



Pension Trends

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Lessons from the Chilean Experience on Infrastructure Funding via Private Pension Funds

- There is a close relationship between infrastructure and economic growth. Latin America however has a deficit both in terms of stock and infrastructure quality, lagging behind other countries with comparable per capita income levels.
- In the early '90s, Chile implemented a BOT contracts system for public works in order to tackle this deficit. This system includes the private sector in the provision of public infrastructures. It is important to highlight that broad political consensus was reached concerning the importance of reducing this deficit and that both State resources and traditional mechanisms for delivering public works were not enough to meet this target.
- In developing countries with shallow financial and capital markets, it is not common to find investors willing to make long-term investments. This is why the main long-term sources of capital for these nations are pension funds and insurance companies.
- At the beginning, pension fund regulations did not allow them to be involved in funding infrastructure projects. Due to the creation of the infrastructure bond in 1998, this restriction was lifted.
- A significant pension fund contribution to the funding of private projects based on public infrastructure BOT contracts can be noted in Chile.
- The Chilean experience is interesting since both public and private agents joined together to lift those restrictions preventing institutional investors from funding infrastructure projects. This was achieved without having to get rid of regulations protecting these industries or those safeguarding the BOT contracts system.

1. Infrastructure, economic growth and income distribution.

There is a close relationship between infrastructure and economic growth. The World Bank estimates that for each 1% increase in the GDP growth rate, investment in traditional infrastructure ¹ needs to increase by 1% in terms of GDP, since economic growth increases the demand for infrastructure by companies and individuals.

Infrastructure is also a key factor in increasing productivity and economic growth (Aschauer, 1989; Calderón and Servén, 2004 and 2006)². More and better infrastructure means lower production costs, since logistic costs and costs derived from capital tied up in large inventories are reduced (Fay and Morrison, 2007). Infrastructure is also a key success factor in making the most of a country's involvement in international trade, as it helps the efficient redistribution of resources, fostering export growth and the country's potential to attract foreign direct investment. Finally, more and better infrastructure enables companies to increase their productivity, therefore allowing them to be more competitive on an international level.

From a different perspective, infrastructure can potentially help reduce poverty and inequality, especially in poor or developing countries and beyond its impact on GDP. There are many reasons for this. Recent literature shows that infrastructure helps improve employment opportunities and income expectations for the poor thanks to the positive impact on its human capital. The impact of infrastructure on the poor's human capital is linked to improvements in health and education. Access to drinking water and sewage systems has a critical impact on health and, according to the WHO, a lack of such services is one of the main causes of infant mortality. More and better transport infrastructure is also thought to increase school attendance levels and time devoted to education, particularly in remote communities, due to a reduction in transport costs.

When poor or underdeveloped areas expand their infrastructure, opportunities for the local population increase, as links to economic activities improve (Estanche, 2004), in addition, the cost of accessing markets drops therefore reducing production and transaction costs. Escobal and Torero (2005) show that by increasing access to a number of types of infrastructure, there is a considerable impact on agricultural productivity and productive diversification in Peru's rural areas.

However, for this increase in stock and/or the quality of infrastructure to have a positive impact on income equality and the poor's quality of life, it is fundamental that such improvements in infrastructure benefit the population. This is not linked to the public or private nature of the infrastructure provision, but rather to the design of reforms, processes and public policies undertaken by the State.

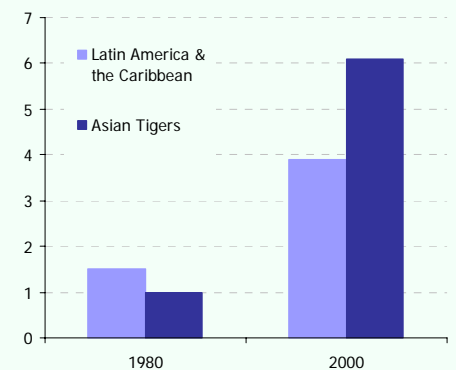
2. Infrastructure in Latin America

Despite the many benefits linked to improvements in infrastructure, investment in Latin American infrastructures has been disappointing. While both the quantity and quality of infrastructure has improved in most countries in the region, progress achieved has been insufficient, lagging behind in comparison with its competitors. As seen in graphs 1 and 2, the region has greater coverage of productive infrastructure –roads, electricity and telecommunications– in 1980 than the so-called Asian Tigers. Latin America is a region with medium-high income and its average infrastructure coverage is the lowest among the medium income countries (Fay and Morrison, 2007).

¹ Traditional infrastructure includes transport, telecommunications, energy, water and sewage.

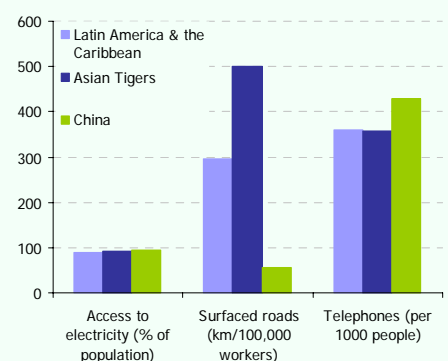
² Initial empirical research, like Aschauer's 1989 study, did not consider the dual causality between economic growth and infrastructure, which leads to an overestimation of the impact of infrastructure on growth. Research that demonstrates this dual causality also finds a significant positive impact (see Calderón and Servén, 2004 and 2006).

Graph 1: Infrastructure Rate



Source: Fay & Morrison, 2007. The rate considers 1 to be the value of the Asian Tigers in 1980.

Graph 2: Existing Infrastructure Rate



Source: Fay & Morrison, 2007

According to World Bank surveys undertaken between 2001 and 2004, only 18% of business people in Eastern Asia consider that infrastructure is a serious problem or obstacle to their companies' operation and growth, while in Latin America, this figure represents 55% of Latin American business people, having a negative impact on the region's competitiveness.

The debt crisis experienced during the '80s required significant tax consolidations and adjustments. In most countries in Latin America, public investment – particularly in infrastructure– was most affected by tax adjustments. Public investment in infrastructure in the region was reduced from over 3% of GDP in 1988 to around 1.6% in 1998 (Fay and Morrison, 2007). Graph 4 shows a matching trend between primary deficit and public investment in infrastructure.

During this period, the strategy was to involve private investment in infrastructure, as public investment was being taken away. While private investment was successfully won³, it was not enough to make up for the sharp fall in public investment, with the exception of Colombia and Chile. Taking into account just Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru and Venezuela, figures show that public investment fell from 3.1% of GDP in 1980-85 to 0.8% of GDP in 1996-2001, while private investment only increased from 0.6% to 1.4% on average during this same period. Total investment in these 8 countries fell from an average of 3.7% of GDP in 1980-85 to 2.2% of GDP in 1996-2001.

Fay and Morrison (2007) show that the distribution of private involvement in infrastructure investments was highly uneven amongst sectors and countries in the region. Six countries –Argentina, Brazil, Chile, Colombia, Mexico and Peru– received 93% of resources. In addition, between 1990 and 2003, only 29% of private financial flows were directed at brand new infrastructure projects, whereas 54% of them related to privatization projects and 17% to BOT (Build, Operate, and Transfer) contracts of existing assets. While private participation tends to improve the quality of infrastructures – a very positive note - it is important to remember that the region has a significant stock deficit that was magnified during this period.

Unfortunately, since 1998, private investment in infrastructure has decreased considerably. Many countries that received private investment have finished their major privatization programs which, in view of the aforementioned figures, seemed to represent the main attraction for investors. In 2003, there was no privatization and new projects represented 72% of private investment projects in infrastructure, while investment levels for the year only reached US\$16 billion, a 77.5% fall in 5 years. Political and regulatory risks have also hindered private investment in infrastructure in Latin America. For example, most BOT contracts granted in Argentina were indexed to the US dollar and US inflation by contract, but after the 2001 crisis, the Argentine government converted all rates in dollars to devalued pesos and then rejected any significant adjustments to those rates. Ausol, a company that was awarded a major Argentinian highway project, recently announced that it was going into receivership due to the fact that “the company's financial position was aggravated by the government's decision to freeze toll prices”⁴. Another example is Peru's Matarani harbor BOT contract project, where the government unilaterally changed the BOT contract term from 30 years to 15 years (Guasch, Laffont and Straub, 2005 quoted by Fay and Morrison, 2007). It is essential that governments increase their commitment and respect for a level playing field.

Lastly, private investment in infrastructure has mainly come from foreign players, which means that projects are also subject to foreign exchange risk.

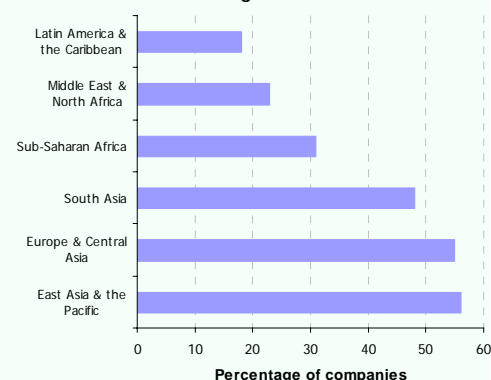
3. Transport infrastructure BOT contracts in Chile

During the early '90s, there was a significant infrastructure deficit in Chile. In 1993, the Chilean Ministry for Public Works (Ministerio de Obras Públicas, MOP) estimated that the infrastructure deficit for the 1995-1999 period amounted to approx. US\$12.5 billion and annual losses for their lack of competitiveness due to insufficient infrastructure were estimated at US\$2.3 billion.

³ Between 1990 and 2003, the region received around half of the US\$789 billion in private resources invested in infrastructure in developing countries (Fay and Morrison, 2007).

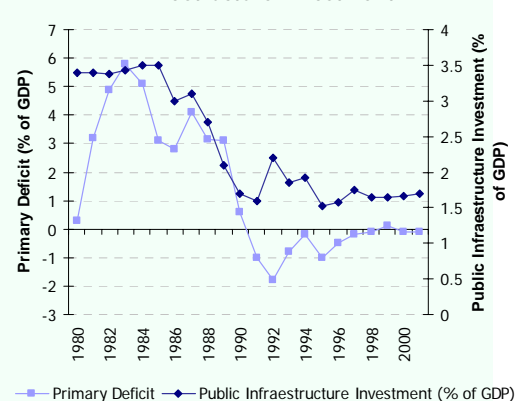
⁴ América Economía, 11 November 2009.

Graph 3: Companies that believe infrastructure represents a serious problem, broken down by region



Source: Fay & Morrison, 2007

Graph 4: Primary Deficit & Public Infrastructure Investment



Source: Servén, 2005

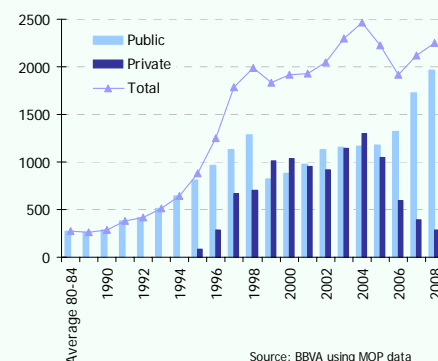
In 1993, under the strong momentum achieved by MOP minister Carlos Hurtado, an agreement was created around the insufficiency of public infrastructures to provide the country with the appropriate support to embark on a rapid growth period. The real novelty about this situation was the consensus reached on the fact that State resources and the traditional system for the provision of public work were not enough to tackle the high infrastructure deficit. The conclusion was that the best alternative meant involving the private sector in productive infrastructure investments. A new BOT (Build, Operate and Transfer) concession system was established, meaning that the company awarded the concession had to fund, build, operate and ultimately transfer, once the contract had finished, ownership of the work to the State. This policy, together with the increase in public investment, started to progressively reduce the infrastructure deficit that was hindering the country's economic growth.

The first project awarded on a BOT contract basis was the "El Melón" tunnel in 1993. Following the project, a number of deficiencies were identified and corrected in subsequent legislation. In 1996, protection of third parties responsible for funding the company awarded the BOT contract was improved by creating a new legal feature known as a "special pledge for public work BOT contracts" (*prenda especial de concesión de obra pública*). This pledge would be agreed upon by the company awarded the BOT contract and its creditors in case of bankruptcy and could relate to the public work BOT contract right, the payment agreed by the State and made to the company awarded the BOT contract and the company's revenues. This legal concept was crucially important since it allowed for the creation of long-term investment guarantees, a fundamental prerequisite for receiving financial resources via the issue of bonds, which would be attractive for institutional investors.

The BOT contract system has driven infrastructure investment forward, as by involving the private sector, State investment has increased in momentum and flexibility by getting rid of the traditional obstacles and rigidity imposed by publicly financed projects.

As well as promoting infrastructure investment and enabling the private sector's involvement in this activity, the BOT contract system factors in an element of equality to investments in public works. Under this system, the direct beneficiaries pay for their use of the infrastructure in projects such as roads, ports and airports where demand mainly results from productive industries and users that typically come from the upper-end income bracket. This BOT contract system therefore enables the State to release resources that may be used in other areas with greater social impact, such as health and education. The system could therefore help a more progressive approach to public expenditure.

Graph 5: Investment in Transport Infrastructure. Millions of US\$, 2008.



Box I

Chile's BOT Contract System Regulatory Framework

Concessions are a type of privatization which aims to increase efficiency and wellbeing. Since the provision of most infrastructure types is subject to significant economies of scale derived from existing natural monopolies, it is not possible to create a competitive market. The concession system deals with this limiting factor by introducing "*competition for the playing field rather than competition on the playing field*".

The competitive bidding mechanism must encourage the most efficient company to be awarded the project; in addition, as the project awarded is usually a monopoly, the regulator must avoid the company awarded the concession from obtaining monopolistic income, awarding the project at a competitive price.

MOP's Decree 900 (Decreto N° 900), which regulates the concession system, states that these projects must be approved by organizing an open competitive bidding process which may be awarded to any company, either national or foreign. If the company awarded the concession is foreign, the company must be incorporated in Chile in the form of a corporation subject to Chilean legislation. The law is flexible enough so that the concession agreement may be adapted to the specific needs of each project. A number of variables may be considered when bidding for a project of this kind: i) the fee that users will pay and its readjusting mechanism; ii) the concession term; iii) State subsidies offered to the bidder, for projects with negative private profitability but positive social profitability; iv) minimum income guaranteed by the State - in exchange for this, the company awarded the concession may share the excess income with the tax authorities if the project becomes profitable over a specific threshold; v) payments to be made by the company awarded the concession to the State for the existing infrastructure; vi) risks born by the company awarded the concession during the construction or operation of the project; vii) quality of the technical bid; viii) overall income for the concession; ix) environmental aspects to be considered. The bidding terms and conditions may include one or more of the variables mentioned above.

The MOP will manage the bidding process for a project, to which the relevant companies shall bid; the project will be awarded to the company presenting the most attractive proposal. The company awarded the concession must incorporate a company with which the State is deemed to have entered into a concession agreement. The company awarded the concession shall build and fund the infrastructure project; the project will then be operated by the company and a fee will be charged for the service provided for an extended period of time, between 10 and 30 years. Once this period has ended, the infrastructure will be transferred to the State.

The company awarded the concession must build the project based on a stipulated timeframe and specific quality standards must be maintained, providing an uninterrupted service level based on the winning bid; the company awarded the concession will otherwise be subject to fines and even the concession's suspension or cancellation. The MOP will supervise and tax the project's construction and operation either directly or by outsourcing it to specialized private companies. In the event of a disagreement between the MOP and the company awarded the concession, an arbitration mechanism led by expert witnesses is provided for in the law. This mechanism will be allocated in advance, in order to resolve any potential conflicts.

Both private companies and individuals may make proposals to the MOP for its consideration; the MOP shall assess them and ultimately manage a bidding process to award a concession. The MOP may reimburse bidders their proposal costs or at least a part of them.

The MOP has also offered contracts with additional guarantees relating to minimum income or the overall income for the concession. Companies awarded concessions have been able to access foreign exchange insurance specifically linked to the repayment of their external borrowings. The State would pay the company awarded the concession the excess costs incurred by servicing the debt if the exchange rate increased more than 10% and, based on the same principle, the opposite would apply if the currency dropped more than 10%.

In 2002, the MOP included an income distribution mechanism for negotiating additional works to the existing concessions. This compulsory compensation mechanism means that the State guarantees the company awarded the concession a certain level of income at present value for the entire concession term. Under this compensation agreement, the total guaranteed income is established based on a growth rate which is then discounted at a fixed annual real rate (9.5% for contracts entered into so far). The concession finishes when the real income's present value for the concession reaches the guaranteed value, therefore transforming a fixed-term contract into a floating one. If the concession has not received the guaranteed income by the maximum term stipulated in the relevant concession law, the State will subsidize the difference. The premium for such insurance will vary based on the guaranteed income levels and shall be payable in the form of additional works for the same concession. During 2003 and 2004, five companies chose to adhere to this income distribution mechanism.

It is worth noting that this income distribution mechanism has been widely questioned (see Engel et al. 2008) since the value of the guaranteed income is determined by bilateral negotiations – between the State and the company awarded the concession – rather than via a bidding process. Due to the general principle that any bilateral negotiation is always dominated by competitive bidding, an efficient outcome cannot be ensured from a cost perspective.

4. Infrastructure funding by pension funds in Chile

Pension funds have accumulated huge capital volumes in relation to the size of Chile's economy – in October 2009, these amounted to 66% of the country's GDP. Pension funds in Chile can only invest in financial instruments and the sole objective from an investment point of view is to achieve maximum return alongside reasonably limited risk.

Investments made by pension funds have had a positive effect on financial and capital markets. 58.4% of the US\$109.905 billion accumulated as of October 2009 was invested in Chile, boosting national financial markets and increasing availability and funding alternatives for Chilean companies. The capitalization system's contribution to financial and capital markets, as shown in graphs 6 and 7, has enabled the Chilean financial market to increase its economy's funding options and, despite still being a developing economy, the relatively deep financial markets in Chile have benefited from the different economic industries, including the infrastructure sector.

Pension funds can invest in infrastructure sectors by purchasing shares and bonds issued by privatized infrastructure companies, such as electricity, health and telecommunications companies. The purchasing of this type of share or bond however, is not considered to be funding for new projects that will increase or improve existing infrastructures except during the issuing of such instruments. In other words, the purchasing of company shares and bonds is not an investment from an economic perspective, as no creation of new productive capacity is involved.

4.1. Funding new infrastructure projects in developing economies

Broadly speaking, the funding of infrastructure projects is complex due to i) the long-term nature of projects (15 to 30 years) that require a deep capital market, ii) the high amounts involved and iii) physical assets that cannot easily be pledged.

In developing economies with shallow capital and financial markets, there are not usually available funds for long-term investment. Institutional investors, pension funds and insurance companies are the main long-term investors, as they generally have significant funds readily available and long-term obligations.

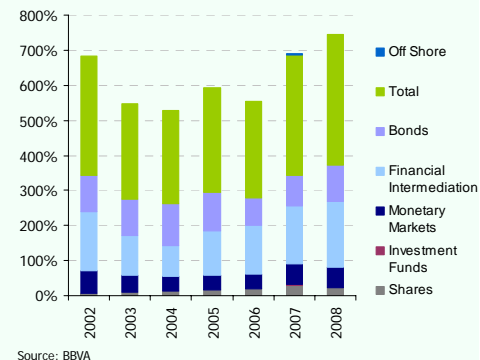
Companies in the infrastructure sector benefit from institutional investors in terms of project funding, not only because these investors have resources that can be invested in the long-term –reducing costs and the risk of refinancing derived from the availability of longer-term investment– but also because these investors are national, thus removing any foreign exchange risk. Furthermore, by involving pension funds, political and regulatory risk could be reduced, as governments would be expected to show greater discipline in adhering to contracts and maintaining a level playing field since it is the resources used to fund local workers' pensions that are involved (Vives, 1999).

In some countries in the region, pension fund involvement could also reduce the public opinion's aversion to private participation in infrastructure projects (see graph 8). On some Chilean roads, there are signs that read: "Your savings fund this road and this road funds your retirement", making citizens aware of the benefits of this partnership.

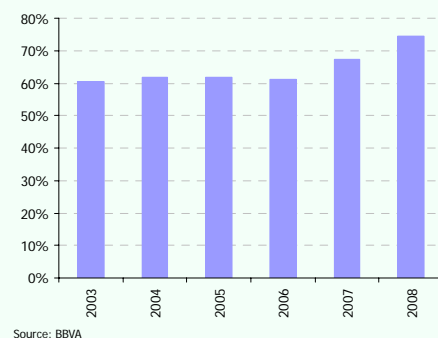
Institutional investors are also keen to invest in infrastructure projects, since they are an interesting investment alternative. In Chile, pension funds have accumulated significant resources; due to its size or lack of depth however, the national capital market is not able to absorb all these resources without incurring costs in terms of risk or profitability⁵.

While pension fund administrators are eager for new instruments in which to invest, there are unsatisfied investment needs, such as infrastructure projects. This type of partnership is therefore mutually beneficial.

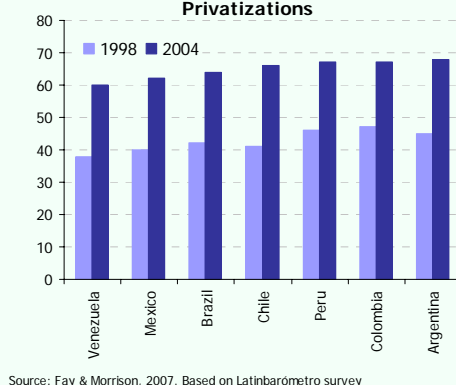
Graph 6: Annual Transactions on Chilean Capital Market as % of GDP



Graph 7: Total Banking Placements as a % of GDPo % del PIB



Graph 8: Percentage of the Population Unhappy with Infrastructure Privatizations



⁵ Pension fund regulation imposes maximum and minimum limits on foreign investment by type of fund and on the number of funds managed by a single administrator.

Private pension systems, such as the Chilean system, are developed within a fairly strict regulatory framework. The administration of pension funds should be strictly supervised and regulated, as resources that the State requires workers to save for their pensions are being administered and there is therefore a state guarantee (explicit or implicit) surrounding this activity. Many of these regulations however, limit pension funds' involvement in infrastructure funding, particularly when referring to new infrastructure projects or infrastructure project finance. The regulations are the following:

- **Rating:** The instruments in which pension funds may invest must be rated by an independent rating agency.
- **Liquidity:** Broadly speaking, the holding of securities that cannot be traded or lack a significant level of liquidity is forbidden or limited. This is to make portfolio valuations easier and more transparent. There are even regulations that establish specific liquidity ratios.
- **Valuation standards:** Broadly speaking, portfolios must be periodically valued at market value, encouraging a bias towards investments that are frequently traded. This makes infrastructure investments difficult, as the instruments used to fund these assets are not often bought and sold.
- **Allowed investments:** When setting up individual capitalization systems, fairly restrictive standards are usually implemented in terms of the type of instrument that can be invested in. As capital markets develop and confidence in the system grows, the regulation allows investment in different instruments.
- **Performance measurement:** Generally speaking, portfolio performance is regulated. These regulations are sometimes expressed as a minimum return level or in relation to the performance of all pension fund administrators. This discourages investments in volatile sectors or instruments, such as infrastructure. In addition, it encourages crowd-like behavior, where there is little variation in portfolios among administrators and there is a preference for investing in relatively short-term and lower risk instruments.

4.2. The funding of infrastructure BOT contracts

A developing economy like Chile's does not usually have a developed, long-term debt market, but companies awarded BOT contracts and institutional investors are usually interested in taking part in this market. The authorities realized that this partnership was not being taken advantage of and they therefore came up with a mechanism to overcome the obstacles without reducing the impact of regulations that protected the pension and insurance industry and the BOT contract system. Chile's tax authority and the MOP jointly requested a piece of research for the purpose of developing an instrument that met the previously stated requirements; i.e. assessed the feasibility of issuing such instrument in a way that would allow institutional investors' involvement in infrastructure funding, thus representing an attractive investment instrument while enabling BOT contract funding.

Pension fund regulation was appropriate but it was considered an obstacle since the Chilean BOT contract system obliges successful bidders to incorporate a company that manages and operates the awarded public work.

Pension fund regulations prevent them from investing in companies without a relevant track record, particularly companies that do not have a 3-year record of audited balance sheets and the last 2 years posting operating profits. More generally, pension funds cannot invest in companies that, given the absence of a relevant track record, cannot be rated or allocated an investment grade.

The logic behind this regulation is to protect pension funds from taking excessive risks. In project finance or new project funding, the investment risk is equal to the project risk, since the instrument enabling the funding is backed by the project's future flows, unlike the purchasing of traditional financial instruments that are backed by the assets of an existing company.

Pension funds were initially prevented from taking part in funding infrastructure BOT contracts, as the company issuing the debt document was a new company and it therefore had no track record, assets or resources apart from the BOT

contract project. As a result, it did not qualify as an investment option for pension funds.

The authorities however verified that, even though the regulation's aims were relevant, it was possible to create alternative solutions or regulations to help pension funds invest in these projects. The tax authority and MOP requested a piece of research to assess the feasibility of developing a new instrument to help pension funds take part in infrastructure funding. Such instrument had to be an attractive investment vehicle for pension funds, but at the same time, a good funding alternative for companies awarded BOT contracts. As a result of this piece of research, the **Infrastructure Bond** was created in 1998.

4.2.1. Infrastructure Bond: bonds issued by companies awarded infrastructure BOT contracts

Bonds for infrastructure BOT contracts can be issued both before and after the infrastructure begins operating. In both cases, the bond is backed by the BOT contract's future income, meaning that the main funding element is the flow from tolls and other operational income.

The infrastructure bond is a debt document issued by companies awarded infrastructure BOT contracts. Due to insurance companies' matching regulations (one of the main potential claimants), bonds have no pre-payment option. In general, infrastructure bonds are 100% guaranteed by insurance policies issued by international insurance companies. This gives them external credit backing that enables them to achieve better ratings by replacing the issuer's risk with the insurance company's risk.

In Chile, two types of infrastructure bond issuance contracts have been developed:

1. **Pre-operational bond:** The bond is issued once construction on the public work has begun and before this is finished. This is project finance funding, as the funding structure includes payment of the investment before work starts and the funding of future payments required for the project to go ahead. In addition, one of the main features of project finance is self-sufficiency. The future flows required to pay for the obligations resulting from the bond fully depend on the project's success.

A successful placement should raise an amount that enables costs incurred up to the moment of issuance and those to be incurred up until the project is operational to be funded. In general, these bonds have been irrevocably and unconditionally guaranteed by international insurance companies, which guarantee full payment of the principal and interests outlined in the issuance contract.

2. **Operational bond:** This bond is issued during the awarded public work's operational stage, in other words, once permission has been given by the MOP to start operating the infrastructure and the company is fully entitled to operate and exploit the project. This is a pure revenue bond, since the debt instrument is issued to fund a finished project and, once again, the debt repayment is exclusively backed by the project's future revenues.

Issuance should include the pre-payment of the full investment made for the construction of the infrastructure. The company awarded the BOT contract has normally turned to bank loans, meaning that the amount issued must cover the repayment of principal, interest and other related costs.

Chilean infrastructure bonds have been rated AAA when issued, except for Melipilla and Autopista Interportuaria bonds, which were rated AA- and A+ respectively. As the Feller Rate rating agency states "all [infrastructure] projects awarded the AAA category have enough strengths to hold an investment grade from a risk perspective, both on a local and global scale. The awarded rating is a result of the issuer having an irrevocable and unconditional guarantee policy, granted by an international insurance company for full payment within the dates set out in the contract".

The recent global financial crisis has had an effect on some companies that had insured infrastructure bonds, having had their rating downgraded on a global basis and therefore having a negative impact on the ratings of some infrastructure bonds. The bonds have however maintained an investment grade and a rating above that achieved by the insurance companies themselves, as when the payment capacity assessment of the bond guarantor is lower than the issuer's, the issuer's risk rating prevails.

In infrastructure bond rating reports, the Chilean State's commitment to the BOT contract system has always stood out as a strength. This is shown in its efforts to create a defined institutional framework to develop these investments⁶.

The Chilean State considers the undertaking of unprofitable, but socially beneficial, infrastructure BOT contracts through the private sector. In these cases, the MOP pays the company awarded the BOT contract a subsidy, defined as a known amount indexed to inflation that is outlined in the BOT contract. Payment is compulsory in all cases, meaning that the risk of a legal claim is replaced by the Chilean State's risk. This eventually results in bonds linked to these projects reaching the investment grade category.

One alternative that has not yet been implemented in Chile, but which is theoretically feasible, is to issue securitized infrastructure bonds against the rights granted by the BOT contract system to the company awarded the BOT contract. In Chile, the Securities and Insurance Supervisor (*Superintendencia de Valores y Seguros*) established that only credit securities can be securitized, meaning that the right to receive tolls could not be considered a securitized asset. State subsidies for unprofitable BOT contracts could however be considered a credit security, as an established payment schedule has been set out in the bidding contract.

On 30 May 2008, Chilean pension fund administrators held US\$1,957 in infrastructure bonds placed on the domestic market, which were equal to 42% of the amount issued. This amount represents the floor for total investment made in these instruments by pension funds; this is because it has been several years since the majority of bonds were placed- none of them were bullet bonds – and to date, the bonds have already paid coupons, meaning that direct investment in public infrastructure BOT contract funding was higher.

5. Lesson to be learned: Conclusion

During the early '90s, there was a significant infrastructure deficit in Chile. In 1993, the Chilean Ministry for Public Works (*Ministerio de Obras Públicas, MOP*) estimated that the infrastructure deficit for the 1995-1999 period amounted to approximately 15% of the country's GDP and that annual losses for their lack of competitiveness due to insufficient infrastructure amounted to 3% of GDP.

In 1993, it was decided that the best alternative was to involve the private sector in productive infrastructure investments. A new BOT (Build, Operate and Transfer) contract system was established, which meant that the company awarded the BOT contract had to fund, build, operate and ultimately transfer ownership of the infrastructure to the State. This policy, together with the increase in public investment in the industry, has helped the country to progressively reduce the infrastructure deficit that was hindering Chile's economic growth.

In 1981, Chile's pension system was reformed in order to establish the individual capitalization system. Twenty-seven years later, pension funds have accumulated resources equivalent to 66% of the country's GDP. This has significantly helped the availability of domestic capital for funding investments, being particularly relevant for long-term investment funding.

Chile's pension funds cannot invest in financial instruments and are involved in the infrastructure sector mainly by purchasing shares and bonds issued by privatized infrastructure companies, such as electricity, health and telecommunications companies. Only at the issuance stage can the purchase of such financial

⁶ See Infrastructure BOT contracts Act.

instruments be considered an infrastructure investment from an economic perspective.

In developing countries with insufficiently deep financial and capital markets, it is uncommon to find investors willing to invest long-term. Pension funds and insurance companies are therefore the main long-term national sources of capital, as they generally have significant funds readily available and long-term obligations.

Developing economies -due to the size or lack of depth of their national capital and financial markets- are not however able to absorb the significant amount of resources available by pension funds without incurring costs in terms of risk or profitability.

This happens while there are unsatisfied investment needs in these economies, such as infrastructure projects, which not only deliver attractive private returns but also wide social benefits by promoting growth, competitiveness and equity in these countries.

Due to pension fund regulations, which aim to ensure an appropriate return on investment while avoiding excessive risks, pension fund involvement in infrastructure funding was initially limited. In particular, it was necessary to deal with pension fund restriction in terms of investing in shares or bonds from companies with no relevant track record. Since companies awarded a BOT contract needed to incorporate a company to undertake the BOT contract project, it is quite obvious to see why such companies didn't initially meet the requirements. After concluding that pension funds are "natural" investors for these projects, Chile's tax authority and the MOP jointly requested a piece of research for the purpose of assessing how feasible it was to develop an instrument that would allow institutional investors' involvement in infrastructure funding, representing an attractive investment instrument while enabling funding for the company awarded the BOT contract. As a result of this piece of research, a new instrument was created in 1998: the Infrastructure Bond.

Infrastructure bonds are debt instruments issued by the companies awarded public infrastructure BOT contracts, they have no pre-payment option and are generally 100% guaranteed by insurance policies issued by international insurance companies. Thank to the purchase of these financial instruments, a significant contribution by pensions funds to the funding of private projects based on infrastructure BOT contracts can be noted in Chile.

The Chilean experience is interesting, since both public and private powers joined together to lift the restrictions that limited the appearance of this funding alternative due to regulations from the pension fund and life insurance industries. It was determined that both the companies awarded infrastructure BOT contracts and institutional investors would benefit if the latter were allowed to invest in these bonds without getting rid of regulations protecting these industries.

Developing economies often have multiple unsatisfied investment needs, such as infrastructure projects, which not only deliver attractive private returns but also wide social benefits. In the particular case of infrastructure, by increasing both the stock and quality of infrastructures, economic growth, competitiveness and equity in these countries can be improved. At the same time, the individual capitalization system established in Chile has allowed the country to make use of large volumes of resources and invest them in these projects. It was the authorities' decisiveness that allowed for the appropriate mechanisms to be devised in order to direct pension fund resources towards these investments with high private and social returns. This has been tremendously beneficial for the country, not only by reducing the infrastructure deficit but also by allowing workers to obtain attractive returns which will help them to have higher pensions.

6. References

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