

Pension Watch

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Economic Analysis

Pension

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Infrastructure investment of pension funds in an international context

- Infrastructure investments by the private sector have reached a high growth rate in recent decades. Multiple Public-Private Partnerships (PPPs) models have emerged as the key tool to this development.
- The fact that infrastructure investment projects are of a long term nature, and that there remains a good relationship between profitability/risk observed in many of them, has attracted the attention of pension fund administrators in many countries who have been increasing the weight of this type of investment in their portfolios.
- However, not all the results have been successful. This type of project is highly complex and requires specialized multidisciplinary teams to study each project after individually, which has made accurate evaluation difficult in some cases. At the same time, there can be numerous limitations in some countries that make pension fund participation difficult. Among other notable problems, there exists the lack of coverage in the face of specific and diverse risks for each project, bureaucratic and regulatory issues.
- Conversely, in other countries, institutional changes have been made to favour infrastructure private financing, modifying regulation, offering diverse types of warranties and making the processes of awarding of bids more transparent and effective.
- The private pension funds participation in develop countries has had different kind of funds schemes and cotized and non-cotized companies in the market. However, the basic model is in each one.
- In this pension watch we will describe the model of private investment in countries outside of Latin America where a greater participation from the private sector has developed in recent years. Specifically, we will review the cases of Australia, the United Kingdom, Canada, the USA and Continental Europe.

1. The participation of pension funds in the financing of infrastructure in Australia

The case of Australia is considered one of the most successful in the world with regards to participation of the private sector in the design, construction and improvement of infrastructure. This is due to the number of projects managed, the volume of capital invested and the numerous follow-up public studies employed to improve the system.

Since the early 80's, Australia has pushed public/private participation (PPP) in the construction and operation of infrastructure, especially in the State of Victoria. Between 1980 and 2005, under diverse forms of PPPs that have been evolving over time, the number of managed projects was 127, which reached a value of US\$ 26,823 million (English, 2006).

The current definition of a PPP in Australia is that of a long term contract between the public sector and the private sector, where the Government pays a promoter to provide a service based on an infrastructure project in their name. These projects can be of the social type (schools, hospitals, jails), or economic type (roads, ports, airports, etc.), (Australian Government, 2008). Some characteristics of PPPs are (see Table 1):

Table 1

Differences between the traditional infrastructure system versus PPPs in Australia

Traditional System	PPPs
Type of concession: D&C (design and construct) and DCM (design, construct and maintenance)	Type of Concession: - Economic Infrastructures: BOOT (build, own, operate, transfer) and DBFO (design, build, finance, operate). - Social Infrastructures: DBFM (design, build, finance and maintenance)
The Government purchases the assets from the infrastructure	The Government purchases the services from the infrastructure
Short-term contracts (2-3 years) with the private sector for design and construction.	Long-term contracts with the private sector for design, construction, financing and maintenance.
Specifications for the project based on INPUT	Specifications for the project based on OUTPUT
The Government assumes the risk from the life cycle of the infrastructure	The private sector assumes all risk from the life cycle of the infrastructure
The Government manages the infrastructure	It may or may not manage the infrastructure
The Government must finance the project from its commencement.	The Government must start paying only when service begins to be rendered.
The Government must finance the project from its commencement	The Government must start paying only when service begins to be rendered

Source: Australian Government (2008)

The provision of service implies the design, construction, financing, maintenance and rendering of service by the private sector. The Government may contribute assets (land, other existing infrastructure, etc.), share risks and provide other support mechanisms. The private sector receives payments from the Government or from the users of the infrastructure once operating. The Government only begins to pay when the infrastructure is finished and operating. The most common method of concession is BOOT and DBFO for the economic type of infrastructure, and DBFM for the social type.

One of the keys to the high level of success that PPPs have had is that good projects have been chosen for them. This implies that this model was only used when it was more advantageous for all parties, that is to say, it provided the best outcome in the cost/benefit analysis (value for money). A standard and rigorous mode of evaluation called Public Sector Comparator (PSC) is responsible for establishing these criteria. (see Table 2).

Table 2

Functions of the PSC

Compare the project under public provision to that under private provision
Analyze the discounted cash flow of the project
Estimating costs and risk and the decision of how many and which should be assumed by the public and private sectors
Proposals to measures the control of risks

Source: Australian Government (2008)

Another factor for the success of a PPP project is risk management. On the one hand, the part assumed by the private sector must be limited to the degree that makes investment commercially attractive. On the other hand, the public sector must transfer a part of the risk to the private sector so the PPP formula will look interesting to them. This difficult balance is optimized when the distribution of each type of risk is assumed by whoever is most capable of dealing with it between the public and private sectors. However, given the differences in each infrastructure project, in Australia there is not one standard with regards to the formula and quantity for distributing risks between the public and private sectors. The PSC determines the quantity and the way in which to address the analysis, the results of which are the object of negotiation with the private sector. To sum up, we could classify PPPs in two large groups that face different risks, the social (schools, hospitals, etc.) and economic (roads, ports, airports, etc.).

1.1. . Instruments of Infrastructure Investment in Australia

In Australia, private infrastructure investment has continued on a pattern similar to the development of investment in the real estate market. Initially, investors preferred to invest their capital directly in infrastructure projects (direct investment). However, with the passage of time, the need arose to carry out a process of financial innovation that would permit the inclusion of pension funds based on their specific needs (larger volumes of investment, liquidity, terms and leverage), of which the availability of capital was increasing. In this way, during the first decade of 2000 instruments for investing were created that were more flexible and provided better access to the market.

In 2005, two means of investment were facilitated in this sector: companies and funds that could be listed on the stock market (listed companies and funds) and funds that were not quoted (unlisted funds). The assignment of investments between listed and unlisted assets depends on the objective and the preferences of the private investor.

a. Investment in Listed Funds and Companies

Infrastructure investments through companies and funds listed on the Australian stock Exchange have increased in recent years. This has become more evident because of the significant infusion of capital that pension funds have injected into this sector. In contrast to the US\$ 3.6 million in 1997, this market reached US\$ 20,266 million in 2006. Thereafter, in just one year, the capitalization of these investments increased in listed companies and funds to US\$ 47,089 million. The main forces of these instruments arise from being: 1) highly liquid and transparent due to their listing in secondary markets; 2) allowing a high diversification between different types of infrastructure, making it easy to achieve a presence between different regions and sub sectors; and 3) the minimum required investment is lower, making it more accessible to minority investors. The principle investors of these funds are companies like Macquarie, AMP, Babcock & Brown, Colonial First State and James Fielding. (see Table 3).

Table 3

Compañías y Fondos Cotizados

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1. Altamente líquidos y transparentes debido a su cotización en mercados secundarios
 2. Permiten una alta diversificación entre distintos tipos de infraestructuras, por lo que es muy fácil alcanzar presencia entre diferentes regiones y subsectores
 3. La inversión mínima requerida es menor, haciéndolo más accesible para inversores minoristas
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Fuente: CFS Research

In order boost participation of pension funds, the Australian market launched a product called infrastructure securities funds, which offers the opportunity to access a wide range of global equity stocks and other types of financial instruments (bonds, stocks, securities, and notes) related to infrastructure. These funds allow for a greater diversification of positions toward infrastructure bonds in countries that are still in an early phase of privatizing their infrastructure.

In general, this role is highly important to minority investors due to the fact that the management of funds allows a greater diversification and there are various investment portfolios from which to choose.

In Australia, investments made in infrastructure through listed funds and companies have been made for decades. The sectors involved are varied and include construction, energy, integrated and diversified public service sector companies, communications, electricity generation, transmission and distribution companies, etc. For example: the company Australian Gas Light has a total of US\$ 2.49 billion in assets in the public sector of gas, transmission and distribution of electricity. Notwithstanding, together with two other companies; Origin Energy Limited with US\$ 6,106 million and Alinta Limited with US\$ 2,634 million in assets, constitute integrated public sector companies in the arena of exploration and energy development assets totalling US\$ 11,198 million. The sectors that stand out in this type of investment are construction and toll roads and transmission and distribution, with assets totalling US\$ 16,449 million and US\$ 17.37 billion, respectively. However, the largest investors prefer to have direct participation in projects or further invest in non listed assets.

b. Unlisted Funds

The value of unlisted fund assets is established through diverse indirect valuation methods that fluctuate less than stocks listed on the securities exchanges. The principle agents, which acquire greater presence in infrastructure through these unlisted funds are large institutional investors and Superannuation funds. The administrators of the largest funds are AMP Capital, ANZ Infrastructure Service, Industry Funds Management and James Fielding. In Table 6 the characteristics of these funds are presented.

Unlisted investment funds have experienced significant growth in recent years. At the end of 2005, 19 entities were accounted for in the sector, with capital of US\$ 3,378 million invested in 144 stocks of economic (airports, toll roads, trains, energy, etc.) and social (health, correctional, parking and universities, etc.) infrastructure.

To identify the funds that belong to this sector, they were classified by type of administrator, the year established, the number of shares and the percentage of those shares that belonged to the infrastructure sector. In order to value the benefits from the development and diversification of this type of investment, the average-weighted index is calculated, constructed using five large unlisted investment funds. These funds are Hastings Utilities Trust of Australia (December 1994), the AMP Diversified Infrastructure Equity Fund (September 1995), the CFS Infrastructure Income Fund (October 2003), the Perpetual Diversified Infrastructure Fund (January 2005) and Hasting's the Infrastructure Fund (October 2000). In the previous table all investments made by these and other funds were reviewed.

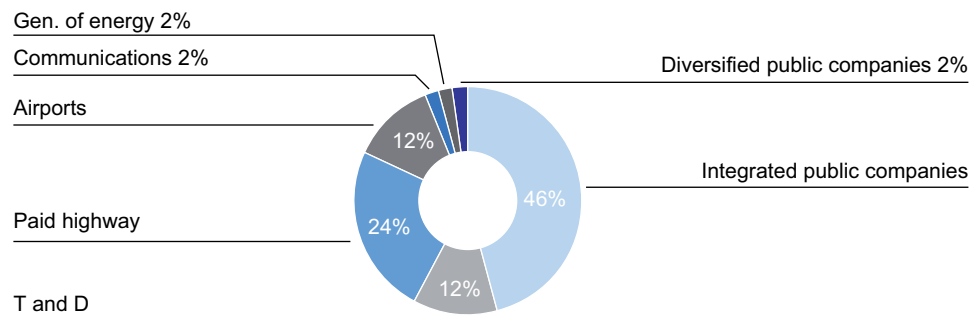
On the other hand, another product exists in the Australian market: unlisted wholesale funds. In general, these are balanced funds that also include assets from other sectors beyond infrastructures. These especially attract the interest of pension funds and other institutional investors, due to the fact that they are especially well diversified long term investments and do not require a great capital contribution. In this type of investment, investors can divide their cost of participation on each project from a standpoint of diversifying their position, with the result being that they obtain a greater degree of diversification and a greater profitability in the long term.

c. Risk-return profile among listed investments

One of the great advantages of infrastructure is that it offers a wide range of investment products (individual, collective, portfolio diversification, investment in different sectors, health funds, majority funds, etc.) to satisfy the different levels of risk tolerance among investors. The factors that influence the risk-return profile of these products can vary among the national, regional and international markets based on levels of leverage and degree of development. The infrastructure market in Australia (one of the most mature globally) offers a wide range of public information about the return on listed investments. In addition, it offers a division of products between those "core" ones (mature products that offer a lower risk and low return) and those "opportunistic" ones (those with a presence in developed and emerging markets whose risk-return profile looks like that of stocks). Some investments in these funds have been taken from stock in the Australian stock market. As of June 30, 2006, 20 infrastructure funds were reported as available, with a combined capitalization of US\$ 26.3 billion.

Chart 1

Infraestructura cotizable y empresas del sector público en Australia (capitalización de mercado por sector, agosto 2008)



Source: UBS and CFS Research

1.2. Pension funds in Australia and their participation in Infrastructure

Reasons that have made infrastructure investment by superannuation funds favourable and those that continue to make it unfavourable have been the spectacular increase in the participation of Superannuation funds in the financing of infrastructure results from a series of factors that have made the election of this type of shares favourable: Consistent yield: Infrastructure projects tend to provide a flow of secure and consistent dividends, good fiscal incentives over dividends through the exemption or deferral of tax payments, direct investment in infrastructure is free from the adverse development of other listed shares in the stock market, reducing the volatility of portfolios, long term maturity: Infrastructure shares produce returns over a long period of time. This fits in with Superannuation funds because the commitments for payment of services are over the same time period.

Nevertheless, there are other factors that cause Superannuation funds to not be invested in infrastructure to the extent that they could be restriction of liquidity, difficulty to value projects, initial investment usually requires large quantities of capital, which means that only large funds can be invested in infrastructure projects that are not listed in the Stock Market and unequal offer of the quality of infrastructure shares.

Superannuation funds can be invested in infrastructure four ways (see Table 4). Australian funds were the first to be involved in infrastructure during the 90's, forming part of the process of share privatization that the State kept open in different sectors, mainly energy, transportation, construction and communications. The process involved the participation of financial experts in the structuring of portfolios that were appropriate to the long term objectives of pension companies.

Table 4

Superannuation Funds Investment

- Through the acquisition of debt coming from the infrastructure operators
- Through unlisted investment institutions
- Through listed infrastructure funds and companies
- Through associations with other companies to be co-owners and jointly operate the investment (Project finance)

Source: Nielson, L 2005

In 2002 the investment in infrastructure through superannuation funds made up approximately 2% of total funding, with US\$ 4,448 million. By 2012 it is expected that the investment will rise to US\$ 51,673 million, which will represent 5% of the total superannuation fund (US\$ 667,904 million).

The investment in infrastructure has provided a long term life cycle for the assets demanded by superannuation funds. Plus, the reduction in infrastructure expenditure by the Government (that has gone from over 14% in 1970 to 5% in 2005) makes it favorable to increase the participation of superannuation funds in infrastructure investment, replacing the State as the primary institutional investor.

Table 5

Infrastructure Investment from Australian Pension Funds

Companies - Funds	% of the portfolio	Infrastructure assets (millions)
MTAA Super Fund	18%	US\$610
WESTSCHEME	12%	US\$126
STAsuper	8%	US\$417
UniSuper	6%	US\$706
HOSTPLUS	4%	US\$89

Fuente: Peng y Graeme 2007

2. The participation of pension funds in the financing of infrastructure in the United Kingdom

The mechanism for evaluating projects in the UK is very similar to Australian's. The first successful examples in the application of PPPs were carried out in the transportation sector. For example, the Dartford bridge (signed in 1987 and opened in 1991) crosses the River Thames, alleviating highway congestion on M25 Motorway near London. This project was done with private investment under the DBFO (design, building, financing and operation) model. Another groundbreaking project was the construction of the Severn bridge (signed in 1990) between England and Wales which implemented a DBFO concession.

Due to the success of the previous projects, in 1992 the British Government announced the creation of the Private Finance Initiative (PFI). The first wave of projects began in 1994, involving the construction sector participating in the design, building and operation of new roads.

In 1997, the PFI model was restructured and a more complete program was developed, at which point the term PPP came into use.

The PFIs / PPPs, as they are commonly called in the United Kingdom, are increasingly involved in the development of infrastructure, particularly in the sectors of transportation, health, education, housing, defence, telecommunications (IT), and the management of urban waste, water and sanitation.

Other data coming from the IFSL Research 2008 shows that between 1990 and 2007 more than 900 projects were signed under the PPP model at a value of US\$ 106,029 million and the largest participants in PFI projects in 2008 were the armed forces, education and healthcare. These have been the most prominent departments during the five years since 2004, with contracts that add up to around US\$ 15 billion between defence and healthcare and close to US\$ 11 billion in education.

2.1. The participation of pension funds in infrastructure

In the United Kingdom there are approximately 50 public and private funds currently investing in infrastructure. Some of the largest public pension funds are:

1. *The London Pensions Fund Authority (LPFA)*. This fund can be characterized by having 15% of its portfolio allocated to infrastructure investments. It utilizes various instruments, like direct investments, unlisted funds and it also has positions in listed funds.
2. *Universities Superannuation Scheme (USS)* is the second largest fund. USS is a frequent investor in infrastructure shares through its pool of private capital. 90% of its capital is placed in unlisted funds while the rest is directed to direct investments.
3. *Greater Manchester Pension Fund (GMPF)* is the largest domestic pension fund in the United Kingdom, made up of 10 localities in Manchester and around 200 associated organizations. Its capital is currently more than US\$ 14,802 million.

3. The participation of pension funds in the financing of infrastructure in Canada

It is difficult to talk about PPPs in Canada in general way. As is the case in Australia, infrastructure competencies are relegated to each province, and in some cases, vested at the municipal level. In this way, there are diverse legislation and models within the country. The region that has most clearly wagered on PPPs has been British Columbia, while the province of Quebec is making great progress toward adapting regulation and attracting new investments. The region of Ontario, however, is in a special situation. Some recent experiences in PPPs (controversial from a political point of view) have brought about a definitional modification which resulted in a newly inaugurated term, Alternative Financing and Procurement Strategies (PFA), so that it would be more acceptable to the general public. In general, the different regions try to adapt their legislation to make it as close as possible to looking like the best practice models of Britain and Australia.

PPPs are a relatively recent phenomenon in Canada, the first projects are dated to the second half of the 90's. This country shows an idiosyncrasy that is somewhat special for the region, where the presence of public services (education, healthcare, etc.) is funded by taxes whose access is universal. This element differentiates it from its southern neighbor, imposing a certain preference regarding the public provision of vital services, and as such, the breakthrough of the private sector in the provision of these services is seen by the population with a certain degree of skepticism. Nonetheless, budget restrictions in the provinces obligate them to look for ways in which to collaborate with PPPs. The result of these circumstances is that the PPPs in Canada receive mixed reviews regarding their desirability, especially from political and social points of view.

The most emblematic case is that of Highway 407 in Ontario, where the conservative Government granted a concession to a beltway road from Toronto to a group of national and international investors for a period of 99 years. In the signed contract, a clause stated that if traffic surpassed a certain volume, the licensee company could increase its fees for the use of the highway. The company exercised this right in 2004, which was very unpopular among its users. This was used by the opposition as a way of gaining a political advantage by proposing a decrease in the fees (an issue that was not provided for in the contract). The liberal Government filed a claim against the concessionaire (which as of today they have lost) and the proceedings are being carried on in the judicial sphere. This event has generated legal insecurity in PPP investments in Canada, and it poses (surprisingly) the possible need to utilize regulatory risk mitigation tools for investments, which were themselves developed in Canada (ICEX, 2005).

3.1. The participation of pension funds in infrastructure in Canada

In Canada, between public and private pension, there are more than 15 funds currently investing in infrastructure. According to the Pension Investment Association of Canada (PIAC), aggregate assets invested in infrastructure amounted to US\$ 27.733 billion, which represents 3.67% of total managed assets. The principal public funds are:

1. *Ontario Teachers' Pension Plan (OTPP)* is one of the largest public pension funds to have invested in infrastructure since 2001, mainly through direct investments in infrastructure companies and projects.
2. *Ontario Municipal Retirement System (OMERS)* was created in 1962 for employees of the Government of Ontario. In the 1st quarter of 2009, investment in infrastructure assets represented between 15% and 16% of its portfolio between direct investments and investments in equities of companies in this sector. They currently plan to increase their participation to between 31% and 35%.
3. *Canadian Pensions Plan (CPP)* began investing in infrastructure in 2005 and since then has developed a portfolio of direct investments and commitments to unlisted funds. By the end of 2010, they plan to have 6.5% of their portfolio allocated to infrastructure, and to increase this percentage by 2.2 percentage points during the year.

4. The participation of pension funds in the financing of infrastructure in the USA

The PPP model in the USA has been concentrated in the transportation sector, which includes roads, bridges, trains and ports. There are many examples of privately built infrastructure in the USA, such as the Chicago Skyway, the Indiana Toll Highway and the Pocahontas Parkway. Even though their PPP model is not different than those in the rest of the world, the fragmented nature of the federal government system does not permit extracting just one regulation for PPPs. Recently, the US Transportation Department published in a pilot program with the intent of promoting, financing and studying new infrastructure using the PPP formula in a federal news report. This proposal is also a positive starting point for being able to come up with common regulations for the entire country. The following section proposes a unique program for PPPs in the US. The main PPP projects realized in different states are seen in Table 6.

Table 6

Large PPP Roadway projects in the US

Project	State	Public Authority	Commencement of the Project	Opening	Project Cost (US\$ million)
State Route 91	CA	Caltrans	1993	1995	126
State Route 125	CA	Caltrans	2000	2007	722
Route 3 North	MA	Mass. Highways	1999	2006	385
Southern Connector	SC	S. Carolina DOT	1998	2001	217
Dulles Greenway	VA	Virginia DOT	1993	1995	338
I-895 Pocahontas Parkway	VA	Virginia DOT	1998	2002	377

Source: Yescombe (2007)

Unique PPP program in the US

In order to harmonize the PPPs among the different States, the Federal Department of Transportation proposed a series of measures to promote the participation of the private sector in the funding of infrastructure: to establish a PPP Commission Unit, introduce Pilot Projects, to Define the Objectives of the Public Sector, to Define the scope of the Project, viability and Other Studies and to Identify sources of income.

When a project is considered eligible for contracting with a PPP, it is important to define the form of payment as different payment mechanisms exist. We refer to three cases: 1) Self-financing: the fees charged to users for the service are adequate to finance the cost of capital of constructing the project as well as the expense for management, in addition to providing an acceptable return to the private sector investors. 2) Payments from the Public Sector: Projects are deemed part of basic public services (i.e., public education, health, and the like.) In this case the public sector pays an agreed-upon fee for the service rendered. Generally, these projects are deemed low risk, because technically, it is not difficult to calculate the associated expenses and cash flow. (for example: the maintenance of schools or Government offices, etc). 3) A combination of both: The State may subsidize a part of the applicable fee.

4.1. The participation of pension funds in the financing of infrastructure

Recently in the US, the Maine Public Employee Retirement System increased its allocation goal for infrastructure projects from 4% to 5% as part of a process of reconfiguring its portfolio (Liability Driven Investment-LDI). In a similar case, in September 2007 the California Public Employee Retirement System (CalPERS) included an initial allocation of infrastructure investment of more than US\$ 2.5 billion. In November 2007, the Washington State Investment Board and The Teachers Retirement System of Texas decided to invest 5% of their portfolio in "tangible assets" that include infrastructure, agricultural and timber exploitation.

5. The participation of pension funds in the financing of infrastructure in Continental Europe

PPPs with a wide variety of different legal frameworks and models among different countries in continental Europe began to develop in the last decade. In recent years, there has been a renewed interest in PPPs due to the need for new infrastructure and budgetary restrictions. This has driven legislative reforms that have tended to promote the participation of the private sector in the financing of new infrastructure.

Although projects exist that are funded through the capital market, the utilization of bonds has been relatively scarce. Unlike the United Kingdom where the fixed income market is well established, many of the European PPP transactions have been financed through bank loans. Nonetheless, many countries have introduced new legislation in order to make up for the models' weaknesses: 1) Some countries have taken a systematic approach to changing the policies and legislation in order to allow PPPs to function, using the conclusions of studies to decide what projects are likely to succeed within the PPP framework. 2) Others have tried to accommodate PPPs within current legislation or begin with pilot projects.

5.1. The Phenomenon of Public-Private Collaboration (PPC)

In the face of a large amount of applicable legislation and PPP formulas in the EU, in 2000 the European Commission proposed the Public-Private Collaboration as a model that integrates the framework of different PPPs on the continent. In general, it refers to the different forms of cooperation between public authorities and the business world whose objective is to guarantee the funding, construction, renovation, management and maintenance of infrastructure. For that reason they published "Interpretive Communication on concessions and Community public procurement law", which addresses the basic principles and rules arising from the treaty and the law. It also defines the concession as a right of the community, and obliges the public authorities to comply with a set of laws when selecting the concession operators. In addition, the new European Parliament and Council directives target modernizing and simplifying the community's legislative framework in order to establish an innovative procedure for awarding projects, especially with regards to adjusting to the specific needs of especially complex contracts. This new procedure, "competitive dialog", allows public authorities to establish a dialog with candidate companies in order to identify solutions to respond to their needs. (see Table 7).

Nonetheless, some representatives of the interested sectors believe that the community standards applicable to concessionaires lacked sufficient clarity and homogeneity from one member State to another. This situation created uncertainty among community agents, because it represented a real obstacle for the creation or operational success of the PPC to the detriment of the funding of large infrastructure projects and the development of quality public services. For this reason, the European Parliament invited the Commission to examine the possibility of adopting a Directive targeted at regulating the concessionary sector and other forms of PPCs in a homogeneous manner. The European Economic and Social Committee, on their part, also stated that a legal initiative was necessary.

Table 7

Features of CPP's operations

1. A relatively long duration, which involves the cooperation between the public and private partners in different aspects in order to complete the project
2. The manner of funding the project, guaranteed in part by the private sector. On occasion, this occurs through a complex organization of diverse participants. Nonetheless, private funding may be subsidized with public funding, which may end up being very high
3. The important role of the financial operator, who participates in different phases of the project (design, production, execution and financing). The public partner essentially concentrates on defining the objectives in the public's interest, quality of services provided and pricing policy, while guaranteeing the control of compliance with said objectives
4. The sharing of risks between the public and private sectors, through the transfer of risks that historically have been supported by the public sector. Nevertheless, the PPC operations do not necessarily imply that the private partner will assume all risks arising from operation. The exact sharing of risks is outlined on a case by case basis, depending on the parties' respective capabilities to evaluate, control and manage said risk

Source: European Commission, Green Paper

In 2004, the European Commission announced the publication of the “Green Paper”, which focused on the operations of PPCs and the communities’ right to public contracting and concession for the purpose of initiating a debate regarding the best way to guarantee that PPC operations are developed competently and legally. The Green Paper presents the scope of community standards applicable to the selection phase of the private partner and the previous phase, with the objective of detecting possible uncertainties and analyzing whether the community framework is appropriate for the obstacles and specific characteristics of PPC operations.

5.2. Infrastructure Projects Carried out in Europe

Over the course of the last decade, the PPC phenomenon has developed into a large number of public projects. There are various factors that explain this boom. Taking into account the budget restrictions that the different States have had to face, the public sector must turn to private funding for the construction of new necessary infrastructure. Another explanation consists of the desire to take advantage, to the greatest extent possible, of the knowledge and methods used by the private sector in the operation of these types of projects. On the other hand, the development of the PPC model represents the evolution of the role of the State in an economic setting, morphing from direct operator to organizer, regulator and controller.

The public authorities of member states often turn to PPC operations in order to realize infrastructure projects, particularly in the sectors of transportation, public health, education and safety. In the European setting, it has become known that PPC operations can contribute to the creation of trans-European transportation networks, in which there is a huge backlog due to, among other things, the scarcity of investments. In the framework of the growth initiative, the Council has approved a series of measures whose objective is to increase investment in trans-European network infrastructure, as well as the realm of innovation, research and development, in particular through the organization of PPC operations.

Since 2001, US\$ 54,013 million in projects have been assigned within continental Europe, which represents two thirds of the value reported in the United Kingdom (US\$ 89,048 million).

The value of contracts signed in 2008 reached US\$ 7,299 million. The values of PPP agreements signed in 2008 by country are, from largest to smallest amount, Spain and France (US\$ 5,985 million), Italy (US\$ 5,255 million), and Ireland US\$ 4,817 million).

The most important contracts that PPCs have had to negotiate have developed in the transportation sector, with some pension fund investment in them. In Table 9, the largest projects that have been done in Europe are grouped together by sector.

Currently, according to IFSL Research at the European level, the largest PPP market is located in Italy, with projects valued at US\$ 40,845 million, while Germany and Greece have projects valued at US\$ 13,868 million and US\$ 9,197 million, respectively. According to DLA Piper, these negotiations are intended to be extended in the coming years throughout the continent and as such, fund administrators and individual investors are becoming more and more involved in them.

Table 8

Largest PPP Contracts executed in Europe (Value of capital by contract, US\$ million)

Project	Type	Country	Year of contract	US\$ million
Messina Strait Crossing	Source	Italy	2006	3829
CSB toll road	Road	Greece	2007	2859
Csurgó City - sport facilities	Sport	Hungary	2007	1838
Oosterweel Link	Tunnel	Belgium	2004	1573
HSL Zuid speed rail	Train	Netherlands	2001	1093
Corinth-Tripoli-Kalamata & Lefktro Sparta	Road	Greece	2007	1362
Corinth-Tripoli-Kalamata & Lefktro Sparta	Road	Greece	2008	1460
Devavanya City - sport facilities	Sport	Hungary	2007	1205
Brescia-Milan Toll Road	Road	Italy	2005	1058
Szekszard Boly-Pecs	Road	Hungary	2007	1164
A5 Ostregion	Road	Austria	2006	1085
A2 Motorway, Nowy Tomysl-Konin	Road	Poland	2004	1016
Segarra Garrigues-Irrigation Project	Channel	Spain	2002	776
Phase 1-Thessaloniki Subway	Train	Greece	2005	982

Source: Public Private Finance 2007

5.3. Investment of pension funds in infrastructure in Europe

While experience with the PPP formula for infrastructure investment has started to be very successful in continental Europe, we cannot state the same for the participation of pension funds in the funding of infrastructure. One of the reasons that may justify this is that the majority of these countries have a public distribution system until recently. The funds accumulated in these systems have generally been invested in fixed income assets. In some countries, a percentage of the fixed income assets are allowed to be listed, but in no case would it be possible to invest directly in infrastructure, because among other reasons the different social security administrations do not have teams specialized in this asset class. In some cases, like that of Spain, where the reserve fund reached 57,223 million Euros at the end of 2008, investment only allowed in sovereign debt would be an excellent resource for infrastructure investment.

If the public systems do not invest in infrastructure, the private pension funds have not turned to this important form of action either. Nevertheless, according to Prequin, many countries have introduced some percentages of assets associated with infrastructure into their investment objectives. For example, according to Prequin, Bayerische Versorgungskammer invested 300 million Euros in infrastructure shares of listed companies and funds and their goal is to reach 600 million (1.5%).

6. Conclusions

The consolidation of infrastructure investments by pension funds in developed countries has evolved over a period of decades. Each one of the countries reviewed, when venturing into this type of investment, has taken up different perspectives in the application and management of the concession systems under the PPP modality as well as the manner in which pension systems could be integrated as a channel for resources. In the end, these experiences have shown that the infrastructure-pension binomial can generate significant advantages for members of pension plans as well as for the development of the countries.

In summary, the countries whose experiences we have reviewed in this chapter have incorporated a significant amount of pension fund participation in infrastructure investment. In order to do so they have adopted new financial tools, homogenizing the laws of some independent states, generating systems that shield them from political restrictions, developing markets for new assets and decreasing distrust on the part of investors and individuals in their respective states. The result shows both strengths and weaknesses in the current processes of developing PPP systems.

With respect to emerging countries, we can distinguish the strengths of the most developed systems. First, they have maintained a positive cost-benefit analysis in terms of value for money. Second, they have improved throughout the process, reaching equilibrium with respect to the important role of the financial operator who participates in different phases of the project (design, production, execution and financing). Third, in PPP models, the role of the public partner has been most focused on defining strategic objectives and on defining conditions in terms of the quality of services provided and the pricing policy, while guaranteeing compliance to project objectives. Fourth, over the years a greater understanding of how to develop risk management plans has taken form. Fifth, the modes of financing and insuring projects have been adequately secured by assuming the correct risk assumptions on the part of both partners. And finally, a wide range of investment products have been developed (in the scope of individual, collective, portfolio diversification, investment in different sectors, insurance funds, majority funds, etc.) to satisfy the different levels of risk tolerance among investors.

As for pension funds, experience has shown that this type of project provides them with a regular and definite flow of dividends and profits, and interesting tax incentives. Furthermore, direct investment in infrastructure is free from the same adverse risks as other assets listed in the stock market, thus reducing portfolio volatility. It is true that there is still work to be done with respect to liquidity restrictions for infrastructure-related assets, the difficulty of appraising projects (in some cases, it is difficult to estimate the current value of an infrastructure project), the demanding submission conditions (the initial investment usually calls for large amounts of capital, though there are special products for retailers), the inequalities in the quality of infrastructure assets and the legal uncertainty for investments. Overall, however, the advances made toward decreasing these risks have been substantial.

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