



Instituto Superior de Economia e Gestão

UNIVERSIDADE TÉCNICA DE LISBOA

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**“AN OVERVIEW OF PROJECT FINANCE
MARKET IN PUBLIC PRIVATE PARTNERSHIPS
IN PORTUGAL”**

Joana Raquel Gonçalves Caldeira

Orientador: Mestre Joaquim Miranda Sarmiento

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List of acronyms

BOT – Build, Operate and Transfer

BOO – Build, Operate and Own

BOOT – Build, Own, Operate and Transfer

EIB – European Investment Bank

GASEPC – Office for the Support of the Business Sector of the State, Partnerships and Concessions

IEP – Portuguese Public Road Institute

IRR – Internal Rate Return

MF – Ministry of Finance

MFAP – Ministry of Finance and Public Administration

OECD – Organization for Economic Co-operation and Development

PPP - Public Private Partnerships

SEE – State Business Sector

SPV – Special Purpose Vehicle

VFM – Value For Money

WACC – Weight Average Cost of Capital

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Abstract

Over the last years, the governments have increase the use of Public Private Partnerships as a cooperation between the public and the private sector regarding the construction and maintenance of infrastructures and public services, with an intervention in all phases of process from private sector.

The main purpose of public private partnership is to adress the infrastructure gap as it has a negative impact on economic growth, job creation and social cohesion. This gap consists in a need of infrastructures considerably superior to the public financial resources available. The assumption of this gap has resulted in the acceptance that the private sector can play an important role in financing and operating of infrastructures, in partnership with the public sector through the project finance.

This work analyses the project finance market in public private partnerships in Portugal describing the Portuguese experience and gives us a general idea of capital expenditure and number of partnerships in Portugal market. Additionally we analyze which sectors are and how it is distributed by sectors. From 1995 to 2009 were established one hundred eleven concessions, and almost 30 000 million of Euros of capital expenditures.

Keywords: Public Private Partnerships, Project Finance

Resumo

Nos últimos anos, o uso de Parcerias Público privadas tem aumentado por parte do estado como uma forma de cooperação entre o sector público e o sector privado em relação à construção e manutenção de infra-estruturas e serviços públicos, com uma intervenção em todas as fases do processo por parte do sector privado.

O principal objectivo de parcerias público privadas é o de colmatar uma lacuna de infra-estruturas, *the infrastructure gap*, este tem um impacto negativo no crescimento económico, na criação de emprego e na coesão social. Essa lacuna consiste numa necessidade de infra-estruturas consideravelmente superior aos recursos financeiros públicos disponíveis. O pressuposto desta, resultou na aceitação de que o sector privado pode desempenhar um papel importante no financiamento e na exploração de infra-estruturas, em parceria com o sector público através de *Project Finance*.

Este trabalho analisa o mercado de *Project Finance* nas Parcerias Público Privadas em Portugal descrevendo a experiência Portuguesa e dá-nos uma ideia geral das despesas de capital e do número de parcerias existentes no mercado Português. Adicionalmente, analisou-se quais os sectores existentes e como é que se encontram distribuídos. De 1995 a 2009 foram estabelecidas cento e onze concessões, e quase 30 000 milhões de Euros de despesas de capital.

Palavras-chave: Parcerias Publico Privadas, *Project Finance*

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Thank you all

1. Introduction

In recent years the project finance has attracted the interest of a large community of analysts since it is a frequently used form of financing associated to Public Private Partnerships.

Public Private Partnership according to OECD (2008, p. 17) is “... an agreement between the government and one or more private partners (which may include the operators and the financiers) according to which the private partners deliver the service in such a manner that the service delivery objectives of the government are aligned with the profit objectives of the private partners and where the effectiveness of the alignment depends on a sufficient transfer of risk to the private partners”.

As mentioned in the definition, the public private partnership is cooperation between public and private sector, which has been greatly increasing, which is related to the increased participation of the private sector with the intervention in all phases of the process.

The phase of financing is one of the phases in which the private sector participates actively. Project finance is a form of financing that will be studied, which can be defined as “...the structures financing of a specific economic entity – the SPV, or special-purpose vehicle, also known as the project company – created by sponsors using equity or mezzanine debt and for which the lender considers cash flows as being the primary source of loan reimbursement, whereas assets represent only collateral” (Gatti, 2008, p. 24).

The project finance and the public private partnerships are a subject little explored in Portugal. The objectives of this work are to analyze how public private partnerships are financing through project finance using the Portuguese market.

This dissertation is divided in five chapters, *Introduction*, *Review of Literature*, *An Overview of Public Private Partnership in Portugal*, *An Overview of Project Finance Market in Public Private Partnerships in Portugal*, and *Conclusions*.

The second chapter, *Review of Literature* is divided in two sections, one defines project finance, comparing definitions of different authors and referring the common features in several project finance projects, differentiates the contrasts between project and corporate finance, and shows the possible sponsor in projects finance deal. The second section refers to public private partnerships addressing various definitions and concepts related as value for money, notes the advantages and disadvantages and the types of projects in public private partnerships.

The third and fourth chapter, *An Overview of Public Private Partnership in Portugal* and *An Overview of Project Finance Market in Public Private Partnerships in Portugal*, describes the Portuguese legislation for public private partnerships and gives us a general vision of Capex and the number of partnerships in the Portuguese market.

At last, the report will end in a last chapter which contains a discussion and conclusions of the results found during the research.

The Method used during the research, for data collection is to collect secondary sources (Kumar, 2005). The documents which have been consulted to access the results compiled in the following report are government's publications and earlier research.

2. Review of literature

2.1. Project Finance

2.1.1. Definition

Project finance can be defined as “*a method of raising long-term debt financing for major projects. It is a form of ‘financial engineering’*, based on lending against the cash flow generated by the project, and depends on a detailed evaluation of a project’s construction, operating and revenue risks, and their allocation between investors, lenders, and others parties through contractual and other arrangements” (Yescombe, 2002).

Gatti, (2008, p. 24) defines project finance as “*a financing that as priority does not depend on the soundness and creditworthiness of the sponsors, namely, parties proposing the business idea to launch the project. Approval does not depends on the value of assets sponsors are willing to make available to financiers as collateral. Instead, it is basically a function of the project’s ability to repay the debt contracted and remunerates capital invested at a rate consistent with the degree of risk inherent in the venture concerned*”.

Although Project finance was used a lot of time as a method of financing, when financing decisions were based on cash flows expected by the project, only recently we named it Project Finance (Farrel, 2002).

Project Finance is generally used to refer to a non-resource or limited resource financing structure in which, Debt, Equity and credit enhancement are construction and operation of a particular facility in a capital intensive industry (Andrew, 2006).

“Project finance is the structures financing of a specific economic entity – the SPV, or special-purpose vehicle, also known as the project company – created by sponsors using equity or mezzanine debt and for which the lender considers cash flows as being the primary source of loan reimbursement, whereas assets represent only collateral” (Gatti, 2008, p. 24).

Both definitions are centralized at Cash Flow, which can be generated for the new project with the capital invested and debt contracted.

Project finance structured is used in different sectors and industries. It has similar features that can be recognized in all the projects in general. In every Project Finance deal there is a Special Purpose Vehicle (SPV) as an independent business, legally and financially, of the sponsors. The Special Purpose Vehicle is a debtor and usually it is created for a new project, not for an existing business (Esty, 1999 and Yescombe, 2002).

Another important issue in project finance deal are the guarantees, as the sponsor do not need to provide assurances, or just limited assurance for the project finance debt. Consequently lenders do not look for the value of asset, they are trust in future cash flows that will be generated by the new project, they do it by certifying the value of project contracts practicing a strict control on the activities of Special Purpose Vehicle (Yescombe, 2002).

The priority of Cash Flows of Special Purpose Vehicle is to cover operating costs and to ensure the service of debt in terms of capital repayment and interest; just residual funds can be used to pay dividends to sponsors (Gatti, 2008). The author also mentioned that an important typical feature is about risk of project, which is allocated equitably among all parties involved at the project.

As debt resources are central in project finance, projects tend to have a high ratio of debt equity, normally 70 – 95% of a project costs (Yescombe, 2002 and de Sousa, 2009).

In terms of project life are finite, based on factors like duration of the contracts or license, or the reserves of natural resources, consequently the project finance debt must be fully repaid by the end of this life (Gatti, 2008).

2.1.2 Corporate Finance vs Project Finance

Sometimes project finance is not clear in relation to corporate finance, some authors like to clarify the differences between these two types of financing.

According to Yescombe (2002), Gatti (2008) and Esty (1999) corporate finance is given based on the value of assets in the balance sheet, and projections of past cash flows and profit record, while project finance is lent based on future cash flows.

The insurance of the project in corporate finance is the cash flows of borrower's business, instead of limiting the cash flows to a specific project, and usually equipment and buildings is used as guarantee.

Another difference is that the accounting treatment is on the balance sheet opposing to project finance.

Another important difference is the length of the project life. In corporate finance it is assumed that the company has an infinite life, therefore it can renovate the loans unlike in project finance, where the life is finite which limits the duration of the financing (Gherzi and Sabal, 2006, Yescombe, 2002 and Gatti, 2008).

Relatively to the financial vehicle, project finance has a single purpose entity, while the traditional finance has multipurpose organizations, which means the destination of financing in project finance has a single purpose and in corporate finance is multipurpose (Gherzi et al, 2006 and Comer, 1996).

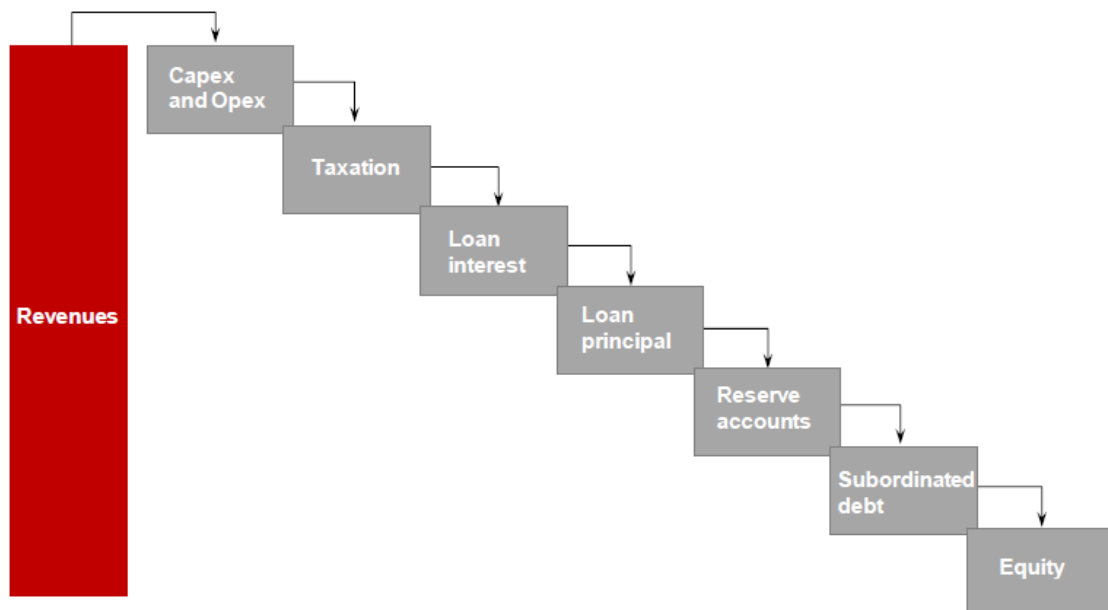
Other critical issue regards the reinvestment decisions and the dividend policy, in corporate finance the reinvestment decision and the dividend policy are taken by the corporate management, independently of investors and creditors, while in project finance the dividends policy is fixed (immediate payout) and usually reinvestment is not allowed (see Exhibit 1). Associated to this point comes the transparency of capital investment decisions to creditors, which is found more easily in project finance than in corporate finance for the reasons that were mentioned in the latter point (Comer, 1996).

The financial costs in project finance tend to be very high, comparing to corporate finance, for these reason project finance “...requires the existence of a certain scale and only makes sense for large-scale investment” (Gherzi et al, 2006).

Table 1 - Project Finance – Corporate Finance continuum

Dimension	Corporate Finance	Project Finance
Financing vehicle	Multi-purpose organization	Single-purpose entity
Type of capital	Permanent – an indefinite time horizon for equity	Finite – time horizon matches life of project
Dividend policy and reinvestment decisions	Corporate management makes decisions autonomous from investors and creditors	Fixed dividend policy – immediate payout; no reinvestment allowed
Capital investment decisions	Opaque to creditors	Highly transparent to creditors
Financial structures	Easily duplicated; common forms	Highly-tailored structures which cannot generally be re-used
Transaction costs for financing	Low cost due to competition from providers, routinized mechanisms and short turnaround time	Relatively higher costs due to documentation and longer gestation period
Size of financings	Flexible	Might require critical mass to cover high transaction costs
Basis for credit evaluation	Overall financial health of corporate entity; focus on balance sheet and cash flow	Technical and economic feasibility; focus on project's assets, cash flow and contractual arrangements
Cost of capital	Relatively lower	Relatively higher
Investor/ lender base	Typically broader participation; deep secondary markets	Typically smaller group; limited secondary markets

Source: Comer (1996, p. 6)

Exhibit 1 - Cash-Flows cascade in Project Finance

2.1.3 Sponsors in Project Finance deal

In a project finance deal we can find institutional investors who are known as sponsor, they follow a clear objective, which differs depending of the type of sponsor. There are four types of sponsors identified that are involved in those agreements (Gatti, 2008 – see exhibit 2).

The first sponsor recognized is Industrial Sponsor, who sees the new project integrated on the business both downstream or upstream, or somehow connected to their core business. The other sponsor identified is Public Sponsor who is central or local government, municipalities, or municipalized companies, that the objective is social welfare. The third investor known is denominated for Contractor “who develop, build, or run plants, they are interesting in participating in initiative by providing equity and/or

subordinate debt” (Gatti, 2008). The last sponsor referred by Gatti (2008) is purely Financial Investors, with a single objective, to invest capital in high-profit deals, expecting high returns, for these reason these players have high tendency for risk.

Exhibit 2– Sponsors in Project Finance

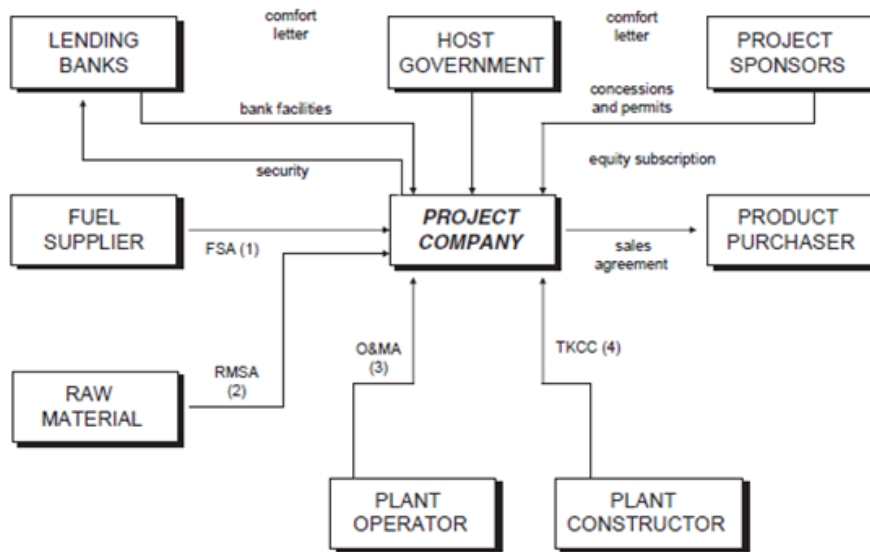


FIGURE 1-1 Typical Contract Structure of a Project Finance Deal [(1) fuel supply agreement; (2) raw material supply agreement; (3) operating and maintenance agreement; (4) turnkey construction contract]

Source: Gatti (p. 30 ,2008)

2.2 Public Private Partnerships

2.2.1 Definition and main concepts

The definition of Public Private Partnerships (PPP) is not unanimous, varying from setting to setting since each definition defines several types of contracts.

The OECD (2008, p. 17) defines Public Private Partnerships as “... an agreement between the government and one more private partners (which may include the operators and the financiers) according to which the private partners deliver the service in such a manner that the service delivery objectives of the government are aligned with the profit objectives of the private partners and where the effectiveness of the alignment depends on a sufficient transfer of risk to the private partners”.

The European Investment Bank (2005) describes the Public Private Partnerships like a “...provision, long-term operation, and maintenance, of public infrastructure by the private sector”, on the other hand in other paper the EIB (2004) states Public Private Partnerships is “... a generic term for the relationships formed between the private sector and public bodies often with the aim of introducing private sector resources and/or expertise in order to help provide and deliver public sector assets and services.”

The definition of Public Private Partnerships by the Canadian Council for Public-Private Partnerships¹ is “A cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.”

According to the Decree - Law (Decreto-Lei 141/2006 – de 21 de Julho) defines Public-Private Partnerships as “...the contract or the union of contracts, in which way private

¹ <http://www.pppcouncil.ca/>

entities, named by private partners, undertake on a lasting basis, before a public partner, to ensure the development of an activity aimed to satisfy a collective need, where the funding and responsibility for investment and exploration are, in whole or in part, to the private partner”.

Despite these difficulties to define Public Private Partnerships, there are some characteristics in common, which can be clearly identified in these definitions:

i) **Participants:** the establishment of a contract between two (or more) parties, where one of them is a public body and the others are the private sector. This contract aims to build or/ and to develop and to manage the agreement infrastructure (Grimsey and Lewis, 2007 and Santos, 2006).

ii) **Relationship:** The relationships between partners in a partnership have to be thoughtful, since it is a long-term partnership. (Grimsey et al, 2007, p.13).

iii) **Sharing:** These contracts implicate a sharing of risk and responsibility for the results. The risk and responsibility should be allocated to the entity with more competencies to manage it (Grimsey et al, 2007, p13).

Besides the characteristics identified above, one can found another general features of Public-Private Partnerships can be found, such as:

iv) **Resourcing:** All participants should bring some value to the Public Private Partnerships, their input might be their best skills, knowledge and resources for the public infrastructure services (Grimsey et al, 2007, p13).

v) **Continuity:** regarding contracts, as in a partnership, it is associated to continuity. The contract establishes the general elements for the life of project and therefore, it is important to incorporate values, mutual understanding of priorities

and objectives and a good measure of trust, because it is impossible to anticipate all needs in the whole life of the contract (Grimsey et al, 2007, p13).

Value for money is the public sector crucial issue associated to a Public Private Partnership. According to Grimsey and Lewis (2005) value for money is “the best price for a given quantity and standard of output, measured in terms of relative financial benefit”, other definition is given by EIB (2005): defines Value For Money as a “measure of the economic efficiency of a project”.

Value For Money as a measure have six main determinants, according Andersen (2000), risk transfer, long-term nature of contracts, the use of an output specification, competition, performance measurement and incentives and private sector management skills.

Another points are be required in order to achieve value for money, as competitive environmental, this meaning that the projects must be earned in a competitive market; “comparisons between publicly and privately financed options be fair, realistic and comprehensive”; and “economic appraisal techniques, including proper appreciation of risk, be rigorously applied, and that risk is allocated between the public and private sectors so that the expected value for money is maximized” (Grimsey et al, 2005).

2.2.2 Advantages and Disadvantages of PPP

In the market of Public Private Partnerships one can find various advantages and disadvantages, depending on the sector where partnership is. This chapter will address the general advantages and disadvantages of these partnerships.

The most important advantage is if Public Private Partnerships create Value for money to the public sector (EIB, 2004). They do it by creating motivations and simplifying the implementation of the project on time and on budget (“no service/ no pay” principle ensure that the private partner delivery the infrastructure under the terms of deal).

The allocation risk is other important point, as Public Private Partnerships allows a sharing of risk to the party with greater ability to manage it, then it creates value for money, incentivize the private partner to find new forms to manage the operation risks underlying the project (Stainback and Donahue 2005 and van Herpen, 2002).

Another advantage to use Public Private Partnerships is the cost efficiencies, which means cost savings, that will be obtained because the “increased competition, an improved proportion of risk transfer, a closer integration of the different aspects of a project, better whole life costing and improved innovation” (van Herpen, 2002).

Time to delivery savings is created by private incentives that are associated to partnerships, some examples of them are, as soon the private sector begin to generate revenue is best for them, the experience in dealing with Public Private Partnerships (learning curve), profit motives and accountability to shareholders with the profit (van Herpen, 2002).

Other referred advantage of Public Private Partnerships is the improved response to the market forces through innovation and other reasons results in greater efficiency (van Herpen, 2002).

Moreover, the broad support from european, national, regional and local government is a big advantage for Public Private Partnerships (van Herpen, 2002).

Partnerships not only have benefits and incentives but, sometimes there are drawbacks. Contrary to the first advantage mentioned, sometime the Public Private Partnerships can create poor value for money by having high cost transaction that can happen because these type of contracts, most of the times they are an unique project, in the deal is necessary to anticipate external factors in long term, more parties are involved than traditional procurement, for that is more difficult to negotiate, and to manage the infrastructure, requiring more time and work, another point to associate to poor Value For Money is higher capital (van Herpen, 2002).

Insecurity, inefficiencies and culture gap are other important disadvantages associated to Public Private Partnerships. Insecurity is caused most of the times by the parties that participate in the project, when there is a miss-cooperation between the parties. Inefficiency happens when there is no competition and contestability, to fight these problems the terms of contract need to be clear, defining the services it requires specifically. Normally there is a culture gap due to different objectives and reasons for participate, public and private sector, in a Public Private Partnerships. For this reason, public and private sector need to understand and respect each other (van Herpen, 2002).

2.2.3 Types of contracts for Project Finance in PPP

The elaboration of a project has different stages, according to Gherzi et al (2006), one can identify two stages, clearly: the construction and the operation, these stages can be executed in many ways, i.e. there are various types of contracts (see exhibit 3).

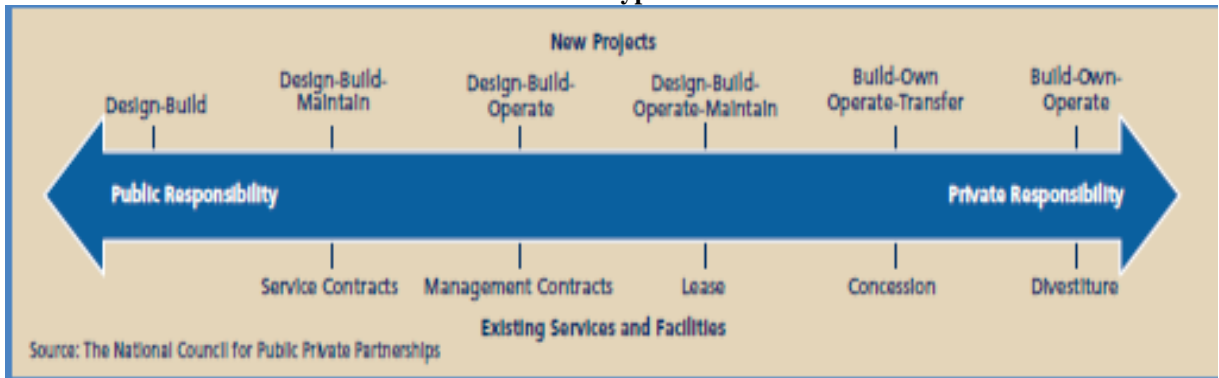
Gatti (2008, p. 27) considers three types of contracts in project finance, **Build, Operate and Transfer (BOT)**, **Build Own, Operate and Transfer (BOOT)** and **Build, Operate and Own (BOO)**.

The **BOT** is the “... *contract where the private sector takes primary responsibility for funding (financing), designing, building and operating the project. Control and formal ownership of the project is then transferred back to the public sector*” (Grimsey et al, 2007).

The **BOOT** framework differs the BOT framework in that “*the private party owns the work. At the end of the concession term the works are transferred to the public administration, and in this case a payment for them can be established*” (Gatti, 2008).

Lastly, the **BOO** is considered for some authors a variant of BOT, in these type of contract “... *the contractor owns the assets, meaning that they never returned to the sponsor. A longer horizon for exploiting the facilities should imply a more moderate yearly return on investment for the contractor and hence lower costs to the final consumer*” (Gherzi, 2006).

Exhibit 3– Different types of PPP



Source: The national council for Public Private Partnership

3 An overview of Public Private Partnership in Portugal

“Public investment is not exhausted in what is directly promoted and supported by the state or developed through the companies from the state business sector (SEE), particularly in areas as health, environment, transport infrastructure and tourism (MFAP, 2008).”

“In the last two decades, many countries have used public private partnerships, targeting to develop the investment projects of public concern, aiming not only to attract private capital to finance public investment, and also to benefit from technical and specialized skills of the private entity in the construction and the management of services designed to satisfy collective needs (MFAP, 2008).”

In Portugal the main entity that supports controls and supervises the public private partnerships is The Ministry of Finance and Public Administration through the direction of treasury and finance.

The first general legal regime for Public Private Partnerships in Portugal has appeared in 2003 with the decree law 86/2003 of 26 April, which aim was “...to define the general standards of state intervention in the global definition, design, preparation, tendering, procurement, modification, inspection and monitoring of public private partnerships” (MF, 2003) .

Three years later the first change in the law was set, with the decree law number 141/2006 of 27 July that considers that “... contracts or the union of contracts, in which way private entities, named by private partners, undertake on a lasting basis, before a public partner, to ensure the development of an activity aimed to satisfy a collective need, where the funding and responsibility for investment and exploration are, in whole

or in part, to the private partner”. This decree law was published, according to MFAP (2008), with the following objectives:

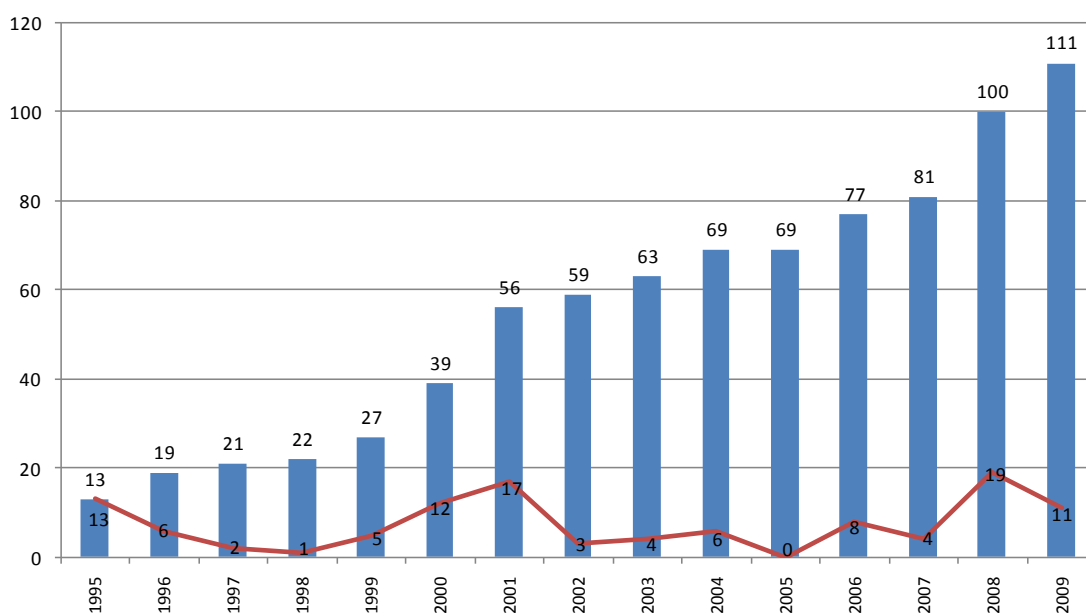
- To deepen, during the various phases of the project, the technical and politic articulation among ministries co-involved;
- To increase the flexibility, efficiency, financial control and transparency during the design, preparation, development and change of public private partnerships.
- To clarify the model of risk sharing, particularly, as a result of unilateral changes by the public partner, preserving legitimate rights and interests of private partners;
- To establish the procedures to observe when there are susceptible situations that create new costs for the public partner or state.

Another important step was the creation of the GASEPC (Office for The Support of the Business Sector of the State, Partnerships and Concession) for the state Secretary of the Treasury and Finances in 24 September, 2007, this office published since 2008, every quarters and year, reports about Public Private Partnerships and concessions that will be used in this study.

4 An overview of Project Finance market in Public Private Partnership in Portugal

Portugal setup the first Public Private Partnerships project in 1995 (the *Vasco da Gama* bridge), and in 2009 we can count on 111 projects, considering Public Private Partnerships and concessions as a whole universe. In graph 1 we can see the year evaluation of projects. From an average 7 projects by year, we can see that some years were substantially important in developing Public Private Partnerships, especially 2000, 2001 and 2008 and 2009 (see Graph 1). Despite the financial crisis in 2008, that affected the credit to large projects, Portugal has been using Public Private Partnerships quite often these last years. That is mainly due to the fact that the recent government has undertaken several infrastructures projects, delivered not by traditional procurement, but by Public Private Partnerships.

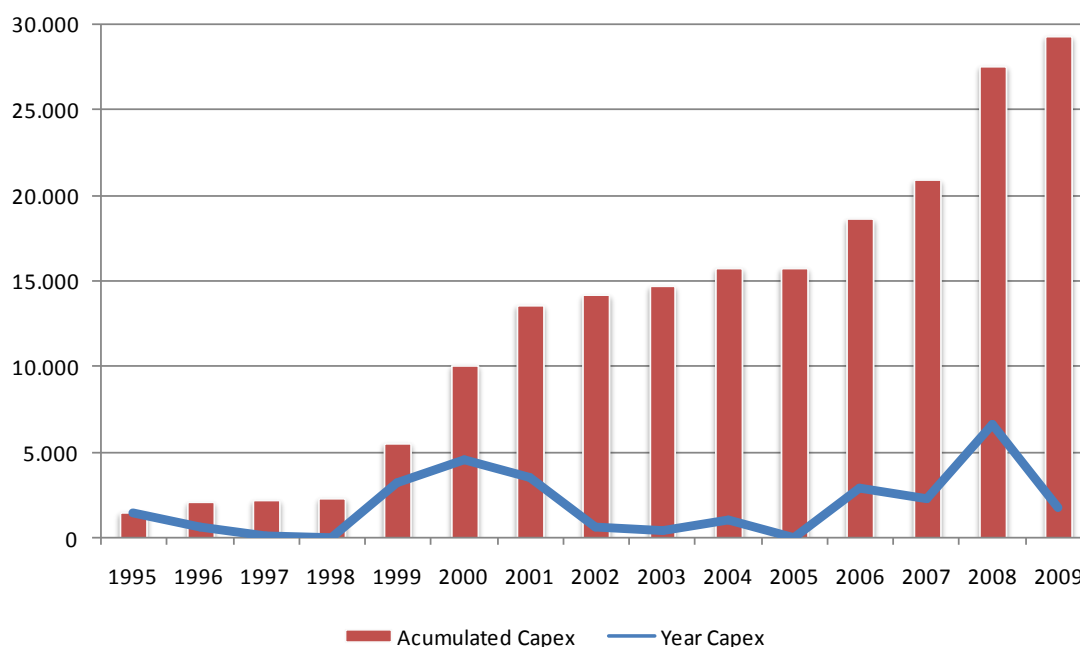
Graph 1 – Number of PPP projects 1995 – 2009



Source: Ministério das finanças e da administração pública (2010)

Regarding capital expenditure in Public Private Partnerships, the total amount already invested in the several sectors, during the last fifteen years almost reached 30 billion of euros (see Graph 2). The major investment years have been the same years were we can find a large number of projects. The investment has been significantly important in the last two years, 2008 and 2009, as a strategy to reduce the impact of the financial crisis in the private investment in the economy.

Graph 2 - PPP Capital Expenditure by year and accumulated 1995-2009

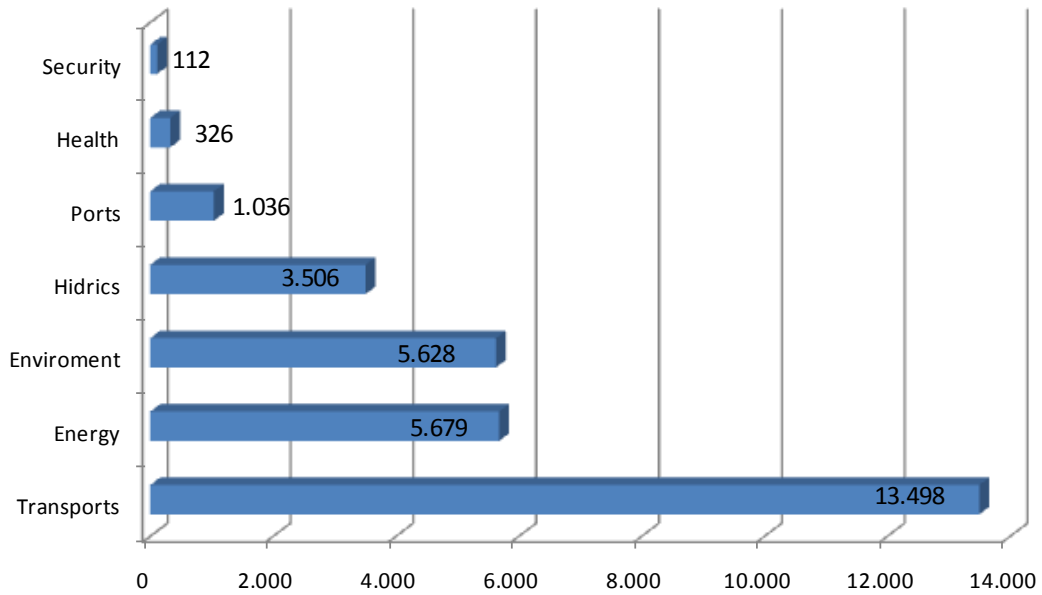


Source: Ministério das finanças e da administração pública (2010)

Transport sector, has we can observed from Graph 3, is the main sector of Public Private Partnerships investment, followed by energy and environment. These three sectors combine represent above 75% of total investment (see Graph 3). The importance of transport sector is due mainly to the roads constructed in the years of 1996-2000 and the recent projects since 2006 (see annex 1). As regarding environment and energy, we can find projects in water and sanitation, during the late nineties and this century, along with

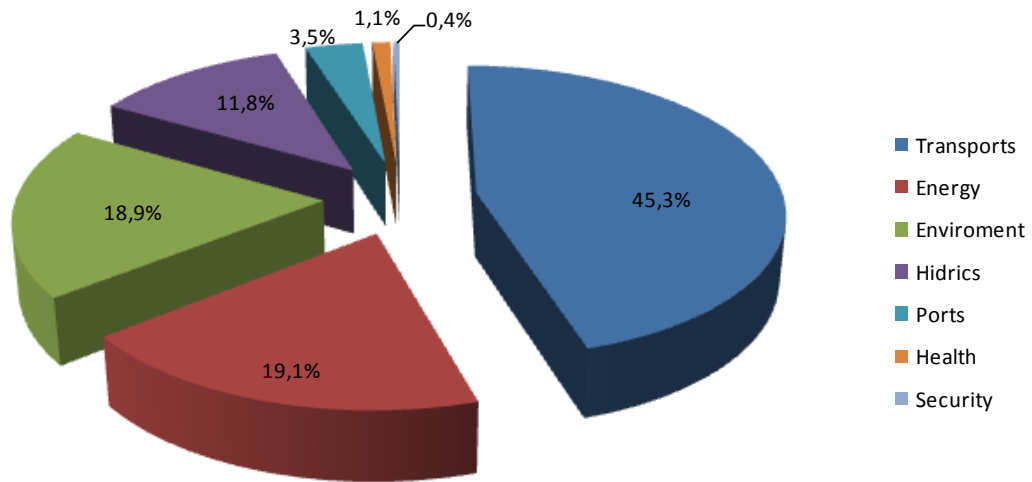
some new projects in hydrics dams in 2008. The health sector, although as we can see in only represents 1% of total investment, it will represent already six projects, and it will became more important in the future, as new hospitals, like Braga, Cascais and Loures, will became in function.

Graph 3 -- PPP Investment by sector in Million € 1995-2009



Source: Ministério das finanças e da administração pública (2010)

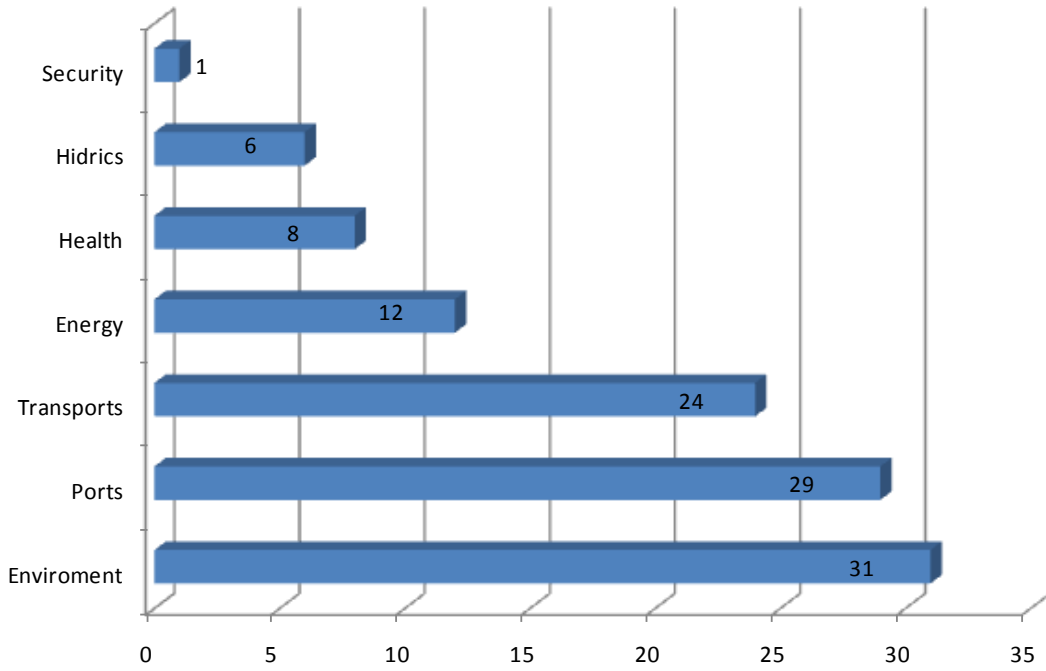
Graph 4 - PPP Investment by sector in % of total 1995-2009



Source: Ministério das finanças e da administração pública (2010)

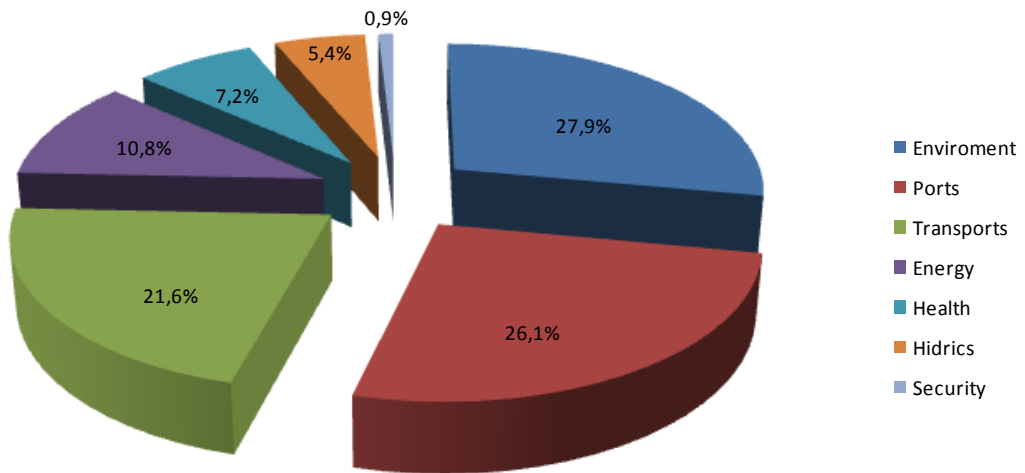
Considering the number of projects by sector, the environment sector is clearly the most important, with a total of thirty-one projects and 28% of total projects, followed by the ports sector with twenty-nine projects and the transport sector with twenty-four projects. This three sectors combine represents two-thirds of the total number of projects. However, as transport sector represents 45% of total investment, and only 22% of the total number of projects, we can assume, and that is also visible from annex 1, the road projects have a much higher need for capital expenditure than other projects in other sectors.

Graph 5 - PPP projects by sector 1995-2009



Source: Ministério das finanças e da administração pública (2010)

Graph 6 - PPP projects by sector as % of total 1995-2009



Source: Ministério das finanças e da administração pública (2010)

As we can see from Table 2, as some sectors, like transports, mainly roads, and ports have projects since 1995, other sectors like energy, hydrics and health have been developed more recently, in the last few years.

Table 2 - PPP number of projects by sector and year

Year	Sector							TOTAL
	Transports	Energy	Enviroment	Hydrics	Ports	Health	Security	
1995	1	0	3	0	9	0	0	13
1996	0	0	6	0	0	0	0	6
1997	0	0	2	0	0	0	0	2
1998	0	0	1	0	0	0	0	1
1999	4	0	0	0	1	0	0	5
2000	4	0	4	0	4	0	0	12
2001	3	0	8	0	6	0	0	17
2002	1	0	0	0	1	0	1	3
2003	0	0	2	0	2	0	0	4
2004	1	0	2	0	3	0	0	6
2005	0	0	0	0	0	0	0	0
2006	0	5	0	0	1	2	0	8
2007	2	1	0	0	1	0	0	4
2008	3	6	1	6	1	2	0	19
2009	5	0	2	0	0	4	0	11
TOTAL	24	12	31	6	29	8	1	111

Source: Ministério das finanças e da administração pública (2010)

In Table 3, we can find, for the SCUTS Public Private Partnerships, the cost of equity, that is, the cost of raising funds from sponsors, the cost of debt, that is, the cost of borrowing money, and the overall cost of financing an operation.

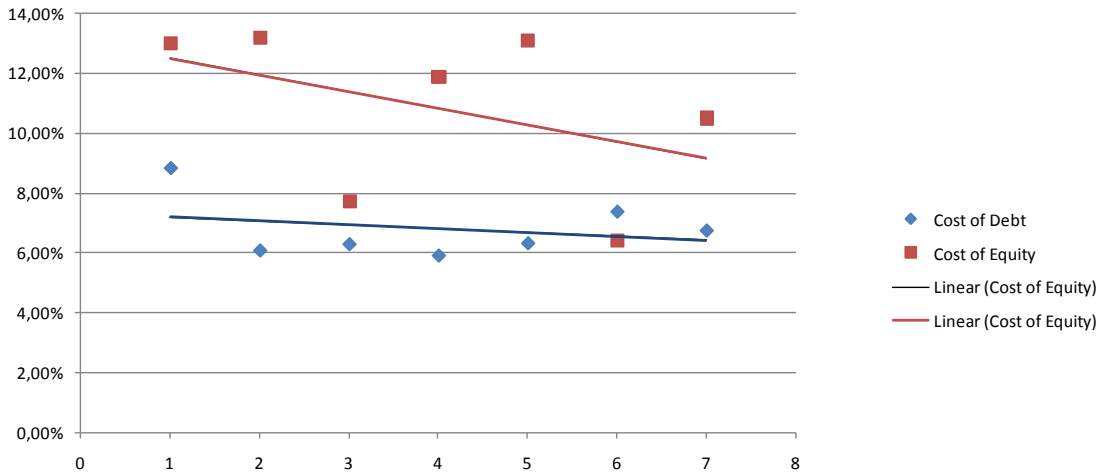
As Table 3 shows, as following the discussed in the literature, we can find a high level of debt in SCUTS Public Private Partnerships projects (road sector), with an debt average of 90%, giving a leverage around 9. In fact, excluding the “Norte Litoral” project, all other projects have a level of debt above 90% of total capital expenditure; with “Algarve” project around 80% (see Table 3). The same high level of debt can also be observed in the new road projects (see Table 4).

Looking at “Norte Litoral” project, been the project with lower level of debt, but at the same time, the second project with the higher cost of debt, and also the higher Weight Average Cost of Capital (WACC), it becomes the projects less profitable, with the lower Internal Rate Return (IRR).

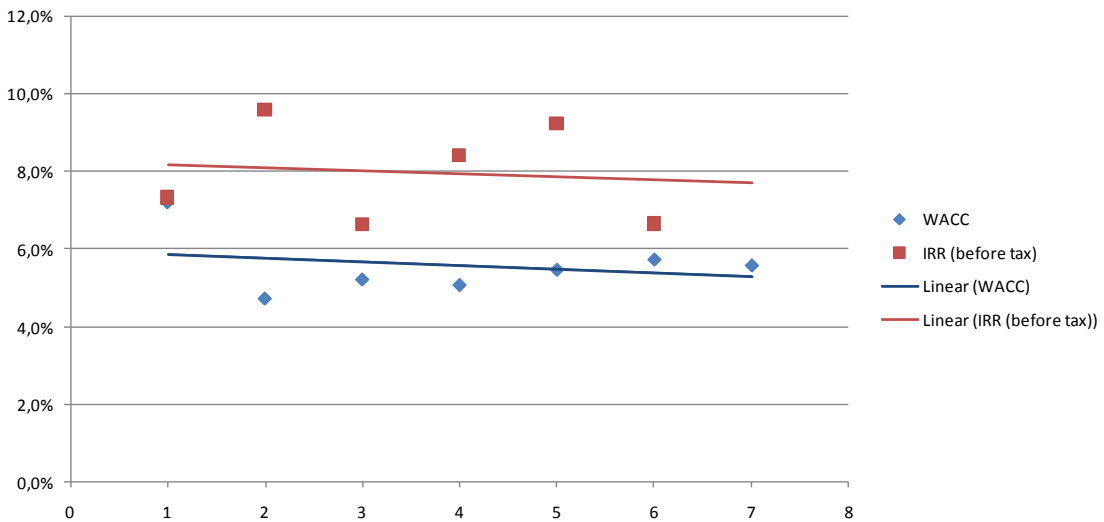
Table 3 - Financial indicators of SCUTS PPP

	Beira Interior	Interior Norte	Algarve	Costa de Prata	Beiras litoral e alta	Norte Litoral	TOTAL
Capex	438	499	243	298	753	228	2,459
Debt - %	91%	98%	83%	91%	91%	76%	90%
Debt	397	489	202	272	687	173	2,220
Equity - %	9%	2%	17%	9%	9%	24%	10%
Equity	41	10	41	26	66	55	239
Debt/Equity	10	49	5	10	10	3	9
Cost of Debt	8.83%	6.09%	6.30%	5.92%	6.33%	7.38%	6.75%
Cost of Equity	13.00%	13.18%	7.72%	11.89%	13.10%	6.41%	10.50%
tax	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
WACC	7.22%	4.74%	5.23%	5.09%	5.48%	5.75%	5.59%
IRR (before tax)	7.35%	9.59%	6.67%	8.43%	9.24%	6.68%	N/A
Source: IEP - Portuguese Public Road Institute							

Graph 7 – Cost of Debt and Equity in SCUTS projects



Graph 8- WACC and IRR SCUTS PPP analyse



Legend: 1-Beira Interior; 2- Interior Norte; 3- Algarve; 4- Costa de Prata; 5- Beira Litoral e Alta; 6- Norte Litoral; 7 - Total

Source: IEP – Portuguese Public Road Institute

In Graph 7, we can see that “Norte Litoral” and “Algarve” project, with a lower cost of Equity, reduces the linear cost of Equity from all projects. It is also observable that the cost of Equity has a considerable level of variance from each project, on contrary to the cost of debt, that follows very closed to the linear cost.

As the percentage of Debt is considerable high, as the cost of debt of each project is much closed to the linear cost, the WACC of each project is also much closed to the

linear WACC of the seven projects. With an average debt of 90%, the cost of Equity remains marginal in the WACC calculation. However, the IRR, as the profitability of the project, assumes a large variance to the linear IRR. The cost of Equity and Debt here has a more significant impact.

Table 4 - Financial indicators of new highways PPP

	Grande Lisboa	Douro Litoral	AE Transmontana	Douro Interior	Tunel do Marão	Baixo Alentejo	Baixo Tejo	Litoral Oeste	Algarve Litoral	TOTAL
Capex	180	778	536	642	348	382	270	444	165	3,744
Debt - %	70%	75%	81%	82%	85%	71%	88%	86%	62%	79%
Debt	125	579	436	525	294	273	237	383	103	2,956
Equity - %	30%	26%	19%	18%	16%	29%	12%	14%	38%	21%
Equity	55	198	100	117	54	109	33	60	62	788
Debt/Equity	2.30	2.92	4.35	4.49	5.45	2.50	7.26	6.35	1.65	4
Source: IEP - Portuguese Public Road Institute										

5 Conclusions

Over the last few decades, public-private partnerships have been increasingly used by governments all around the world to finance and manage complex operations. Portugal has been one of the countries that used Public Private Partnerships often, since 1995. A total of 111 Public Private Partnerships were setup, in sectors like transports (mainly roads), ports, environment, health, energy and security. The total amount of capital expenditure reaches 30 billion €.

As 2001, 2008 and 2009 are the years with higher contracts of Public Private Partnerships, they are also the years with higher levels of investment.

As transport sector represents 45% of total investment, and only 22% of the total number of projects, we can assume that road projects have a much higher need for capital expenditure than other projects in other sectors.

Public-Private Partnerships should be considered as a valid option for the public sector need for investment. They have been (and will continue to be for sure), one of the main instruments to overcome the infrastructure gap. When considering the level of public debt and the needs for investments in replacing or creating new infra-structures, private sector efficiency and capability of raising debt is crucial for these efforts.

Public Private Partnerships are financed through a project finance solution, with a non-resource debt, where the guarantee for lender relies not in an asset or a sponsor guarantee, but in the future cash-flows of the operation.

Project Finance also is characterized by high levels of debt, with a strong leverage in operations. We have seen how levels of 90% debt in SCUTS projects affect the cost of capital and the return to investors. As two of those projects have less debt than average, they have higher levels of cost of capital, due to the higher use and cost of

Equity comparing to Debt. That has of course, affect the return of the project, measure by the IRR. An interesting study would be why in seven similar projects (Public-Private Partnerships roads without tolls to the user), two projects have less use of debt, and therefore, less leverage, and less return to the sponsors. We might assume that the level of risk was higher in these two projects.

The financial crisis in 2008 has created a drying up in the credit, especially in large, risk projects. But 2008 and 2009 were the two years were more Public Private Partnerships were contracted in Portugal.

The financial crisis, not only in Portugal (but particularly in Portugal, due also to the fiscal constraints), have raised a number of issues on the future of Public Private Partnerships, mainly due to the “debt overhang” on the economy. As credit is drying up, Public Private Partnerships future relies on more flexible and affordable project.

References

Andersen, Arthur (2000), “Value for Money Drivers in the Private Finance Initiative”.

Arthur Andersen and Enterprise LSE

Comer, Bruce (1996), “Project Finance Teaching Note”. The Wharton School

dos Santos, Tiago Alexandre Carvalho (2006), “ A transferência de Risco em Public-Private Partnerships” (Thesis of Master)

de Sousa, Susana Pinto (2009), “O uso de Public-Private Partnerships em Portugal para a construção de Infra-estruturas de distribuição de água e saneamento básico, rodoviárias e de saúde” (Thesis of Master)

Esty (1999), “An Overview of the Project Finance Market”. Harvard Business School

European Investment Bank (2004), “The EIB’s Role in Public-Private Partnership (PPPs)

European Investment Bank (2005), “Evaluation of Public-Private Partnerships Projects Financed by the EIB”

Farrel, L.M. (2002), “Principal-agency Risk in Project Finance”. International Journal of Project Management

Fight, Andrew (2006), “Introduction to Project finance”. Elsevier

Gatti, Stefano (2008), “Project Finance in Theory and Practice: Designing, Structuring and Financing Private and Public Projects”. Elsevier

Gherzi, Henrique and Jaime Sabal (2006), “An Introduction to Project Finance in Emerging Markets”. Studio ISEA

Grimsey, Darrin, and Mervyn K. Lewis (2005), “Are Public Private Partnerships Value For Money? Evaluating Alternative Approaches and Comparing Academic and Practitioner Views”. Elsevier

Grimsey, Darrin, and Mervyn K. Lewis (2007), “Public Private Partnerships: The Worldwide Revolution in Infrastructure Provision and Project Finance. Edward Elgar

Van Herpen, G.W.E.B (2002), “Public Private Partnerships, The Advantages and Disadvantages examined”. Association for European Transport

Kumar, Ranjit (2005), “Research Methodology: A Step-By-Step Guide For Beginners”. SAGE Publications

Ministério das Finanças e da Administração Pública, Direcção Geral do Tesouro e Finanças (2008), “Relatório Sobre Parcerias Público Privadas e Concessões”

Ministério das Finanças e da Administração Pública, Direcção Geral do Tesouro e Finanças (2009), “Parcerias Público-Privadas e Concessões: Relatório de 2009”

Ministério das Finanças e da Administração Pública, Direcção Geral do Tesouro e Finanças (2010), “Parcerias Público-Privadas: Relatório de 2010”

Ministério das Finanças (2003), “Decreto Lei nº86/2003 de 26 de Abril”. Diário da República

Ministério das Finanças e da Administração Pública (2006), “Decreto Lei nº141/2006 de 21 de Julho”. Diário da República

OECD (2008), “Public Private Partnership: In Pursuit of Risk Sharing and value For Money, OECD Publishing

Sarmiento, Joaquim Miranda (2010), “Do Public-Private Partnerships Create Value For Money for the Public Sector? The Portuguese Experience”. OECD Journal on Budgeting

Stainback, John and Michael B. Donahue (2005), “Outside the budget box – Public/Private Partnership as a Creative Vehicle for Finance and Delivery of Public School Facilities. Journal of Professional Issues in Engineering Education and Practice

Yescombe, (2002), “Public Private Partnerships: Principles of Policy and Finance”, Elsevier (p 113-125).

Annex 1

Sector	Concession	Year	CAPEX
Transports	Lusoponte	1995	867,0
	Norte	1999	879,2
	Oeste	1999	453,5
	Brisa	2000	2623,8
	Litoral Centro	2004	550,7
	Scut da Beira Interior	1999	628,3
	Scut da Costa de Prata	2000	320,7
	Scut do Algarve	2000	228,5
	Scut Interior Norte	2000	504,1
	Scut das Beiras Litoras e Alta	2001	718,4
	Scut Norte Litoral	2001	318,6
	Scut Grande Porto	2002	492,5
	Grande Lisboa	2007	180,0
	Douro Litoral	2007	777,7
	AE Transmontana	2008	535,9
	Douro Interior	2008	641,7
	Tunel do Marão	2008	348,2
	Baixo Alentejo	2009	381,9
	Baixo Tejo	2009	270,1
	Litoral Oeste	2009	443,6
Algarve Litoral	2009	165,1	
Gestão e Sist. Identificação Electrónico	2009	n.a	
Metro Sul Tejo	2001	268,7	
Transp. Ferroviário eixo-norte/ sul	1999	9000,0	
Health	Gestão do centro de Atendimento do SNS	2006	4,0
	Gestão do centro Medicina Física Reabilitação Sul	2006	3,0
	Gestão do H. de Braga – Ent. Gestora do Edifício	2009	122,0
	Gestão do H. de Braga – Ent. Gestora Estabelecimento	2009	11,3
	Gestão do H. Cascais – Ent. Gestora Estabelecimento	2008	16,0
	Gestão do H. Cascais – Ent. Gestora do Edifício	2008	56,0
	Gestão do H. Loures – Ent. Gestora Estabelecimento	2009	29,3
	Gestão do H. Loures – Ent. Gestora do Edifício	2009	84,6

Environment	Águas do Cávado	1995	108,2
	Águas do Centro Alentejano	2003	75,8
	Águas do Douro e Paiva	1996	452,7
	Águas do Oeste	2001	294,8
	Águas de Santo André	2001	130,3
	Águas de Trás-os-Montes e Alto Douro	2001	418,4
	Águas do Algarve	2001	457,3
	Águas do Ave	2003	376,0
	Águas do Centro	2001	177,0
	Águas do Minho e Lima	2000	164,8
	Águas do Mondego	2004	232,0
	Águas do Norte Alentejano	2001	93,8
	Águas do Zézere e Côa	2000	286,0
	Algar	1996	60,7
	Amarsul	1997	70,1
	Ersuc	1997	87,7
	Resinorte	2009	190,8
	Resiestrela	2008	34,1
	Resioeste	1998	37,0
	Resulima	1996	31,6
	Suldouro	1996	52,9
	Valnor	2001	24,8
	Valorlis	1996	31,0
	Valorminho	1996	14,1
Valorsul	1995	291,5	
Sanest	1995	201,6	
Simarsul	2004	235,9	
Simlis	2000	75,0	
Simria	2000	313,7	
Simtejo	2001	536,3	
Simdouro	2009	72,0	
Hydric	Barragem de Foz Tua	2008	340,0
	Barragens de Gouvães, Padreselos, Alto Tâmega, Daivões	2008	1700,0
	Barragens do Fridão e Alvito	2008	510,0
	Barragem Baixo Sabor	2008	257,0
	Barragem Girabolhos	2008	360,0
	Barragem do Alqueva	2008	339,0

Energy	Armaz. Subterrâneo de Gás Natural (Guarda)	2006	29,3
	Distribuição Regional de Gás Natural (Lisboa)	2008	578,0
	Distribuição Regional de Gás Natural (Centro)	2008	289,3
	Distribuição Regional de Gás Natural (Setúbal)	2008	159,8
	Distribuição Regional de Gás Natural (Porto)	2008	307,4
	Armaz. Regasificação de Gás Natural (Sines)	2006	212,0
	Armaz. Subterrâneo Gás Natural (Guarda, Pombal)	2006	114,9
	Distribuição Regional de Gás Natural (Beiras)	2008	69,2
	Distribuição Regional de Gás Natural (Vale do Tejo)	2008	66,5
	Gestão Rede Nacional Transportes de Gás Natural	2006	753,0
	Rede Eléctrica Nacional	2007	1291,7
Exploração da Rede Nac. Distribuição de elect.	2006	1808,3	
Security	SIRESP	2002	112,0
Ports	Terminal de Contentores de Leixões	2000	68,6
	Terminal de Carga a Granel de Leixões	2001	42,8
	Silos de Leixões	2007	6,2
	Terminal Produtos Petrolíferos	2006	n.d.
	Terminal de Granéis Líquido Alimentares	2001	n.d.
	Terminal Expedição de Cimento a Granel	2001	n.d.
	Serviço de Descarga, Venda e Expedição de Pescado	1995	n.d.
	Instalações de Apoio à Navegação de Recreio	1985	n.d.
	Exploração Turística hoteleira	2001	n.d.
	Exploração Restaurante e Bar	2000	n.d.
	Terminal Sul Aveiro	2001	6,3
	Serviço de Reboque Aveiro	2004	2,8
	Terminal de Contentores de Alcântara	1985	362,2
	Terminal de Contentores de Santa Apolónia	2001	60,8
	Terminal Multipurpose de Lisboa	1995	n.p.
	Terminal Multiusos do Beato	2000	7,3
	Terminal Multiusos do Poço do Bispo	2000	3,3
	Terminal de Granéis Alimentares da Trafaria	1995	n.p.
	Terminal de Granéis Alimentares da Beato	1995	n.p.
	Terminal de Granéis Alimentares de Palença	1995	n.p.
	Terminal do Barreiro	1995	n.p.
	Terminal de Granéis Líquidos do Barreiro	1995	n.p.
	Terminal do Seixal – Baía do Tejo	1995	n.p.
Terminal Multiusos Zona 1	2004	11,9	
Terminal Multiusos Zona 2	2004	13,7	
Terminal de Granéis Sólidos de Setúbal	1995	6,0	
Terminal de Granéis Liq. De Setúbal	2003	3,7	
Terminal Contentores de Sines XXI	1999	336,5	

Terminal Multipurpose de Sines	1992	103,6
Terminal de Petroleiro e Petroquímico	2003	n.d.
Serviço de Reboque e Amarração Sines	2002	n.d.
Terminal de Granéis Liq. E Gestão de Resíduos	2008	n.d.

Source: Ministério das finanças e da administração pública (2010)