

Infrastructure Finance in Developing Countries by State and Multilateral Development Banks

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Abstract

Infrastructure concession is an alternative widely used by governments to increase investment. In the case of the road sector, the main characteristics of the concessions are: long-term projects, high investments in the early years of the contract and high risks. A viability analysis must be carried out for each concession and consider the characteristics of the project. When the infrastructure is located in a developing country, political and market growth uncertainties should be added in the concession project analysis, as well as economic instability, because they present greater risks. This paper is an analysis of state bank participation in road infrastructure finance in developing countries. For this purpose, we studied road infrastructure financing and its associated risks, and also the features of developing countries. Furthermore, we considered the issue of state banks and multilateral development banks that perform an important role by offering better credit lines than the private banks, in terms of cost, interest and grace period. Based on this study, we analyzed the Brazilian Development Bank - BNDES – and their credit supply to road infrastructure concessions. The results show that BNDES is the main financing agent for long-term investment in the sector, offering loans with low interest rates in Brazilian currency. From this research we argue that a single state bank should not alone support the increasing demand for finance in Brazil. Therefore, we conclude that there is a need to expand the supply of credit in Brazil, by strengthening private banks in the long-term lending market.

Keywords: infrastructure finance; road concession; state development bank; multilateral development bank; developing countries

1 Introduction

Transport infrastructures are essential for economic and regional development of a country, by promoting territory integration and improving accessibility between production and consumption. Traditionally, government funded infrastructure investment for some reasons. First, infrastructures are public utilities. In addition, infrastructure construction requires large amounts of investment and presents high risk, resulting in the lack of private sector interest. Therefore, these investments were supported by the government and the financial resources were coming from taxes.

However, today the world monetary policy imposes restrictions on public debt in many countries. So there is a trade-off between the need for continued and increased infrastructure investment and budget constraints not to mention the need to reduce the public deficit. Thus, funding public infrastructure by the private sector arose as an alternative to maintain the investment level and focus public spending on social areas.

For this purpose, governments legislated changes that allowed the private sector to fund and manage public infrastructure. These new financing mechanisms use private, mixed and PPP (public private partnership) funding, which are widely used today.

Developing countries also launched road concessions, mainly since the 1990s. In the case of Latin America, Vassallo and Izquierdo (2010) point out that Chile, Mexico, Colombia, Argentina and Brazil have a long experience and some successful models.

The reason for researching developing countries is due to the importance of these countries in the world today. This is highlighted by the high economic growth and projected growth in the coming years of these countries, even when compared with developed countries. According to the World Bank (2011), it is projected that between 2011 and 2025 developing countries will have an average growth of 4.7% annually, double of the projected rate for high-income countries in the same period.

Moreover, the Organization for Economic Co-operation and Development (OECD, 2010) predicts that gross domestic product (GDP) for developing countries will surpass the developed countries in 2030, and will account for nearly 60% of world GDP. The study also concludes that although global structure shifting has been ongoing for twenty years, it is still necessary to study issues on developing countries to better understand their opportunities and risks.

In this global economic context, we can observe that developing countries demand financial credit to maintain their growth rates. However, these countries have greater uncertainty than developed countries, that generate greater risks, so they must adopt different types of finance mechanisms to make their projects viable.

In this sense, state banks and multilateral development banks play a key role in financing infrastructure investments in developing countries. These banks reduce the risk projects in these countries, by offering loans with lower interest rates, longer terms of payment, as well as longer grace periods than open credit market can offer.

1.1 Objective and methodology

In this paper we aim to investigate infrastructure finance in developing countries by state banks and multilateral development banks. The focus of the research is to study the reasons for financial participation of these organizations in road concessions in developing countries, as well as to analyze the loans characteristics.

Thus, the question proposed for this research is: How do state banks and multilateral development banks participate in the investments in road infrastructure concessions in developing countries?

In this investigation we used the following methodology. First we analyzed the finance models of road concession. We then examined the features of developing countries and their risks. Next, we studied the purpose of state banks and multilateral development banks to stimulate investment and present the example of the Brazilian Development Bank - BNDES. Finally, we examined the case of road concessions finance in Brazil.

2 Infrastructure Concession Finance

In the last twenty years many countries promoted infrastructure concession in order to avoid public deficits and to incentivize private finance. The concession is a contract between public and private entities when private parties participate in managing and financing a public infrastructure.

This type of contract transfers construction, maintenance, and operation of the asset to a private consortium, which sets up a single purpose entity known as a Special Purpose Vehicle (SPV), for a set period of time. During this period, the concessionaire receives income based on the usage of the facility. In addition, the concessionaire must satisfy contractual performance level based on the quality of service provided. Vassallo and Izquierdo (2010) present three main characteristics of a concession: risk transfer; asset transfer, but not its property; and a limited period of time.

The most common finance mechanism for road concessions is project finance. It is a long term financing method based on the projected cash flow of the project, which should be capable of producing enough cash to cover initial, operating and debt costs over the whole concession period. Concessions are capable of generating adequate returns in the long term, as they become profitable after about 10 years of

operation, and are potentially interesting business proposals (Pinglo, Guasch and Foster, 2005). So, as a long term project, a concession environment requires clarity in the legislation and regulatory structure.

Furthermore, the economic feasibility of the project depends on detailed analysis of the project and its cash flow, which demonstrates whether a project can provide enough profit for developers and pay debts and shareholder dividends. However, that analysis is complex because it involves cash flow projections, that involve various types of risks.

In fact, a risk study is important because uncertainties affect key variables of the project, such as the traffic flow that is a variable needed for forecasting revenues. Concerning to this fact, Engel, Galetovic and Fischer (2002) show examples that demand risk is a characteristic of private roads. It is essential, therefore, to achieve an optimal risk distribution, allocating risks to the entity which are more efficiently managing them. Some risks can be mitigated by guarantees and insurances. An example is the minimum income guarantee, given by the government to minimize the risks associated with traffic demand. Insurances are mostly used for unpredictable circumstances.

Therefore, risk identification and allocation is a key component of project finance. Ke, Wang and Chan (2010) carried out a comparative analysis of risk allocation preference in different countries and concluded that the maturity of the PPP market would influence the private sector's willingness to undertake more risks in PPP projects.

For this purpose the analysis of a project must take into consideration many features: technical, environmental, economic and political, in the area where the project is being constructed and operated, especially in developing countries because they present unstable environment.

2.1 Finance in developing Countries

The rapid expansion of infrastructure concessions occurred all around the world; more than 2,560 projects were launched between 1985 and 2007 in 80 countries (Vassallo and Izquierdo, 2010). Data from developing countries show that there is an accelerated implementation of such projects in Asia and Latin America. In addition, transportation projects represent 50% of all projects.

In the present study, the term developing country relates to the economic and financing aspects of the countries. From this perspective, the main features of developing countries are: low-income economy, social problems, such as inequality, and high rates of economic growth and industrialization, reaching higher levels of development. Thus, as concluded by the World Bank (2011), developing countries are driving global growth, but remain risky and must be studied in order to mitigate these risks efficiently.

The World Bank report also identifies three main short-term risks in developing countries: tensions in financial markets, large and volatile capital flows, and a rise in high food prices. So, for the longer-term, countries need to shift focus from short-term crisis management toward measures that address underlying structural challenges.

The OECD (2010) highlights that private finance and investment are crucial for developing countries to achieve sustained economic growth. However, the study concludes that there are few developing countries able to get sufficient national funding and foreign investment to meet this challenge.

Pinglo, Guasch and Foster (2005) set out that infrastructure concessions in Latin America are a high risk investment proposal, which explains why the required rates of return on such investments are high. Thus, developing countries should drive a stable and sustained growth in order to attract finance and investment from the private sector. In addition, state banks and multilateral development banks can mitigate investment risk in developing countries. Such credit institutions might encourage the private financing and investment, and reduce investors perception of high-risk in developing countries.

3 State Banks and Multilateral Development Banks

The main purpose of the state development banks is to promote economic and social development of the country, particularly in economic sectors and regions with limited resources, also where projects have high risk or require significant initial investment.

On the other hand, multilateral development banks are not banks in the ordinary sense, they are organizations owned by its member countries. These institutions aim to foster the development of its member countries and, except for the World Bank, they work by continents such as the Inter-American Development Bank (IDB) and the European Bank for Reconstruction and Development (EBRD).

However, the economic basis of state banks and multilateral development banks is not only related to its relevance in offering credit lines, especially sectors that lack private finance. These organizations also play an important role as an instrument to support government economic policy during a crisis that affects the private sector.

Moreover, development banks are the main sources of funding for infrastructure concession, including transport. For example, the road concession projects, implemented from the 1990s, which were heavily financed by multilateral development banks (Pereyra, 2006).

The reason is because these entities provide a lower debt cost than the private market, as well as longer periods of payment and longer grace periods. The debt cost is the result of the sum of the financing cost, with the administration cost of the financial institution and the spread of risk.

Many countries have state development banks. According to Serapião (2010), a Russian State Bank report identifies 750 institutions, including banks, agencies and funds. Comparing these institutions by asset value, the ten largest state banks in the world in 2008 had more than 30 billion dollars and belong to: China, Germany, South Korea, Brazil (BNDES), Japan (two banks), Spain, India, France and Russia.

In order to evaluate the objectives of each state bank and its role in the development of the country, it is necessary to study both the economics and history of the country. However, according to Golonbek and Sevilla (2008), there are some similarities in these institutions, such as the main objective that is to consolidate credit structures of the country and to promote sustained economic growth in some special areas, such as infrastructure sector.

3.1 Brazilian Development Bank – BNDES

The Brazilian Development Bank (BNDES) was founded in 1952 to promote national economic development policies. The BNDES main objective is to foster investment in the country by funding projects from all sectors of the economy in the long term. This bank offers several financial support mechanisms to companies, individuals and public administration entities.

The BNDES is the main financing agent for development in Brazil and plays a fundamental role in stimulating the expansion of industry and infrastructure in the country. Its current priorities are infrastructure, exports, local production arrangements and social inclusion. For comparison, in 2010 the BNDES offered 96.32 billion dollars in credit, three times what the World Bank offered.

Since this paper collects data from investment in Brazil, it is necessary to clarify the exchange rate of the Brazilian currency (real R\$). The average annual value of real for one dollar was: R\$ 1.76 in 2010 and R\$ 1.67 in 2011.

Regarding the current performance, the BNDES's disbursements closed the year 2011 at R\$ 139.7 billion (US\$ 83.6 bn). The highlight in 2011 was the bank's transfers to large infrastructure projects, representing 40% of total disbursements. The most significant amounts were for road transport, at R\$ 26 billion (US\$ 15.6 bn), and electricity, at R\$ 15.9 billion (US\$ 9.5 bn). The bank disbursed 32% of its total disbursements to industry and 21% to trade and services. The BNDES registered a net profit of R\$ 9.9 billion (US\$ 5.9 bn) in 2010. The result represents an increase of 47,2% compared to 2010, as shown in Figure 1.

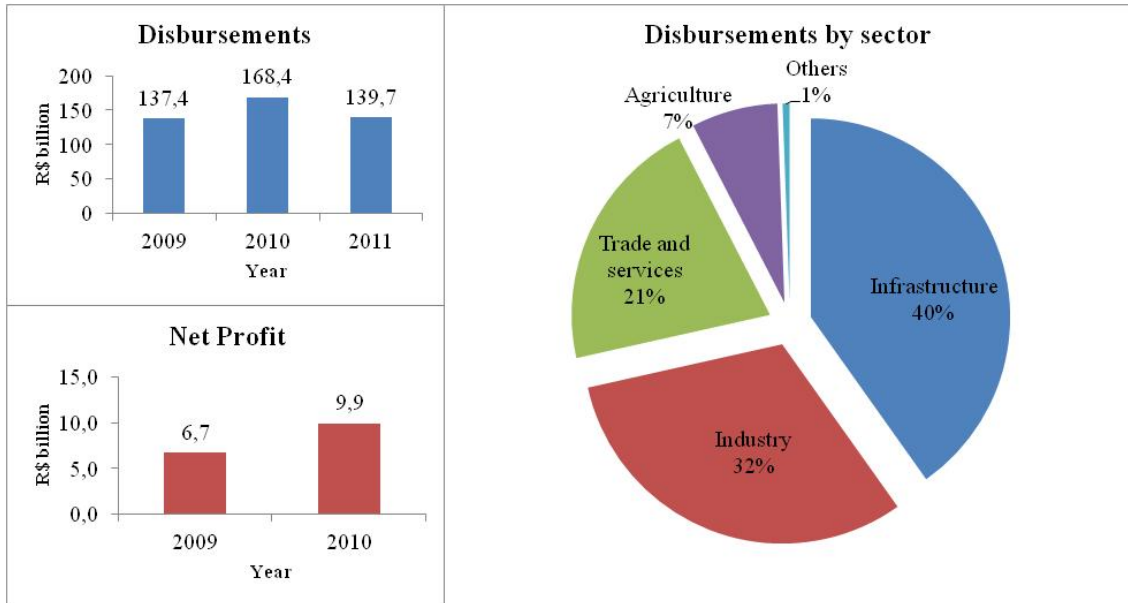


Figure 1 - BNDES disbursements and net profit. Source: BNDES (2011)

The BNDES has many sources of funding, the main one is a steady source from social integration funds of unemployment insurance. The Bank also raises funds from: the National Treasury; return on financing operations; foreign fundraising on the international capitals market and multilateral development banks; fundraising on the domestic market.

The final interest rate used in BNDES loans varies according to the type of support, the type of operation, and region. Figure 2 shows BNDES financial cost structure.

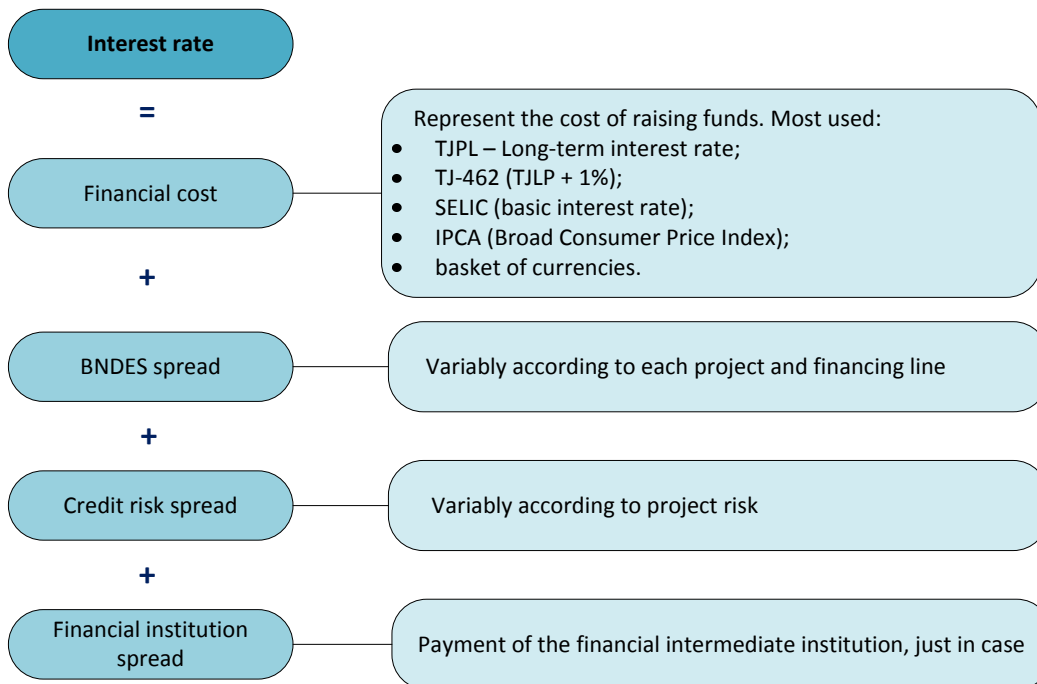


Figure 2 - Structure of BNDES financial cost. Source: BNDES (2011)

The main financial cost and most used by the BNDES is the Long-term Interest Rate (TJLP – Taxa de Juros de Longo Prazo). This rate is defined by the Brazilian Central Bank and incorporates the forward-looking inflation target and a risk premium. Since 2009 the TJLP stands at 6%, having steadily been reduced from 12% in 2003.

Compared with another Brazilian market indices, a basic interest rate (Selic) of 11.7% in 2011, we can say that the TJLP is the most significant competitive factor of the BNDES in the domestic financial market.

Another aspect of the BNDES is that it not only plays a role of a credit bank, but also as a development agency, that studies the project design as well as finance mechanism, feasibility and guarantees.

4 Financing road concessions in Brazil

In 2011 Brazil became the sixth largest economy in the world, the largest economy in Latin America and the second in America. Brazilian Gross Domestic Product (GDP) in 2010 was 2.087 trillion dollars, with a per capita income of US\$ 10,984. The country recorded a growth of 7.5% in 2010, the best result for the past 24 years.

Road is the dominant transport mode in Brazil for freight and passengers. In the modal split, shown in Figure 3, a total of 61% freight and about 63% of total long distance passenger movement are transported by road.

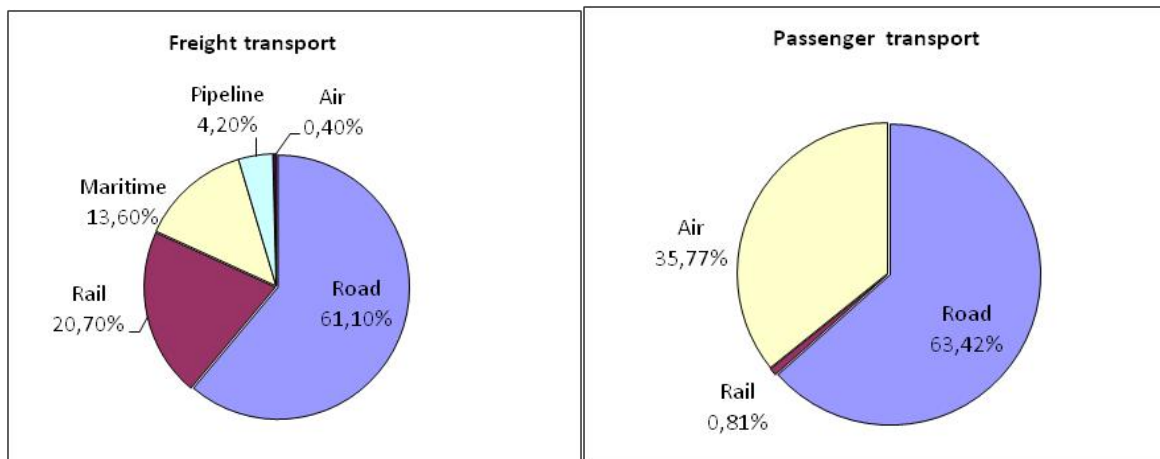


Figure 3 - Modal split of transport in Brazil. Source: CNT (2011)

Currently the road network in Brazil has 1.58 million kilometers, where 75,700 kilometers are the responsibilities of the federal government, 243,300 kilometers of the state government and 1.26 million kilometers are municipal. The road network is more concentrated in the Southeast and South of the country, consistent with the population distribution, with a higher density in the same area.

4.1 Road Concessions in Brazil

The 1988 Brazilian Constitution was the milestone that allowed the concession of public infrastructure for a private entity. After 1994, the federal and state governments began to sign road concession agreements, mostly for 25 years. Figure 4 shows the evolution of the road concession program in Brazil, according to data from the Brazilian Road Concession Association (ABCR). Currently, Brazil has 15,222 km length of road concessions.

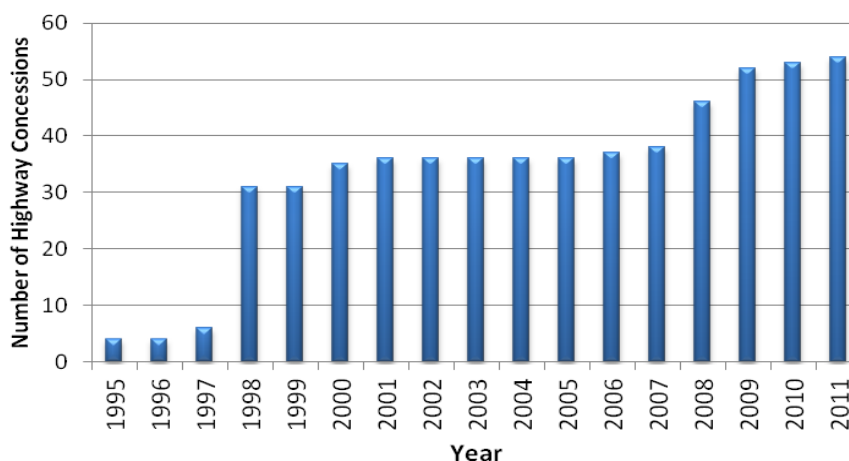


Figure 4 - Evolution of Road Concessions in Brazil. Source: ABCR

For the analysis of credit conditions, this paper will be restricted to roads granted by the federal government, because their concession program has currently 4,763 kilometers, representing one third of the total length of concessions in the country and 7.6% of the total federal paved roads.

Concessions granted by the federal government can be divided into two groups:

- first phase: concessions granted between 1995 and 2000;
- second phase: concessions granted after 2008.

First phase concessions had the BNDES as the main source of finance at the beginning of the concession period. Today these concessions are more than 10 years since they were granted, so they are in the half of the total period and have reduced investment needs. On the other hand, the second phase concessions are still in the early years of the contract, and need high levels of investments.

4.2 Road concessions finance in Brazil

For road concessions projects, the BNDES provides a loan that covers, in general, 75% of the total investment (Prates, Cintra and Freitas, 2000). The credit procedure has two distinct phases. First the bank gives a bridge loan, for one year period, which will finance the first stage of the project. After, this bridge loan is replaced by long-term loans. The BNDES participates throughout the process, with multilateral development banks, like the World Bank and IDB.

In the last three years, the BNDES has disbursed R\$ 8.541bn for the road concession program. In addition to loans, the BNDES also funds by acquiring debentures of concessionaries, through its subsidiary BNDESPAR, which aims to strengthen the capital structure of private companies and to develop the Brazilian capital market.

The data for the loans of road concessionaires were obtained from the 2010 Financial Statements and Reports published by the companies and the federal regulatory authority - Agência Nacional de Transportes Terrestres (ANTT), which is responsible for monitoring the federal transport concessions.

The current short and medium-term loans amount to R\$ 1.766bn, and the BNDES participation is 64% of the total, as shown in Table 1.

From the analysis of Table 1, we can conclude that loans of the second phase concessions are mostly provide by the BNDES, with 89% of the total. As the second phase concessions are the most recent concessions, the data confirms that the BNDES supports concessions in the early years of contract with bridge loans, while long-term loans are being analyzed.

Table 1 – Loans in short and medium-term

	Total Loan (R\$* millions)	BNDES		Private Banks	
		Loan (R\$ millions)	Participation	Loan (R\$ millions)	Participation
1 st phase	496	0	0%	496	100%
2 nd phase	1,269	1,129	89%	140	11%
Total	1,766	1,129	64%	636	36%

Own elaboration (Source: ANTT and BNDES)

* US\$ 1.00 ≈ R\$ 1.76 (2010)

After the early years of the concession period, the BNDES does not provide short and medium-term loans. Therefore, private banks supply the credit demand of the old concessions (first phase), which lend 100% of short and medium term loans, as shown in Table 1. Regarding financial costs of short and medium-term, loans from the BNDES are always based on the TJLP (Long-term interest rate). Other spread costs, that form interest rate, varies between 2.6% and 3.58% per year.

The private banks use TJLP and CDI as a basis of their financial cost. Other spread costs vary too much, between 1.5% and 28.5% per year, reflecting market conditions at the time of the loan approval. We must clarify that CDI - Interbank Deposit Certificate - are papers issued by financial institutions that are limited to use to interbank market operations, and in 2011 had an interest rate of 10.52%. In fact, comparing CDI with TJLP, which is at 6% per year, we note that loans based on CDI are more costly for road concessionaries.

There are no long-term loans contracted with private banks for any federal concession road, so long-term credit supply is all from state banks, see Table 2.

Table 2 – Loans in long-term

	BNDES	
	Loan (R\$* millions)	Participation
1 st phase	89	100%
2 nd phase	4.257	100%
Total	4.345	100%

Own elaboration (Source: ANTT and BNDES)

* US\$ 1.00 ≈ R\$ 1.76 (2010)

As well as in short and medium-term, the BNDES long term financial costs are based on TJLP and other spread costs range from 1.8% and 8% per year. However, second phase concessions have an average spread costs of 2.3% per year. It is worth noting that there are some loans that do not have any spread cost, the final interest rate is TJLP, but those credits must be applied for social investments.

Those BNDES long-term loans have long grace periods, up to 5 year for loans with a term of 10 years. Therefore, the BNDES is the main financing agent for road concessionaires in Brazil, as shown by the data analysis conducted for this paper. This participation promotes the road concession program and achieves the objectives of government policy.

5 RESULTS AND DISCUSSION

From this study we observed that besides infrastructure, road concession projects require high capital investments and long-term financing. We also noted that in the last two decades the number of concession projects launched has grown continuously. Thus, a question arises: how can concessionaries raise funds to invest? In other words, what is the financial model that makes concession project feasible?

The supply of long-term credit is generally not attractive for private banks, because they lose liquidity. In countries with a developed capital market, this can be an option to capture the necessary resources. In the case of developing countries, which do not have a developed capital market and there is no incentive to long-term private credit, state banks and multilateral development banks are the suppliers to finance infrastructure.

Thus, the case of the BNDES has been studied in this paper. The BNDES is a Brazilian state bank that aims to promote development in the country, providing financial support to national industries and infrastructure. In the case of road concessions, the BNDES lends long-term, with a lower interest rate than the private market and in Brazilian currency, thus eliminating exchange rate risk.

This research demonstrated that BNDES is the main financing agent for investment in road concessions in Brazil. According to the loans data of the federal road concessionaries, BNDES supplies 64% of total credit contracted in the short and medium-term and 100% in long-term.

The study also shows that the interest rate used by the BNDES in those loans is lower than that used by private banks. This is because the financial costs of the BNDES are based on the Long-term Interest Rate (TJLP), which at the time of writing is at 6% per year, while private banks use the Interbank Deposit Certificate (CDI), which was at 10.52% in 2011. Moreover, the BNDES loans have longer terms of payment and grace period than the private ones.

We conclude that BNDES is in fact the largest lender in this sector in Brazil and the TJLP interest rate is the competitive factor of the bank in the credit market.

However, there are some issues that arise from the analysis of the current funding model used in Brazil. The first issue is whether the BNDES is able to sustain the growing financing needs of the country. Another point is that most of the BNDES sources of funding, representing 75% in 2010, are from the government budget or funds, so does not meet a basic concession foundation, that investments should be undertaken by the private sector.

The Brazilian government should launch measures to boost the supply of credit by the private sector in order to relieve the BNDES from meeting the demands for financial investment. One possible measure is to reduce the Brazilian interest rate, so that private banks also reduce their interest rates. In addition, it is necessary to develop new financial mechanisms to incentivize private institutions to provide long-term credit.

In conclusion, the BNDES has helped the development of the road concession program in Brazil, by supplying credit under better conditions than private banks. On the other hand, it is worth noting that to maintain the level of infrastructure investment, which is the foundation for the country's growth, it is essential to broaden the financial credit. The Brazilian government should introduce policies to stimulate private credit. In the meantime the BNDES should continue to be the main finance institution in Brazil for the coming years.

References

- BNDES (2011). Annual Report – Financial Statements. <http://www.bndes.gov.br>.
- CNT – Confederação Nacional do Transporte (2011). Boletim Estatístico 2011. <http://www.cnt.org.br>.
- Engel, E., Galetovic, A. and Fischer, R., (2002). "A New Approach to Private Roads". Regulation, v. 25, no 3, pp. 18-22.
- Golonbek, C. and Sevilla, E. (2008). "Un Estudio de Casos sobre Banca de Desarrollo y Agencias de Fomento". Documento de Trabajo no 20. Centro de Economía y Finanzas para el Desarrollo de Argentina, Buenos Aires.

- Ke Y., Wang. S. and Chan A. P. C. (2010). "Risk Allocation in Public-Private Partnership Infrastructure Projects: Comparative Study". *Journal of Infrastructure Systems* v. 16, no 4, pp. 343-351.
- Mourougane, A. and M. Pisu (2011). "Promoting Infrastructure Development in Brazil", OECD Economics Department Working Papers, no. 898, OECD Publishing.
- Ng, A. and Loosemore, M. (2007). "Risk allocation in the private provision of public infrastructure." *International Journal of Project Management*, v.25, pp. 66-76.
- OECD (2010). *Perspectives on Global Development 2010: Shifting Wealth*. OECD, Paris.
- Pereyra, A. (2006). *Articulación Público-Privada en el Financiamiento de la Infraestructura de Carreteras en Uruguay*. Anais do Congresso XX ANPET - Congresso de Pesquisa e Ensino em Transportes, Brasília.
- Pinglo, M.A., Guasch J.L. and Foster V. (2005). "How profitable are private infrastructure in Latin America? Empirical evidence and regulatory implications." *The Quarterly Review of Economics and Finance*, v. 45, pp. 380-402.
- Prates, D. M., Cintra, M. A. M and Freitas, M. C. P. (2000). "O papel desempenhado pelo BNDES e diferentes iniciativas de expansão do financiamento de longo prazo no Brasil dos anos 90". *Economia e Sociedade*, v.15, p.p 85-116.
- Serapião Jr., C. (2010). BNDES brilha em relatório de banco russo. www.amanha.com.br.
- Vassallo, J. M. and Izquierdo, R. (2010). *Infraestructura Pública y Participación Privada: conceptos y experiencias en América y España*. CAF, Madrid.
- World Bank (2011). *Multipolarity: The New Global Economy*. *Global Development Horizons 2011*. World Bank, Washington.
- www.abcr.org.br - Associação Brasileira de Concessionárias de Rodovia
- www.antt.gov.br – Agência Nacional de Transportes Terrestres
- www.bndes.gov.br - Banco Nacional de Desenvolvimento Econômico e Social