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A review of recent infrastructure investment in Latin America and the role of private pension funds

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A review of recent infrastructure investment in Latin America and the role of private pension funds[1][2]

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Abstract

Latin America is enjoying a period of extensive growth. If this trend is to continue into the coming years, the key insufficiencies that could limit total factor productivity will have to be dealt with in order to prevent bottlenecks. One of these insufficiencies is the infrastructure gap. The sources of finance required for infrastructure projects could include a more intensive use of the major resources accumulated by private pension funds. These funds have already been participating in a number of ways in financing projects of this kind through a variety of financial vehicles. Giving more scope to this source of finance means ensuring an appropriate framework, which includes: making substantial changes in the process of socioeconomic cost-benefit analysis; transparent, effective and efficient auctions; a more effective bureaucracy; laws and regulatory processes that ensure appropriate management of the risks of the project at all its stages; and regulation that adapts to the pension funds' investment regime, which has a strict fiduciary role in favor of the savings of the pension savers who will receive pensions in their old age. This is the only way of ensuring a virtuous circle between infrastructure investment by pension funds and economic growth, which will lead to greater benefits for the country involved.

Keywords: Infraestructure, Private Pensions, Pension Funds.

JEL: O180, J320, G230.

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1. Introduction

Latin America has enjoyed an extraordinary cycle of expansion, which has largely been based on increases in productivity and the capital factor. Everything suggests that this trend could continue with the structural elements in place, but there are also some limiting factors, such as the investment gap in infrastructure (the difference between the desired level of investment and the current figures). In fact, Latin America is so backward in this respect that it is even far behind other emerging countries such as those in Asia.

The situation described goes back a long way, although it has become more acute since the 1980s as a result of the crisis and the ensuing fiscal adjustments that had to be introduced, which shrunk public investment in the region. Statistics do not lie when they show that public investment in infrastructure fell from 4.5% of GDP in the mid-1980s to 1.5% of GDP in the 1990s. Although this figure increased in the second half of the last decade, it has not managed to recover the high of the mid-1980s .

Apart from the macro figures, a number of other indicators reveal more about this problem. For example, the distance between industrial centers and maritime ports in Colombia is greater than in most of its competitors. The average distance in a straight line from Bogota, Medellin and Cali to a maritime port is 271 kilometers, according to the World Bank. This distance is nearly five times that in China, Korea or Thailand. Another way of analyzing the same problem can be found in the study by Alonso et al. (2010), which constructed an infrastructure gap index using Germany as a benchmark (where the index is equal to 1). Peru and Bolivia turned out to be the most serious case, with levels of 5.5 and 6.7. Chile came out best in the region, with an indicator of 1.4, while Brazil lags significantly behind, with a gap of 4.4.

This situation is of enormous concern, bearing in mind the impact that the infrastructure variable has on a country's economic growth. Both theory and empirical evidence have shown that this type of investment increases potential GDP in the long term through the improvement of factor productivity.

However, while a lack of funds allocated to infrastructure could be a barrier to its competitiveness and growth in Latin American countries, it could also represent an opportunity for investors at a global level. The World Economic Forum issues rankings that measure how attractive countries are in terms of private infrastructure investment, based on factors such as the regulatory framework, the institutional framework, fiscal sustainability, political risk, macroeconomic factors, and the return on the factors of production. This shows the enormous potential of countries such as Chile, Brazil, Colombia, Peru and Mexico, which are in leading positions in the ranking (World Economic Forum, 2011).

However, if this potential is to be activated a set of measures have to be implemented that are capable of attracting resources to be invested in infrastructure development. This study focuses on Brazil, Colombia, Chile, Mexico and Peru. It shows that these countries have to tackle different bottlenecks within the process of developing infrastructure investment projects. Problems can arise at a variety of points, such as: the project feasibility study phase; cost-benefit analysis of the projects; inefficient concession processes; inadequate risk mitigation schemes at the different stages; the low level of financial development; and the lack of appropriate regulation that allows for the development of the kind of financial instruments capable of attracting institutional investors.

Various studies and experiences have shown the role that private pension funds can play in this objective of boosting economic growth by financing infrastructure projects (Tuesta, 2011 and Escrivá et al., 2010). To do so, there must be an alignment between the processes that ensure project quality, the regulations governing the implementation of investment vehicles and the existing pension fund investment regimes. This is of great importance for the participation of pension funds, as in the last resort they have an essential fiduciary duty to represent the best interests of those participating in their pension plans.

To clarify this point, in this report we include the key legal provisions implemented in Latin America to incorporate participation by pension funds in infrastructure investment. We review five countries (Brazil, Chile, Colombia, Mexico and Peru), for which we set out current trends, the mechanisms that have had the greatest success, changes made to existing investment regimes, and the challenges pending to ensure their successful development.

2. Infrastructure and economic growth

For a number of years, there has been great interest in the contribution of infrastructures to economic growth. Empirical evidence has confirmed that this type of investment increases potential GDP in the long term, mainly by improving the efficiency of all the factors of production[3].

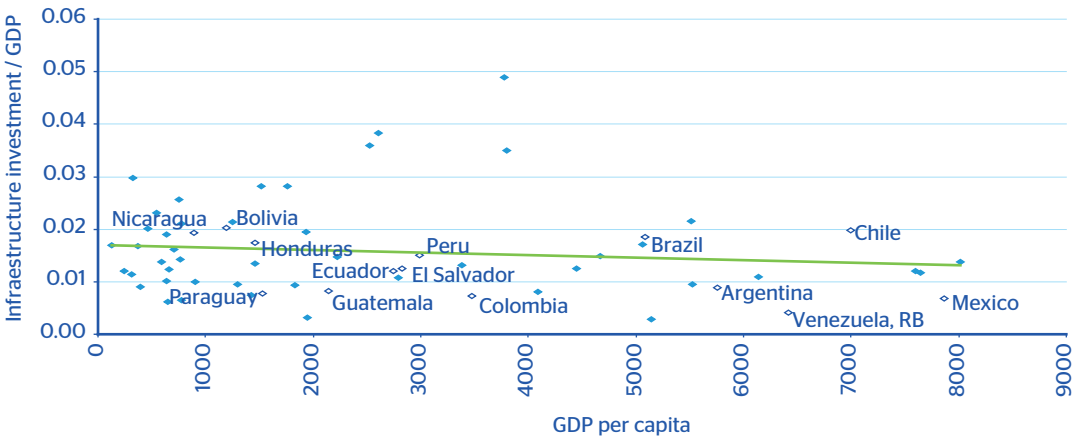
However, despite the important role given to public investment in infrastructure by a number of studies, it remained weak for a large part of the 1990s in Latin America, mainly because of the fiscal adjustments that had to be made by countries in the region. After hitting a figure of 4.5% of GDP in the mid 1980s,, it fell back to 1.5% in the 1990s. To a large extent the strategy of governments was focused on the urgent need to ensure that their economies were fiscally stable and to attract more foreign investment to offset the cut in infrastructure investment resulting from reduced government participation.

Private, domestic and foreign investment partly offset this fall in public investment. However, some factors have prevented the infrastructure gap from being closed until now. First, the potential required increased as Latin America entered a growth spiral. Second, there was a slowdown in the number of investment projects due to the exhaustion of the privatization processes of public companies, the lack of attractive projects and the fact that regulatory frameworks were incapable of generating the participation of capital required for project development. Third, the recent financial crises to a certain extent restricted the flow of foreign capital.

Since there was insufficient investment during this time, the allocation of resources for infrastructure in Latin American countries has not caught up with the most developed ones, or with their direct competitors in international markets. Over recent years, Asian countries have invested strongly in infrastructure and have achieved sustainable economic growth rates. China and Vietnam, for example, have invested around 10% of GDP in infrastructure and have achieved high rates of growth (Straub et al., 2008), largely as a result of this factor.

One of the main conclusions of the book "Balance y proyecciones de la experiencia en infraestructura de los fondos de pensiones en Latinoamérica (Alonso et al., 2010) is that in developing countries infrastructure investment would have positive effects on productivity and growth. However, as we see in Chart 1, Latin America is on average below the global trend for infrastructure investment. Over recent years, the region has only invested 1% of GDP in this area, well under the 10% invested by Asian countries.

Chart 1
Infraestructure investment / GDP and GDP per capita (average last 10 years)



Source: BBVA Research calculations with World Bank data

The same study concludes that adequate infrastructure investment through the year 2050 could lead to a potential accumulated benefit of around 43% of GDP, or even as high as 103% in the case of Peru[4] (see Table 1).

3: See the book "Balance y proyecciones de la experiencia en infraestructura de los fondos de pensiones en Latinoamerica", BBVA Research 2010.
4: See Alonso et al., 2010.

Table 1
Economic impact of increased investment in infraestructure

	Opportunity cost of not investing in infraestructure				Investing in infraestructure
	% gap between per capita GDP in a positive scenario with infraestructure vs. inertial % each year				GDP (2005)
	2020	2030	2040	2050	2005-2050
Mexico	0.8%	1.0%	1.1%	1.1%	24.1%
Chile	1.8%	2.7%	3.2%	3.6%	89.3%
Colombia	0.9%	1.4%	1.8%	2.2%	49.15
Peru	1.6%	2.3%	3.0%	3.6%	103.3%

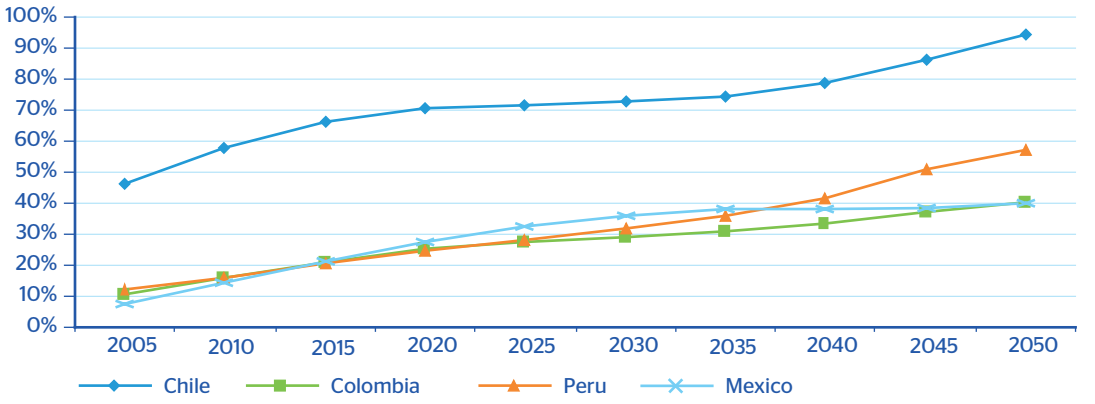
Source: BBVA Reserach

The region needs to invest more and better nfrastructure. If it does not do so, there is a greater chance that the growth obtained in recent years will not be sustainable. One of the key objectives is to finance the infrastructure projects that offer an adequate return/risk ratio.

3. The current and future role of pension funds

The recent reform of pension systems in various Latin American countries included the introduction of private saving components via either a single capitalization pillar, or in some cases one combined with another designed as a pay-as-you-go system. The result has been the generation of a very significant volume of saving flows. In the case of Chile, a pioneer in pension reforms many years ago, this development is by now fairly well consolidated. Some of the forecasts from the study by Alonso et al. (2010) indicate that, for example, by 2050 the participation of pension funds could be in the order of 94% of GDP in Chile, 57% in Peru, and around 40% in Colombia and Mexico (see Chart 2).

Chart 2
Outstanding balance of pension funds in relation to GDP



Source: BBVA Research

These levels of domestic savings must be correctly administered in accordance with the fiduciary role of pension companies, by investing them in assets that meet adequate return/risk conditions. Direct investment[5] in infrastructures by private pension companies could be a valid option if an appropriate framework was established for this purpose. Thus aspects such as those related

5: Direct investment by pension funds in infrastructure projects is understood to be through financial vehicles associated with the development of the project at one or all of its stages (and appropriately balanced between return and risk). In contrast, indirect investment refers to the investment by pension funds through bonds and shares in general of companies typically dedicated to the development of infrastructures, so that the return-risk associated with the financial instrument in question is not directly related to the infrastructure works as such.

to the general regulation of the process of infrastructure investment, risk hedging, and ad-hoc financial vehicles for pension funds, are elements that have to be optimized if these conditions are to be met. This could lead to the generation of a virtuous circle, in which greater participation by pension funds boosts economic growth, while at the same time this expansion brings with it increased returns for pension savers.

A virtuous circle of this kind requires an alignment of the main objectives of both private and government pension funds by trying to match the financing needs of both parties. From the point of view of the government, this interaction would preserve the principles of fiscal sustainability (by easing pressure on the fiscal accounts), reduce the impact of the economic cycle on investment plans, and improve the quality and efficiency of the processes and the infrastructure works completed, while optimizing the feasibility of these projects. From the point of view of the pension funds, investment in these projects would help optimize the management of their portfolio in the long term, reduce political and regulatory risks by sharing public and private objectives, reduce dependence on foreign private investment, and improve the perception of the general population has of private pension systems by demonstrating a more direct link between these systems and the country's development (see Table 2).

Table 2
Governement vs Pensions funds

Governement	Pensions funds
Fiscal consolidation or reduction of the tax burden: possible if government funding silos for infrastructure investment are replaced by private funds.	Optimize planning of the long-term portfolio (Inderst, 2009).
	Reduce political and regulatory risks (Vives, 2000).
More efficient and effective budget process by transferring the process of calculating costs to the beneficiaries/users themselves.	A correctly designed long-term financial investment project offers a good return/risk ratio.
Need to find an alternative to replace public investment if these resources have to be transferred to other social expenditure due to cyclical problems.	•Investment within the same country reduces some financial risks, such as exchange-rate risk.
Improve the quality and reduce the total cost of infrastructure projects.	Public opinion may take a favorable view of pension funds investing in infrastructure, as this increases the quality of life.

Source: BBVA Research

Finally, this link must be generated by providing the appropriate economic incentives for one or the other party, and not by forcing or obliging participation. In the case of pension funds, their decision to participate should respond to a rigorous analysis of the portfolio they are administering, and always take into account the fiduciary role they have to fulfill in favor of their future pensioners.

4. Pension funds and infrastructure investment

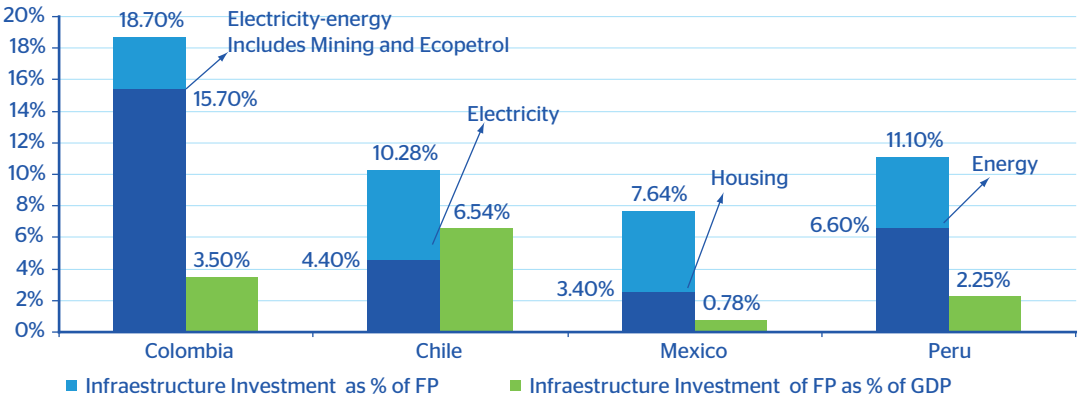
Infrastructure investment by the private sector has gained importance in practically the whole world. Public-private partnerships (PPP) have become the key tool in this development. In order to enable pension funds to voluntarily participate as investors, countries have created new financial instruments, standardized laws and regulations and created schemes to improve the management of the different types of risk involved[6].

In Latin America, this experience has been relatively recent compared with more developed countries. However, the steps taken have been steady, depending on the level of economic development and the institutional-regulatory framework. As seen in Chart 3, direct and indirect infrastructure investment by pension funds amounts to 11.2% of the total portfolio and is focused on the energy and electricity sector. On average, it is equivalent to 3.2% of GDP, with the highest participation in Chile, at 6.54% of GDP.

6: See Ordóñez, Ivonne "Experiencia de los Fondos de Pensiones en Infraestructura en el Mundo" – Observatorio de Pensiones, BBVA Research, 2010.

Below we offer a more detailed description of infrastructure investment by pension funds and the issues that should be given priority in each of the countries under analysis.

Chart 3
Infraestructure investment by the Pension Funds (PFs)



Source: ASOFONDOS, Pension Superintendency of Chile, CONSAR

4.1. Chile

This is the country where infrastructure investment accounts for the highest proportion of GDP, at USD 14,451.7 million (6.54% of GDP). The main form of investment is via stocks and bonds of companies related to the infrastructure in question (indirect investment), at USD 12,492 million (5.34% of GDP). One of the most important forms of direct participation (USD 1,959.7 million) is through the acquisition of infrastructure bonds and, more recently, through mutual funds.

Infrastructure bonds are debt instruments issued by the concessionary companies of public infrastructure projects that meet the specific requirements of the investment regime of pension funds, in accordance with their regulations. This type of bond has only been issued for transportation infrastructure projects, such as highways, roads and airports. The system of concessions in these kinds of infrastructure projects is still being developed, and is expanding towards second-generation concessions such as universities, prisons and hospitals. However, since 2006 no new infrastructure bonds of this type have been issued. The companies winning concessions have therefore opted for other mechanisms to raise the funds needed to carry out the projects[7].

With regard to the participation of pension fund resources in infrastructure mutual funds, it should be pointed out that this is an incipient industry in Chile that still requires some development. At the close of 2010, there were only two private equity infrastructure mutual funds in operation and active on the market; pension funds had investments in both.

As the infrastructure projects carried out in Chile have generated investment vehicles that are attractive to the objectives of the pension funds, the pension funds have incorporated them into their portfolios as part of their diversified investment strategies. As the new scheduled projects, which account for more than USD 8,000 million over the next 3 years, generate investment instruments that are in line with the pension funds' objectives, they will, without a doubt, be incorporated into their portfolios.

4.1.1. Priority issues

There are opportunities worth exploring in public-private partnerships in second-generation infrastructures: universities, hospitals or health centers. However, special attention should be paid to the following aspects:

- Simplifying the concession processes.
- Improving the quality of the technical specifications of construction projects.
- Perfecting the contracting process in order to minimize subsequent disputes and discretionary decisions. This is increasingly important insofar as the concession system is moving toward cross-sector concessions and projects offering lower private returns.

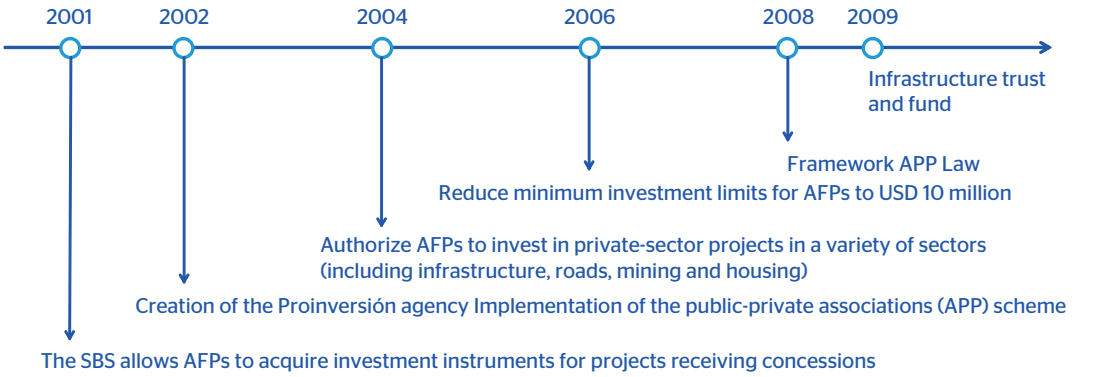
7: For a more detailed analysis, see Hormazábal (2011)

4.2. Peru

Despite the fact that the country has improved its position in the infrastructure quality ranking of the Global Competitiveness Index (from 110th to 92nd in 2009-2011)[8], there is still a significant investment gap, particularly in the transport and electricity sectors[9]. This gap must be closed, and mechanisms should be sought to make infrastructure investment more attractive (Sánchez, 2011).

The government has made regulatory changes over the last decade in order to generate, promote and boost investment in various medium- and long-term instruments, especially in infrastructure. Chart 4 sums up the main changes in the regulatory framework over the last decade[10].

Chart 4
Main regulatory changes over the last decade,



* includes financial companies, fund and administrators and securitized bonds
Source: ASOFONDOS, Pension Superintendency of Chile, CONSAR

Pension fund participation in infrastructure-related investments accounts for 11.1% of the total portfolio (USD 3,416 million, 2.3% of GDP). It is concentrated mainly in energy (60%) and to a lesser extent in transport (21%) and telecommunications.

The main form is indirect investment via stocks and bonds of companies related to the infrastructure and in mutual funds in this sector (USD 2,483 million, 1.7% of GDP).

Direct investment is channeled through bonds and stocks for infrastructure projects and infrastructure trusts. (One example is the type of financing used for the IIRSA Sur road: annual work payment certificates, CRPAO.)

A new investment channel has appeared recently with the development of mutual funds. As we will see below, these funds invest primarily in the energy and transport sectors through private share offerings for qualified institutional buyers. Among the most notable are the following:

i. Fondo de Inversión en Infraestructura, Servicios Públicos y Recursos Naturales de AC Capitales: created in September 2004 with a duration of 30 years and committed resources of USD 50 million, it finances projects at any stage of development through capital allocations. Currently, the value of investments is around USD 55 million, with the only participants in the fund being pension fund administrators (PFAs). It is participating in major projects, including three electric transmission lines, the railroad in the central area, the Jorge Chávez airport, air freight terminals and an oil and biofuel refinery.

ii. Fondo de Inversión Larraín Vial Energía Latinoamericano: this fund is focused on assets related to the energy sector in Latin America (mainly Chile, Peru and Colombia). It participates in projects and companies in different areas of electricity generation (water, gas and coal) and aims to maintain control of these companies. It currently has around USD 100 million and aims to reach a total of USD 150 million. It has a duration of 12 years, which is extendible for periods of two years with the agreement of its contributors. In Peru, the fund has invested in a natural gas plant in Termochilca, which will install up to 200 MW of generation capacity south of Lima. Termochilca has already been awarded an 8-year USD 450 million energy supply contract with the electricity distribution company Edelnor.

8: World Economic Forum (2011)
9: IPE (2009)
10: For a more detailed analysis, see Alonso et al. (2010a) and Sánchez (2011)

iii. Fondo de Inversión en Infraestructura de Brookfield y AC Capitales. Created by the Ministry of Economy as a way of financing large investment projects in the context of the 2009 financial crisis. It currently manages just under USD 500 million.

4.2.1. Priority issues

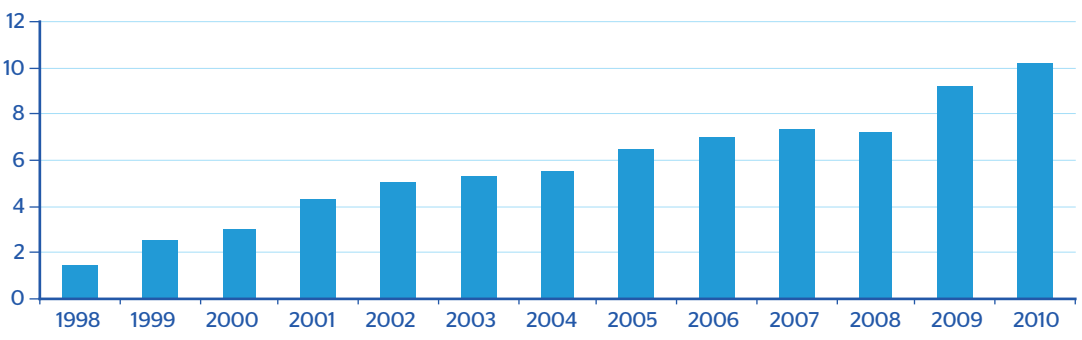
As we have seen, despite the regulatory progress and new investment initiatives and instruments introduced over recent years, infrastructure investment is still not at the levels required to close the gap that Peru currently suffers from. Below is outlined some of the aspects that could be improved:

- Concession process: Reducing the time it takes to process concessions. Currently these last on average more than five years and involve nearly 20 government departments. Because of the number of agencies involved in PPP projects many cases tasks are duplicated due mainly to the complex administrative machinery.
  - i. Making processes run parallel (currently they are sequential) and limiting the departments involved could help reduce the time of these concessions.
  - ii. Improving the skills levels of the technical staff, particularly in the public sector, in order to increase process efficiency.
- Investment limits: Current regulations establish limits to pension fund investments based on the issuer, issue and instrument category (fixed-income, equity, among others). Investments by pension funds in infrastructure have to adapt to these limits, according to the instrument invested in (the infrastructure fund is considered within the equity limits, while the trust is considered within the fixed-income limits). We believe it would be of great help to create specific limits for infrastructure investment that are not dependent on the limits for other investment instruments.
- Counting not only investments made by pension funds, but also the amount committed to projects. In this way when payment is actually made the investment structure would not be greatly affected.
- Applying measures aimed at enhancing and expediting project pre-feasibility and feasibility studies (cost-benefit studies and the financial plan).
- Instrument selection process: Establishing clear regulations that can make it easier for an instrument to be eligible as a pension fund investment ("AFPeable"), particularly in the case of infrastructure.

4.3. Mexico[11]

Over the last decade, pension funds have become more important at the local level, increasing their share from 1.4% of GDP in 1998 to 10.2% of GDP at the end of 2010 (see Chart 5).

Chart 5
Resources Invested by SIEFORES (% GDP)



Source: CONSAR and Banxico (data from Dec. of each year)

11: For more details, see Castilleja (2011)

The main form of infrastructure investment by pension funds is indirect investment, via investment in participation shares in infrastructure-related companies (including hotels, iron and steel, transport, infrastructure, telecoms and housing), which represented 0.6% of GDP at the end of 2010 (USD 6.6 billion).

Direct investment, through structured instruments such as CKDs, represented 0.2% of GDP at the end of 2010 (USD 2.1 billion). Capital Development Certificates (CKDs) are trust securities designed for financing one or more projects. There are two types, one aimed at private capital which in turn will invest in projects, and one intended for projects only, primarily infrastructure-related.

CKDs are instruments which offer significant growth potential. As of December 9, 2010, USD 2.34 billion had been placed in CKDs, and the holding of the SIEFORES in CKDs supported productive projects valued at USD 2.11 billion. Furthmore, 20 new projects were in the process of receiving CKD funds or being studied for placement.

4.3.1. Priority issues

It is essential to create the legal context for promoting private investment in the infrastructure sector, by approving the law on public-private associations (APPs). The purpose of this legislative proposal is to regulate the long-term contractual relations between the private and public sector authorities, in which services are rendered to the public sector or end users, using infrastructure provided partially or totally by the private sector. In turn, the law establishes restrictions to prevent private initiative from participating in the construction of infrastructure in strategic sectors, such as the petrochemical industry. Despite the government's efforts to promote new public-private participation schemes, especially since the 1995 crisis, these changes have been too slow to meet current needs.

Although the modifications made to date in the Siefores investment regime promote investment in local infrastructure projects, there are still significant limitations to optimizing the financing of private projects in this sector. Participation by private investors is hindered by structural factors such as the low liquidity of the associated instruments, the difficulty of valuing the assets and the difficulty of assigning a credit rating to companies with a short or non-existent history.

The capacity to assess and select infrastructure investment projects needs to be developed, given the high level of specialization required. The highway bailout experience in 1997 in which the Federal Government bailed out 23 of the 52 highways in concession demonstrated the serious problems and consequences of a deficient valuation and estimation in this type of project. Likewise, institutional investors such as the Afores must seek support from specialized consulting firms or develop their own capacity to select the projects in which to invest. Therefore, it would be highly recommendable to increase the quality of the technical evaluations and to achieve a collaboration between the public and private sectors, where institutions like BANOBRAS (the National Bank for Public Services and Works) have years of experience in the matter.

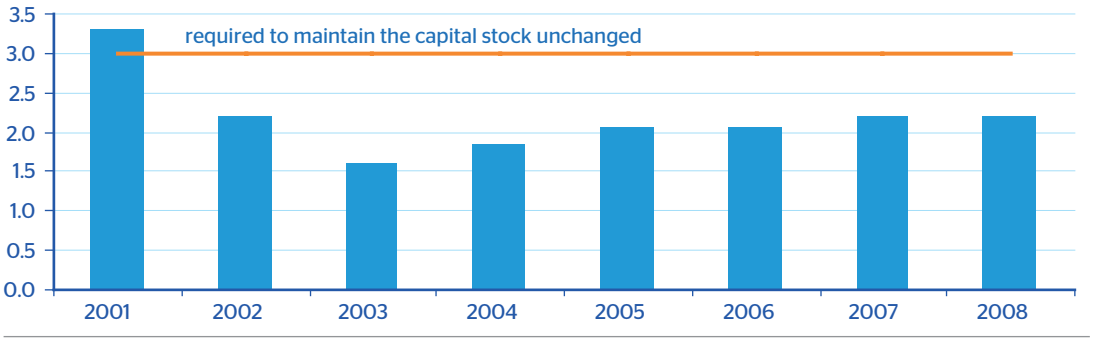
4.4. Brazil[12]

Despite the positive overall macroeconomic performance in recent years, infrastructure investment has remained low in Brazil. For most of the last decade, spending on infrastructure remained at around 2.0% of GDP[13] . More recently, it has increased to a level of around 3.3% of GDP. These figures are limited in comparison with the level needed to maintain a stock of constant capital infrastructure, and in comparison with the amount needed to match the development observed in South Korea and other Asian economies (4.0-6.0%) [14].

As a natural result of insufficient investment for a prolonged period, infrastructure is currently one of the main obstacles to productive activity in Brazil. From a macroeconomic perspective, the scarcity of good infrastructure is one of the main factors preventing the country from achieving sustainable growth of above 4.0% (Dos Santos, 2011).

12: For more details, see Dos Santos (2011)
13: See Frischtak, Claudio. 2007. "O Investimento em Infra-Estrutura no Brasil: Histórico Recente e Perspectivas"
14: See Frischtak, Claudio. 2007 and Fay M. and M. Morrison. 2005. "Infrastructure in Latin America & the Caribbean: Recent Developments and Key Challenges." Washington, DC: World Bank, Finance, Private Sector and Infrastructure Unit, Latin America and Caribbean Region.

Chart 6
Infrastructure Investment (GDP %)



Source: Claudio Frischtak in "O investimento em Infra-Estructura em Brasil"

Among the main public initiatives to promote spending on infrastructure is the Growth Acceleration Plan (PAC), which is undoubtedly the most visible of them. From 2007 to 2010, investments included in the PAC amounted to 444,000 million reales, or around 3.5% of GDP. Most of the resources were invested in social housing rather than physical infrastructure. Over the period 2011-2014, the aim is to invest 955,000 million reales, about 5.2% of GDP.

As well as investing directly in infrastructure, the government has aimed to apply policies to attract participation by the private sector, with limited results. One example is the public-private partnership (PPP) law, implemented in 2004. The idea was to make it easier to invest in infrastructure through a partnership between private agents and the public sector. However, after seven years, the government has still not made the procedure smooth enough for these associations, and they continue to be relatively complex from a financial and legal point of view. This increases the risks associated with long-term associations with the public sector (Dos Santos, 2011). In addition, low returns are also a barrier for the creation of more PPPs.

Another recent public measure to increase the role of the private sector was the announcement of measures to stimulate long-term finance and make improvements in infrastructure. The aim is to create specific financial instruments to finance infrastructure and create a sounder and diversified debt market in Brazil. Specifically, the main measures adopted were as follows:

- The tax on income from debentures linked to investment in infrastructure was reduced to 0.0% for households and non-resident investors, and 15% for companies.
- The tax on income from bonds related to some investments was reduced to 0.0% for non-resident investors.
- A new legal framework was created for debentures (the former legal framework established by Law 6404 was modified).
- The IOF (tax on financial transactions) on foreign capital entry into venture capital funds was reduced to 2.0%.
- A liquidity fund was created by which financial institutions can now assign up to 3 pp of their reserve requirements at the Central Bank linked to time deposits towards a liquidity fund for private bonds. In addition, tax incentives were introduced to stimulate the secondary market for private bonds.

Despite having taken measures to promote private investment in infrastructure, in the last few years the public sector has made few efforts to show its openness and commitment to increasing the participation of the private sector. In this respect, the recent decision to grant the management of some of the main airports in the country to the private sector should undoubtedly be seen as a positive sign.

Although there are no official data on indirect investment by the pension system in infrastructure, an analysis of the PREVI portfolio (the pension fund of the Bank of Brazil, 28% of total investment) could shed some light on this question. After examining the financial statements of PREVI for 2010, we calculate that indirect investment in infrastructure is around 32,000 million reales, or around 20% of all PREVI investment.

As well as providing indirect funds for infrastructure, PREVI invests some 0.7% of its total resources in the sector through private-equity investment funds (FIP) and subsidiaries such as Invepar, Log-In and Neoenergia.

Thus if we use PREVI as an example, the total investment of pension funds in infrastructure in Brazil is around 21% of total investment by pension funds, of which less than 1% is invested directly through the FIPs or subsidiaries. As a percentage of GDP, total investment in infrastructure therefore represents around 3%. This figure is less than that for Chile (6.5%) and Colombia (3.5%), but above that for Peru (2.2%) and Mexico (0.8%).

The expected structural reduction in interest rates should create more room for investment in infrastructure and other sectors. As long as interest rates remain at very high levels, government bonds will continue to be very attractive. In 2010, 48% of the resources of pension funds were invested in government bonds. The resources invested in mutual funds (which include the FIPs as well as other types of funds) only amounted to 4% of the portfolio of pension funds.

4.5. Colombia

Pension funds in this country have been contributing actively to its economic development by directly channeling part of its resources into key production sectors. As part of this, infrastructure project development is already being financed, albeit indirectly i.e., through corporate bonds and shares aimed mainly at that objective. It is currently estimated that indirect PFA infrastructure investment comes in at USD 9,591 million, accounting for 18.7% of pension fund value, equivalent to 3.5% of GDP. It should be noted that the electricity sector accounted for by far the highest participation, at 84% of pension fund infrastructure investment. Pension funds thus hold a major stake in companies in the sector, such as ISA, Ecopetrol and Isagen, at 17.5%, 4.2% and 11.6% respectively (Llanes, 2011).

With regard to the indirect investment vehicle method, 80% of such investment was in stocks. Another method which has recently become important is private equity funds. These have considerably increased share since 2007, when their investment system was established by Decree 2175. They are currently investing in 35 PEFs, of which the main ones are related mainly to the energy sector: FCP Interbolsa Energético, FCP CPVAL and FCP Tribeca Fund I.

Beyond the energy sector and the PEFs, other areas have a relatively lower stake in the pension fund portfolio (road, communications, water, etc. at 1.7% of the portfolio). However, in context it represents 14.5% of bonds issued by local companies in 2010, or 30% of private investment in transport and communications.

5. Final reflections

To maintain economic growth in Latin America, the bottlenecks that could be caused by a deficit in infrastructure investment will need to be eliminated. Pension funds manage significant amounts of resources (between 60% and 15% of GDP, depending on the country). They will continue to grow at a fast rate over the coming years and will therefore require financial assets through which to diversify. Financial instruments associated with infrastructure projects could be a good vehicle to consider in these portfolios.

Today, pension funds invest in infrastructure projects both directly and indirectly, with percentages that range from between 6-19% of the total portfolio and between 1-4% of GDP. Generally speaking, steady progress is being made in regulating private sector participation in infrastructure. However, there is no sign of a clear, comprehensive process for the development of concessions and participation of the various actors involved. Legal bodies are still fragmented in various economic sectors and levels of government, and there are administrative and legal restrictions that limit the decisions of the key actors in the concession process.

There are also limits on the level of authority of those responsible for taking decisions in these processes. And above all, there are still risks that have not been properly assigned/evaluated in many countries. At the same time, caution is needed with respect to the obsession for prioritizing infrastructure investment through pension funds. The decision to invest must be taken freely and should carefully weigh up the returns/costs of each project.

So how can more infrastructure investment in Latin America be encouraged? Given the above limitations, it is clear that infrastructure investment consists of different interdependent stages, which require broad reforms that range across the whole process. First, the opinion of the different interested

parties related to the development of infrastructures has to be canvassed to obtain an initial idea of the subject and allow progress to be made in assessing the problems involved. Second, cost-benefit analysis models have to be institutionalized to ensure the financial feasibility of infrastructure in a transparent fashion that is free from politicization and corruption. Third, the law on concessions has to be revised in detail, so that they are transparent and efficient, and can mitigate regulatory risk effectively. This requires tools and procedures for controlling the execution of projects, optimum contractual relations and schemes that allow fair conflict resolution. Fourth, appropriate financial assets have to be developed, with different financing formulas being explored for the different infrastructure projects. Financial innovation should be accompanied by instruments that mitigate the corresponding risks. The introduction of new assets onto local financial markets could increase the depth of these markets and benefit the system as a whole.

Latin America is going through a period of sound growth with ample potential to attract investment. In the current international situation it can channel part of the major capital inflows resulting from high global liquidity into long-term financial vehicles. This is an opportunity that the region cannot miss out on. It must take advantage of it by implementing all the reforms required to foster as much investment as possible in infrastructure projects. The recommendations proposed here may contribute to boost these investments, increase productivity and promote growth and quality of life in the countries involved.

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