social security contributions and compensations, in accordance to clauses to be established in the additional agreement on social security regulations;

   c) Fees for services expressly included in and required by the concession contract that were effectively provided.

Article 17:

The Contracting Parties will not carry out nor authorize the construction of other fixed road link over the Río de la Plata unless the traffic intensity so justify it.

Article 18:

1) The Concessionaire will be able to utilize the structures of the Bridge as a support for laying either its own or third party's transmission and transport conveyors of energy, liquids, gases, and other substances, in accordance to the provisions set forth in the concession contract.

2) The Concessionaire will be able, within the area determined by Article 6 - §2, to provide with services related to the use of the Bridge, such as restaurants, duty-free shops, or gas stations, in accordance to the provisions set forth in the concession contract.

3) The Concessionaire will allow for the Contracting Parties to utilize, either by themselves or by third intermediaries, the structures of the Bridge for the purposes indicated in the preceding §1 and §2, in accordance to the provisions set forth in the concession contract, and if such use does not negatively affect the main purpose of the Bridge.

Article 19:

The Concessionaire shall carry out the permanent program of environmental protection indicated in Article 10 - §2, by adopting all of the measures necessary to either mitigate or prevent negative effects arisen during construction, operation, and existence of the Bridge. Such measures will be stipulated in the concession contract.

Article 20:

The concession contract will include clauses which require that controversies as to the interpretation or execution of such a contract arising from either the Contracting Parties or the Management Commission, on one side, and the Concessionaire, on the other, will be subject to the decision of an international tribunal of arbitration.

Article 21:

The decision of the international tribunal of arbitration will be definitive and shall not be appealed to the judicial organs of any State nor to any international tribunal. Such a decision will be executed as if it were made by a national tribunal authority.

Article 22:

The Concessionaire shall attempt to assure, when hiring technical and management staff and workers for the construction, operation and maintenance of the Bridge, a similar distribution of nationals of both Contracting Parties, according to the provisions of the concession contract and whenever possible.

Article 23:

The concession will be regulated by the terms of this Treaty, the Bidding Documents, and applicable norms of International Law.

Article 24:

The concession contract will be held between the Management Commission and the Concessionaire.

IV) THE MANAGEMENT COMMISSION

Article 25:

The Management Commission of the Buenos Aires-Colonia Bridge is created, for the purposes of its duty, as an international juridical entity.

Article 26:

The Management Commission will comprise five representatives of each of the Contracting Parties out of which, one will be a representative of the respective Ministries of Exterior Relations, one will be from the respective Ministries competent in public works, and one will be from the Río de la Plata Management Commission. As of the beginning of operations on the Bridge, the Contracting Parties may reduce the number of representatives by Exchange of Notes.

Article 27:

1) The Management Commission will have the following duties:

   a) Award the concession and sign the respective contract;

b) Ensure that the Concessionaire complies with this Treaty, the concession contract, and the Bidding Documents;

c) Approve and control in an exclusive manner, the permanent program of environmental protection referred to in Articles 10 - §2 and 19.

2) Other related functions may be added to the Management Commission's duties and will be assigned by the Contracting Parties in the Statute agreed upon by Exchange of Notes.

Article 28:

The Contracting Parties will empower the Management Commission of the Buenos Aires-Colonia Bridge to act when the present Treaty and the agreement by Exchange of Notes providing the Statute of the Management Commission come into effect. At that moment, the functions of the Binational Commission of the Buenos Aires Colonia Bridge created by Exchange of Notes on May 19, 1985, will come to an end.

Article 29:

The Management Commission will establish its Headquarters in the City of Buenos Aires from the moment this Treaty comes into force through the construction period of the Bridge. Upon completion of construction, such Headquarters will be established in the Department of Colonia until the end of the concession period.

Article 30:

1) The Management Commission will annually submit its proposed budget for the approval of the Contracting Parties.

2) The Concessionaire will finance the Management Commission by directly disbursing to the latter a percentage out of the receipts. The Contracting Parties will finance any shortfall not covered by the aforementioned disbursement on an equal parts basis.

3) While the Bridge is not operational, the Management Commission's expenditures will be met by the Contracting Parties on an equal parts basis, without prejudice to the disbursement made by the Concessionaire in accordance to the provisions of the concession contract.

Article 31:

The Management Commission shall enter into agreements with each of the Contracting Parties about Headquarters location and privileges and immunities of the commission's members and staff, according to international practice.

Article 32:

The Management Commission shall semiannually inform to the Governments of the Contracting Parties through the Ministries of Exterior Relations.

V) SETTLEMENT OF CONTROVERSIES

Article 33:

1) All controversies between Contracting Parties about the interpretation or application of the present Treaty that cannot be settled by direct negotiations or other peaceful means of their choice, will be submitted to the decision of a tribunal of arbitration.

2) The tribunal of arbitration shall comprise three members, two of which shall be designated by each of the Contracting Parties and the third one, who will chair the tribunal, shall be designated by agreement of both Contracting Parties.

3) Should there be no agreement, the third member shall be designated by the President of the International Court of Justice.

VI) ADDITIONAL INSTRUMENTS

Article 34:

1) To be applied during construction and operation of the Bridge, the Contracting Parties shall agree upon and enter into additional accords related to legislation about social security, labor relations, hygiene and safety in the workplace, and statutes and procedure regulations of the tribunals of arbitration provided in Articles 20 and 33.

2) These instruments will come into effect once the Contracting Parties communicate to each other that such instruments have been accepted in accordance to their respective constitutional structures.

VII) FINAL ARRANGEMENTS

Article 35:

The present Treaty will come into force as of the exchange of the ratification instruments.

Done at the City of Montevideo, Oriental Republic of Uruguay, the twentieth day of September, one thousand nine hundred and ninety-six, in two original copies of texts equally authentic.

(Signed by President Carlos S. Menem for the Government of the Republic of Argentina and by President Julio S. Sanguinetti for the Government of the Oriental Republic of Uruguay).