



**LISBOA
SCHOOL OF
ECONOMICS &
MANAGEMENT**

**MASTER IN
FINANCE**

**MASTER FINAL WORK
DISSERTATION**

SHADOW-BENEFITS IN PUBLIC PRIVATE PARTNERSHIPS:
THE PORTUGUESE CASE

FRANCISCA DE AZEVEDO BELTRÃO

SEPTEMBER - 2013



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Acronyms

BAFO – Best and Final Offer

CAPEX – Capital Expenditures

CGD – Caixa Geral de Depósitos

DGTF – Direção-Geral de Tesouro e Finanças

EGED – Entidade Gestora do Edifício

EGEST – Entidade Gestora do Estabelecimento

EP – Estradas de Portugal

EU – European Union

EURIBOR – Euro Interbank Offered Rate

GDP – Gross Domestic Product

IMF – International Monetary Fund

MFW – Master Final Work

NPV – Net Present Value

OECD – Organization for Economic Co-Operation and Development

OPEX – Operational Expenditures

O&M – Operations and Maintenance

PPP – Public Private Partnership

PSC – Public Sector Comparator

SCUT – Sem Custos para o Utilizador

SB – Shadow-Benefit

SNS – Serviço Nacional de Saúde

TC – Tribunal de Contas

VfM – Value for Money

Resumo

Desde meados de 1990 que Portugal apresentou um crescimento intensivo de Parcerias Público-Privadas. Este aumento do número de PPPs deveu-se principalmente, à limitação dos recursos e também ao facto de a população estar constantemente a exigir serviços de maior e melhor qualidade. Este modelo de PPPs foi adotado pelo Estado como um instrumento para a realização de grandes projetos, cujo investimento necessário não poderia ser suportado exclusivamente pelo Estado, e é portanto delegado ao setor privado.

O objetivo desta dissertação é estudar os benefícios-sombra, no caso das PPP Portuguesas. Os benefícios-sombra podem ser definidos como benefícios financeiros que não são contratualmente considerados no caso base e que potencializam o parceiro privado a aumentar a rentabilidade, sem qualquer contrapartida para o Estado (Tribunal de Contas, 2008). Em Portugal, o tema sobre os benefícios-sombra das concessionárias de PPPs tem sido controverso. A literatura económica sobre os benefícios-sombra é praticamente ausente.

Esta dissertação tem dois estudos subjacentes. Primeiro, foram identificados os benefícios-sombra presentes nos 36 relatórios da DGTF, em setores como o das Estradas, Ferroviário, Segurança e Saúde. A recolha de dados permitiu concluir o número de benefícios-sombra por PPP e também por tipo de benefício. Em segundo lugar, análise dos ganhos e perdas dos contratos de financiamento das concessionárias. No caso em que não existem contratos *swap*, o beneficiário será a concessionária. Caso contrário, o beneficiário é o banco. O problema identificado foi que a DGTF não considerou os ganhos deste segundo ponto como benefícios-sombra.

Este estudo permitiu concluir como o risco financeiro foi alocado, quais foram os resultados produzidos entre 2007-2012 e, finalmente, que valor têm os benefícios identificados.

Palavras-chave: Parcerias Público-Privadas, Benefícios-sombra, Estradas, Saúde, Segurança, Ferroviário.

Abstract

Since the 1990s, Portugal has presented an intensive growth of Public-Private Partnerships. This increasing number of PPPs was mainly because of the limitation of the public resources and because the population is constantly requiring higher and better qualities services. This model of PPPs was adopted by the State as an instrument for the achievement of important projects whose required investments could not be exclusively endured by the State, thus is delegated to the Private.

This master thesis aims to study the shadow-benefits in the Portuguese PPPs case. The shadow-benefits can be defined as financial benefits that are not contractually considered in the base case, which potentiate the private partner to increase profitability without any counterpart to the State (Tribunal de Contas, 2008). In Portugal, the theme concerning the shadow-benefits of the PPPs has been controversial. The economic literature about the shadow-benefits is practically absent.

This dissertation has two underlying analysis. First, the shadow-benefits presented in the 36 reports of DGTF which were identified in sectors such as roads, railway, security and health. Through these reports, the data collected led to the conclusion of the number of shadow-benefits by PPPs and also the type of benefit. Secondly, the analysis of gains or losses of the financing contracts. In this case, there are two possible scenarios: when there are no swap contracts, whose beneficiary is the concessionaire and when there are swap contracts, whose beneficiary is the bank. The existent problem is that the DGTF did not consider the gains of this second point as shadow-benefits.

This analysis led to the conclusion of how the financial risk was allocated, which were the results produced from 2007-2012 and finally, which value the identified benefits have.

Key-words: Public-Private Partnerships, Shadow-benefits, Roads, Railway, Security, Health.

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Chapter 1 – Introduction

In the last two decades there was a huge increase of Public Private Partnerships, due to the limitation of public resources and the constant increase of population demand for quality services. PPPs have been created as an instrument for achievement of important projects whose required investments could not be exclusively endured by the State, thus is delegated to the private. Although the definition of PPPs is not consensual, it can be viewed as a contract between a public sector institution and a private party, in which the private party assumes substantial financial, technical and operational risk in the design, financing, building and operation of a project (Farlam, 2008).

The first PPPs in Portugal emerged in the 90s and since then the number has increased substantially. It is a form of cooperation between the public and private sectors in relation to the construction and maintenance of public-sector infrastructure (in sectors such as transportation, health and security), with an intervention at all stages of the process by the private sector. PPP brings private and public sectors together in long-term contracts.

This work will focus on a special failure of the PPPs, the shadow-benefits¹. The shadow-benefits consist in financial benefits that are not contractually considered in the Base Case² that potentiate the increase of profitability of the private partner without any counterpart for the public party. In Portugal, the achievement of these benefits by the private concessions of PPPs has been controversial. The economic literature about the shadow-benefits in PPP is practically absent. Thereby, this work presents a literature review about the shadow-benefits in the PPPs, seeking innovation in the definition of the concept.

¹ The concept of shadow benefit was defined by the Portuguese Court of Auditors as “Benefícios-Sombra” and for the purposes of this thesis the Shadow Benefits are benefits from the point of view of the private.

² The base case is the financial model used as the basis to the signing contract of the concession where are predicted, among many financial data, the amount of the predicted investment and the availability payments paid by the State during the period in which the infrastructure is managed by the concessionary company.

Additionally, this work collects the existent shadow-benefits of the 36 Portuguese PPPs, in sectors such as roads, railway, health and security. Moreover, it analyses the impact of the interest rates in the gains or losses of the concessionaires.

The financial impact for the concessions, namely in the projects profitability, will be analysed as well as the potential mechanisms of sharing these benefits between the private and public.

As mentioned before, the data were taken from the 36 PPPs reports of the DGTF. This information was extracted only from the reports that contain the possible presence of shadow-benefits. The important information for this study was the name of the concession, the sector in which it operates, the debt, the year that the contract was signed, the spread of Euribor, the cost of debt and the swap rate of the base case, if it existed. This collected information was organized and was the basis of this MFW, leading to the creation of a table (See Table I) that synthesizes the interests of the PPPs that contain the presence of shadow-benefits. Subsequently, the gains and losses of the different concessions between the years 2007-2012 were calculated, as well as the number of shadow-benefits by PPP, type and sector.

The Research Questions for this Dissertation, which should be answered in the Final Master Work, are the following:

- 1) What are the shadow-benefits in the risk allocation of the Portuguese PPPs?
- 2) What kind of shadow-benefits can be identified in the PPP Projects in Portugal?
- 3) How was the financial risk allocated and what were the results produced from 2007-2012?
- 4) Which value have the identified benefits?

Roadmap

Section 2 presents the literature review. In section 2.1 is the definition and the characteristics of PPPs; in section 2.2 it will be discussed the differences between PPPs, traditional procurement and privatization; in section 2.3, the advantages and disadvantages of PPPs; in sections 2.4, 2.5 and 2.6 are the achievement of VfM, the risk allocation and major risks, respectively. In the last point of chapter 2 are the shadow-

benefits. Chapter 3 is the methodology and data and it is divided in four sections. Section 3.1 is the data source; section 3.2 presents the methodology of the shadow-benefits and interests; sections 3.3 and 3.4 are Euribor and SWAPs, respectively. The following section, chapter 4, presents the Portuguese case of PPPs. The last two chapters refer to the results of the shadow-benefits analysis and the gains and losses of interest rate risk, correspondingly section 5 and section 6. The last chapter is chapter 7, and it refers to limitations and future works.

Chapter 2 – Literature review

2.1 PPPs: Definition and characteristics

It is possible to find several definitions of PPPs in literature. The concept is “vague” and sometimes “ambiguous” (Hodge, 2010). This is due to the different models used around the world (Duffield, 2010).

According to the Green Paper (2004), PPPs refers to:

...forms of cooperation between public authorities and the world of business which aim to ensure the funding, construction, renovation, management or maintenance of an infrastructure or the provision of a service.

In Green Paper, 2004, p.3.

The IMF (2007) refers to PPPs as “arrangements in which the private sector supplies infrastructure assets and services that have traditionally been provided by the government”.

Cruz & Marques (2012) have a different definition for the concept of PPP. They advocate that it may consist of a concession contract of public works or public service and usually includes a significant component of private financing, in the form of equity and debt assumed by commercial banks or capital markets.

The clear definition of what constitutes a PPP does not exist (Burger & Hawkesworth, 2011). OECD (2008) defines a PPP as:

... 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.

In OECD, 2008, p. 17.

There are three characteristics that are common to all PPPs. First, a contract between the private and public sector for the construction, development and management of infra-structures, with established shared risks between the two

parties. Secondly, the risk should be allocated to the entity with best capacity, knowledge and experience to identify and mitigate the risk. Thirdly, when the private investor entails in a contract with the public, it does not limit to finance the project, but also to manage, advice and innovate.

In Grimsey & Lewis (2002, 2005).

According to Yescombe (2007), there are several PPPs key elements:

First, a long-term contract between the public sector and a private sector. Secondly, design, construction, financing and operation of public infrastructure by the private party. Thirdly, with payments during the life of the PPPs contract to the private sector for the use of the facility, made either by the public party or by the general public as users of the facility. And finally, with the facility remaining in the public-sector ownership or reverting to the public sector ownership at the end of the PPP Contract.

In Yescombe (2007).

In a successful PPP the State and the private party must share the risks and the profits of the projects. However, that is not what is happening in Portugal according to a study by consultancy Ernst & Young.³

A key point of a PPP is that the construction and following service provision are bundled (several contracts in a single contract) and assigned to a single private entity (Hoppe & Schmitz, 2012). An argument in favor of PPPs is that bundling encourages innovative design solutions during the construction phase that can reduce the subsequent costs of providing services (Hoppe & Schmitz, 2012). Compared with traditional procurement, the long-term relationship inherent in a PPP may create particular scope for information asymmetries between the public sector and the private (Yescombe, 2007).

2.2 Differences between PPP, Traditional Procurement and Privatization

In the past, according to Cruz & Marques (2012), the construction of public infrastructure was carried out in a system of traditional procurement. In this model, the

³See:

http://www.jornaldenegocios.pt/empresas/detalhe/ernst_amp_young_conclui_que_ppp_custaratildeo_117_mil_milhotildees.html

contracting entity defines a set of technical specifications for the work to be achieved. This entity engages with the contractor the implementation of these specifications, assuming only the production risk inherent in construction and to the limited extent that is hired. The contractual relationship has the duration of the execution of the work, except the warranty periods subsequent and therefore has a short duration, relatively limited in time (Cruz & Marques, 2011a).

Rather than as an aberration, PPPs (or perhaps more correctly 'traditional' PPPs) need to be viewed as one form of public procurement, supported by many hybrid approaches that blur the lines between them and conventional procurement methods.

In Grimsey & Lewis (2007).

Grimsey & Lewis (2007) state that the main difference between PPPs and traditional procurement is that separate arrangements (building roads, hospitals, schools and public buildings, and in providing management and maintenance services) are combined into one contract and a private entity is responsible for providing but not building a flow of infrastructure services over time.

On the other side of models for provision of infrastructures and services is located Privatization. According to the OECD glossary, the term privatization can be defined as: Transfer of ownership and control of government or state assets, firms and operations to private investors. This transfer takes the form of issue and sale or outright distribution of shares to the general public. Broadly used, the term privatization includes other policies such as "contracting out" that is, the process by which activities, while publicly organized and financed, are carried out by private sector companies, e.g., street cleaning, garbage collection, housing, education. The policy of privatization has been extensively implemented in the United Kingdom and since adopted in several countries around the world.

In OECD Glossary, pp.69-70

In this case, the material property of the assets goes to the private sector, which assumes the responsibility for practically every risk.

Grimsey & Lewis (2007) pointed out that a main feature of a PPP is that the tasks of design, building and operation of a facility are integrated within a single private party, while under traditional procurement there are separate contractors to build and manage.

Privatization is a sale, which implies the full control and modification of material property assets for a period of time usually unlimited. We stand before a process of privatization when the State sells its position, transferring the ownership of assets to private entities, for an unlimited period of time. When the transferring of the material property does not occur, or when this has a limited duration in time, regulated by some contractual document, following which ownership of the asset returns to the public domain, then we are standing in front of a type of PPP.

In Cruz & Marques (2012).

Between these two models, privatization and traditional procurement, lies the PPP model (see Exhibit 1).

Over the years, the main discussion in the literature about PPP has been whether the arrangement is on, or off, the balance sheet. It has not been about whether or not it represents good value for money (Grimsey & Lewis, 2005).

2.3 Advantages and disadvantages of PPPs

The model of PPP presents, at a theoretical level, a set of advantages and disadvantages. The main advantages (see Table I) of developing a PPP according to Cruz & Marques (2012) are many, and are described below.

One advantage is the integration of the various phases of the project. To integrate the various phases ensures clarification on risk management and allocation of responsibilities - the concessionaire is the primary responsible. The responsibility to manage and operate the infrastructure for the duration of the contract encourages the concessionaire to adopt solutions, at the level of design and construction that will ensure better performance over the duration of the contract, reducing the overall cost of the life cycle venture.

Other advantage is that it eases innovative solutions. Contestants compete with each other for the ability to find solutions that maximize the value of the project. This competition between the best available competences in the market assures the conceding that the best available solutions will be presented. With the appropriate selection criteria in the competition, it can be guaranteed that the winning bid presents the greatest VfM.

The PPPs model reduces the cost and time of projects development. One of the main objectives of the adoption of this model contract is to obtain lower costs for project execution, safeguarding compliance with deadlines and required quality.

PPPs also attract bigger and more capable international partners to the contest as contests in PPP regime have a higher magnitude than those of traditional procurement.

The PPP model allows the State to focus on its main objectives, to the services actually provided, leaving to the private sector the tactical and operational issues to achieve the lowest possible cost.

It unblocks the public resources. PPPs ensure private investment, thereby freeing up resources for public areas where its application can be more beneficial for the public interest.

It ensures a dynamic and active management of infrastructure or services due to potential private sector's ability to manage it, in a more efficient and innovative way.

Finally, the last advantage is that it ensures a more rigorous selection of projects, in a model of effective risk sharing with the concessionaire as the PPP model allows selecting only models with viability.

Besides the advantages referred above, the PPPs model also presents several disadvantages (see Table I), according to Cruz & Marques (2012).

One of the disadvantages is the higher cost of capital. Private financing is more expensive than public and the reasons have to do with the nature of the risk.

Other disadvantage of the PPPs model is its contract fragility. In the long term it is not possible, nor desirable, to write complete contracts. And its deficient definition will confine the partners for several years.

Difficulty in predicting long term. It becomes necessary to make projections of 30 or more years to define the base case and even with very sophisticated methods of forecasting it is not possible to obtain reliable results.

Overspending. Differ in time of payment of the infrastructure can lead to overspending phenomenon (excessive investment).

High transaction costs, including costs of preparing tender procedures, evaluation of bids, establishment and management of contract.

The last disadvantage is the budget failure. So far, PPPs are not accounted in terms of public debt. This status of off-balance sheet can be seen as an advantage or a

disadvantage. An advantage in the sense that it allows making investments without accounting the public deficit. Unfavorable because with the contractual drawings that keep the risk in the side of the state, this expense is of public nature, escaping any budgetary control. More than avoiding upfront payments, PPPs status of “off-sheet” balance, not accounted for public budget calculation, provided the government the ability of performing infrastructure investments with no immediate impact to public finance. The payment would only emerge in the medium and long term. What started to be an advantage was soon transformed in a pitfall, since it allowed economically unfeasible projects to go forward.

One of the controversial issues of PPPs was that private investors gained a rate of return higher than the government’s bond rate. The controversy comes from the fact that, who bears the risk associated with the project, instead of the private sector (who was the one that profits more), was the public sector.

2.4 PPP and VfM

Jackson (2012) defines VfM as:

... striking the best balance between the “three E’s” – economy, efficiency and effectiveness. It is not a tool or a method, but a way of thinking about using resources well... A fourth “E” – equity – is now also sometimes used to ensure that value-for-money analysis accounts for the importance of reaching different groups”. A simple definition is that the VfM is the optimum combination of whole-life cost and quality to meet the user’s requirement and it can be assessed using the criteria of economy, efficiency and effectiveness.

In Jackson, OECD (2012).

Burger & Hawkesworth (2011), state that VfM can be defined as:

...what a government judges to be an optimal combination of quantity, quality, features and price (i.e. cost), expected (sometimes, but not always, calculated) over the whole of the project’s lifetime. Thus, the VfM concept attempts to encapsulate the interests of citizens, both as taxpayers and recipients of public services. As such, VfM should in principle also be the driving force behind traditional infrastructure procurement.

In Burger & Hawkesworth (2011).

Therefore, any project, whether it is a PPP, a traditional procurement or a privatization, should be accepted only if it creates VfM.

Grimsey & Lewis (2005) define VfM as “the best price for a given quantity and a standard of output, measured in terms of relative financial benefit”.

VfM should be understood as a measure of the utility of spent money, which is different from looking for the cheapest solution. Maximize the VfM, means to maximize efficiency.

The main goal of PPPs is to deliver improved services and better VfM. Primarily through appropriate risk transfer, encouraging innovation, greater asset use and integrated whole-of-life asset management. When the State accepts to launch a PPP, it has as main purpose to generate VfM and the proper allocation of the risk is the primary factor (Privately Financed Projects, 2006).

According to Sarmiento (2010), the best methodology for evaluating VfM in PPPs is the public sector comparator prior to the bid. The PSC is chosen for three reasons:

First, it enables to know, in detail, the cost of the project if developed by the public party. The public sector choice has to be the lower bid, with the same outputs, and besides the lower bid, it has to be below the PSC cost. If this does not happen, then choosing to develop the project via PPP system will be a bad choice.

Secondly, in most countries, the public administration does not have the resources and expertise necessary to carry out a more detailed and complex analysis, as required by a complete cost-benefit analysis of all the alternatives.

Third and last reason, through executing a PSC after the bid may show whether VfM has been reached. If the result is negative, the renegotiation of PPP would be in order.

PSC is what will determine whether the project has VfM or not. The PSC is a value that reflects the theoretical cost to the State, if the construction of the infrastructure or the provision of the service were carried out using the traditional procurement. PSC can be defined as the cost of the life cycle of the infrastructure in a traditional procurement model, including potential efficiency gains and quality of service. Moralos & Amekudzi (2008) state that PSC is a hypothetical scenario, because it depends on approximations made by agencies and their experience, which may lead to significant errors. These errors

may be caused by the complexity of the financial models used and the lack of experience of the public sector to handle it.

VfM evaluates total project costs and benefits. VfM often incorporates a PSC that estimates life cycle costs - including operations, maintenance and improvements - for public project delivery. Using a PSC, a VfM analysis can ask whether a PPP offers better VfM in comparison to traditional project delivery and it can offer a comparison among PPP bids. A PSC also sets a threshold for private firms to meet or exceed (Rall et al, 2010).

One have to compare the PSC with the payments that the State is going to do to the PPPs in terms of NPV. If the PPPs payments are lower than the buyers cost, thus the PPPs demonstrates VfM (Sarmiento, 2010):

- (1) $NPV\ of\ cost\ (PPP) = Payments + retained\ risks$
- (2) $NPV\ of\ cost\ (PSC) = Capex + O\&M + Transfer\ Risks$
- (3) $NPV\ of\ cost\ (PPP) < NPV\ of\ cost\ (PSC)$

In a first moment the risk has to be allocated. The retained risks by the State and the transferred risk by the private party. Secondly, it has to be evaluated the financial value of the risks, in the case of the analyzed sample it was apparently overestimated.

2.5 Risk allocation

Sarmiento (2010), states that transfer risks are a crucial part of the process, to achieve VfM through PPPs. Therefore much of the risk of PPPs comes from the complexity of the project itself. Grimsey & Lewis (2005) utter that VfM demands an equitable allocation of the risks between private and public.

The risk is the uncertainty seen by the individual. In the case of PPPs, this individual is the investor or the state. The model of risk sharing is the most crucial to ensure that the PPPs model presents VfM face to the alternative of traditional procurement. If in a particular type of PPPs the private partner has the responsibility to build, finance and manage the infrastructure, this does not mean that this support the main risks associated with PPP (all depends on the allocation of risk). One of the main features that make the model of PPPs different from traditional procurement is the question of risk. The risk allocation structure in a traditional procurement is quite simple. The private party is hired by the state to fulfill a certain service, assuming only the risk associated

with that specific service. On the other hand, in a PPPs model, the risk allocation structure is significantly more complex. Because the partnership will be developed over a long period of time, it will face many factors of uncertainty and also the level of involvement of the private entity is higher. This means that the responsibility of developing different tasks in the life cycle of the infrastructure and the responsibility to take their share of risk are greater (Cruz & Marques, 2012).

Burger & Hawkesworth (2011) describe the role of risk as a fundamental element of the PPPs definition. Therefore it is necessary to transfer the adequate amount of risk to the private party, to guarantee that the private runs efficiently, effectively and achieve VfM. Risk should be delivered to the party that is best at managing it. This means, the party that should bear the risk is the one that can manage it at minimum cost and that is best able to prevent the risk from realizing.

The whole notion of the PPP concept is built on the premise that the efficient allocation of risk delivers VfM. A risk that is not valued or measured cannot be allocated efficiently and therefore will not deliver VfM.

After measuring the risks, the State has to achieve optimal risk allocation. Thus it can determine which part has greater ability to manage each risk. Risk transfer is a very important aspect to obtain VfM, and the division of the risk between public and private sectors must be balanced. Otherwise the project would go wrong. Transferring too little risks to the private would make the project inefficient. Nevertheless, transferring too much results in higher payments and it reduces the VfM (Moralos & Amekudzi, 2008).

If the public sector seeks to transfer risks which the private sector cannot manage, VfM will reduce as the private sector seeks to charge a premium for accepting such risks (Corner, 2006).

The risk-transfer element of VfM is also linked with the fact that project cannot generally be taken out of the public sector balance sheet, unless risk transfer to the private sector can be demonstrated (Yescombe, 2007).

2.6 Major Risks

The major risks to be transferred to the private sector in the PPPs are: construction risks, demand risks, operation risks and maintenance risks.

PPP projects face different risks and uncertainties, namely: sponsors, design and construction, operational and maintenance, political, legal, market, social and environmental and force majeure. Each project is unique with a particular location and a specific sector and therefore, is exposed to different risks with different degrees. In this context, the complex contractual structure typical of PPP, plays a fundamental role in the allocation of risks between the parties (Basílio, 2011).

Many authors have dedicated their investigation to the theme of risk and its allocation in the framework of a PPP (Grimsey & Lewis, 2002; Meda, 2007). The most accepted idea is that risk should be allocated to the agent with best capacity to manage it, this means, the agent that minimizes its economic cost. A certain risk must be transferred to the private partner if and only if it is able to manage better and more efficient than the public partner. A classic example of this type of risk is the construction risk, or rather, the risks associated to the building activity like overruns in time and cost. If the private partner is the entity that plans, manages and executes the construction process, it is better able to manage this risk than the public partner, because in fact this is its core business (Cruz & Marques, 2012).

According to Sarmiento (2010), the construction risks are usually aligned with environmental projects, archaeology discoveries or costs with eminent domain. The environmental component has a great importance in the whole process of a PPP, especially since the launch phase of the contest until the end of the construction phase. Many of the contests launched in Portugal related to the road sector were held without environmental approvals. Thus, it was decided what, where and how to build without any environmental approval, apparently due to the tight political schedules and the unsettling will of government to raise a project. This situation has resulted in substantial and costly problems for the public sector, as a result of economic and financial rebalancing made in favor of to the private due to environmental restrictions or incompatibilities of certain projects that would be known only after the signing of the contract. (Cruz & Marques, 2012).

The construction risk is associated with the risk of delivery assets/ infrastructure under necessary conditions for the provision of contracted services. The main points that should be analyzed when performed an assessment of construction risk are: penalties for late delivery, failure to comply with specific norms, exposure to construction overrun

costs, changes in prices and burdens in the construction of assets, technical deficiencies, infrastructure planning, environmental and external risks. If the State has the obligation to make payments regardless of the physical condition of the assets, this is evidence that the risk of construction remains in the State. If the State assumes the risk of construction, then it is considered that it is also in possession of the economic benefit of the asset and therefore should register it as an asset on its balance sheet. This understanding should also be applied when the State has an obligation to pay or reimburse the concessionaire for additional costs of construction regardless its justification. The risk of construction is considered to be transferred to the private partner, when the state does not have any obligation to pay for any failure in management by the private partner during the construction phase. (DGTF reports, 2012).

Demand is a risk whose allocation will depend on the type of concession considered and the initial perspectives in relation to the demand of a particular infrastructure or service subject to a concession. The risk of demand can be on the side of the public sector, if the payments are made to the private mainly by availability, although may also be on the side of private sector. In this case, the remuneration is directly dependent on the demand (where the amount charged by the toll or tariffs belongs to the private sector) (Cruz & Marques, 2012).

The risk of demand is associated with the volume of production or services that the State requires to the private partner. The demand risk includes the risk of changes in customer behavior or end users or infrastructure resulting from: economic factors, new trends of markets, entry of competitors and technological obsolescence. When the demand risk is shared, the allocation of risk should be determined taking into account the relative weight that the State assumes the demand risk. Payments by the State should be dependent on the effective use of assets. If the State is required to make minimum payments regardless of effective demand, the demand risk was not substantially transferred to the private partner (DGTF reports, 2012).

The risks of operating-cost overruns are generally transferred to the Private entity. This "whole-life" approach to building and maintaining the facility, which is fundamental to the PPPs process, is one of the strongest VfM arguments for PPPs. However, these risks are not always transferred in full (Yescombe, 2007).

2.7 Shadow – Benefits

The shadow-benefits can be viewed as financial benefits that are not contractually considered in the base case. These benefits potentiate the growth of profitability of the private party without any counterpart for the Government. The available literature about the shadow-benefits is hardly existent and scarce.

These shadow-benefits that result from the difference between the actual operating costs and estimated in the base case, are appropriated by the private, who believe that these extraordinary amounts result from gains in efficiency and good management.⁴

Chapter 3 – Methodology and Data

3.1 Data Source

The database of this dissertation has two variables: the shadow-benefits and the interest rates. First, collection and analysis of the shadow-benefits. These benefits were identified by the DGTF. The information was taken from DGTF reports and a detailed study of the PPPs contracts has been done. Secondly, analysis of gains/ losses on financial risks. In this case, the data were extracted from two different sources: the data from the concessions reports and the data from several years of the Euribor rate. The data from the concessions were in the DGTF reports and the year, debt, spread and swap for each PPP (if there was a swap contract) were extracted. For the Euribor rates, the data in this FMW were taken from <http://www.euribor-rates.eu/> and it is relative to the December 31 of each year, from 1999 (when Euribor was created) up to 2012. Also, the impact of the evolution of Euribor face to the cost of debt of the base case will be estimated.

In Table II, it is possible to see the year of the contract, the amount of debt, the spread on Euribor and the Euribor relative to the year of the contract, the cost of debt of the base case and, in some cases, the swap.

⁴ The negotiating committee led by António Ramalho has argued that if these contracts are partnerships, gains extraordinary must benefit both parties adjusting to the current time in the country, not being supported by taxpayer. Available at: <http://www.asjp.pt/2013/03/18/estado-quer-partilhar-dos-beneficios-sombra/>

3.2 Methodology

3.2.1 Shadow – Benefits

The data collection of the shadow-benefits was taken from the 36 DGTF reports. There are a few reports that do not contain evidence of shadow-benefits (see Table III). The data collected of each report were the PPPs name, the type of shadow-benefit and its description, the item (Capex, Opex, Interest, etc) and the period of the shadow-benefit.

3.2.2 Interests

The State hired PPPs and fixed the payments (between 30-40 years). These payments result from the assumptions of the base case. These assumptions of the base case are the investment costs, O & M, taxes (corporate tax) and financial costs. In financial costs, the assumption is the cost of financing at the time of the base case. The cost of financing can be done in two ways: through Euribor plus Spread or through interest rate swaps. This means that the risk of funding was allocated to private. But the State has fixed the interest rate that would pay in the base case. Therefore, changes in Euribor are not reflected in the State payments, whether are gains or losses.

Portuguese PPPs are financed through debt (finances 70-90% of Capex) and Equity. Payments to PPPs by the State are according to the cost of debt of the base case, and are not revised periodically. Therefore, the risk of interest rate is assumed by the private partner at the interest rate of the base case. The cost of debt of the base case used in each PPP is available in Table II.

According to the scheme of gains and losses Figure 2, when the cost of debt, which is Euribor plus Spread, is above the cost of debt of the base case, the private partner incurs a loss. But if the cost of debt is below the cost of debt of the base case, the private partner wins. In the case where the private profits, there are two possible scenarios: when the PPP has swap contracts, the one to profit is the Bank but if the PPP has no swap contracts, then it is the concessionaire who wins. Since 2007/2008 Euribor decreased substantially which consequently led to a decline in the cost of debt. The State pays the Euribor (of the date of contract signature) 6 months + Spread. In 2007, the cost of debt was around 7% but nowadays this value should be around 2%-3% but instead the State still pays the rate

relative to the base case. Besides the return of the base case, the bank or the concessionaire even gain a large amount of money, by this type of shadow-benefit, not considered in DGTF reports.

The objective of this dissertation is to measure the gains and losses of the PPPs or the bank compared to the base case.

3.3 Euribor

In 1999, with the introduction of the single currency, Euro, European Banks considered necessary to create a “new money market reference rate for the euro” within the Economic and Monetary Union: Euribor. Euribor rates are benchmark rates used to gauge the cost of unsecured borrowing in the interbank market (Taboga, 2013).

“On each trading day, the European Banking Federation (EBF) asks a panel of banks what interest rate, to the best of their knowledge, a prime bank would charge another prime bank on an unsecured loan”. Euribor is calculated as the average interest rates established by a panel of fifty European Banks (Panel banks) that lend and borrow among them⁵. There are fifteen different Euribor rates. The loan maturities vary from a week to twelve months and their rates are one of the most important in the European money market (Taboga, 2013).

3.4 SWAPS

When a company needs to finance its operational activity, an interest rate is financed by a bank (7%, as an example), which is indexed to Euribor. This company has the alternative of contract an interest rate swap in which the floating rate is exchanged for a fixed rate, protecting themselves against the rising of interest rates (hedging). Thus, the interest rate of the loan that the company asked the bank becomes fixed regardless of changes in Euribor. If there is an increase in the Euribor rate after signing the swap contract, the company will profit, since a fixed interest rate that at the time was below Euribor was settled in the contract. With the increase in Euribor, the initial rate of the loan will certainly increase, due to be indexed to it. This causes the company to obtain savings,

⁵ Portugal is represented in the Panel Banks by CGD.

since the swap contract provides for a fixed rate of 7%. If instead, the Euribor has a tendency to decrease, the company will have losses with these swap contracts, as it is paying a fixed rate of 7% when it could be paying a lower rate if swaps were not being used.

Chapter 4 – The Portuguese Case – PPPs

Since the beginning of the 90s, the development of PPPs in Portugal has experienced an overwhelming growth. Whether at the level of major infrastructure, such as roads or hospitals, the high level of the country infrastructure was substantially due to this hiring model. If the merit of having increased very substantially the level of infrastructure in the country in recent years is questionable, so is the negative impact that this development had at the level of fiscal risks that resulted in a degradation of public debt rating (Cruz & Marques, 2012).

In 2005, Portugal was the European country with the largest expense in PPPs as a percentage of its GDP, overtaking countries such as the United Kingdom or Ireland. Figure 1 represents the costs of several countries with PPPs projects as a percentage of GDP during the period 2000-2005 (Cruz & Marques, 2012).

It was since 1994 that there has been a massive development of PPPs in various sectors such as roads, rails, health and security. The wave of PPPs of the 90s and 2000 began with road concessions, with these dominating the early years of the development of PPPs, if not in number of projects at least in investment. In 1994, Lusoponte was the first PPP in Portugal with the crossing of the Tagus River that is held by two bridges: Vasco da Gama and 25th April. After that it was followed by several PPPs in the field of water and waste between 1995 and 1998. In the following three years, 1999-2002, PPPs in the road sector, as well as railway sector were launched with Fertagus in 1999 and Metro Sul do Tejo in 2002 (Lemos et al, 2004).

Sectorial framework

Roads

The wave of PPPs in the 90s and 2000 began with road concessions. In Portugal, the development of the motorway network was based on three factors: regional equity, a decrease in travel times and the reduction of road accidents.

Concerning roads, a variety of PPPs models were introduced in three main waves (see Table IV). Wave 1 was launched in the late 1980s, private concession from the government BRISA (tolls paid by users). The second wave was launched in the end of the 1990s and it includes SCUTs, Grande Lisboa and Norte. The third and last wave of PPPs in the road sector was launched between 2007-2008 to open in 2013-2014 as an EP sub-concessions.

Portugal is one of the European countries with the densest motorways network, with 28.4 Km/1000Km², in contrast to the average European which is 15km/1000km². These values are representative of the rapid growth of the motorway system of our country, which would not be possible without resource to PPPs. However this option has entailed excessive costs, to the extent that it created a financial unbalanced system and important mistakes were made in the design process of the PPPs, especially in the allocation of risks. The financial pressure that would result from the construction of a so vast road network in such a short period of time would be unaffordable for the public finances.

One of the measures used to reduce the imbalance of the financial system and minimize the impact of compensation that resulted from an asymmetry in the allocation of risk was the introduction of tolls on Scuts. The introduction of tolls on Scuts aimed to reduce the imbalance of the financial system and minimize the impact of contingent compensations⁶, which resulted from an asymmetry in the allocation of risks with losses to the exchequer.

According to the report of TC (2005), in these concessions, the State replaces itself to users to pay tolls, apparently providing a free service. And it refers apparently because

⁶ Some of these compensations are due to overly optimistic traffic forecasts, deficient tender procedures, changes to the project after the contract is signed. There are multiple reasons why the concessionaires to claim hefty compensation to the state (Cruz & Marques, 2012B).

taxes will be paid by taxpayers, over the 30 years life of the grant, which will fund such service.

The Scuts which are no longer "No Costs to the users" are: Algarve (A22), Beira Interior (A23), Interior Norte (A24) and Beira Litoral/ Beira Alta (A25), Norte Litoral, Costa de Prata and Grande Porto.

All road concessions have a term of 30 years, with the exception of the Concession Litoral Centro that has a variable period between 22 and 30 years.

The Government believes that there is an excessive concentration in the sector. The transport and infrastructure sector concentrated at the end of last year, 96% of PPPs in Portugal⁷.

73.8 million Euros was the cost of the concession Beiras Litoral and Alta, the most expensive of all PPP roads.

Health

As it happens with other public services, the health sector also experienced an increase of the private participation in recent decades. This results of the strategy of "liberalization" of the sector that exists in some countries, in the sense that models of private management in hospitals of the SNS are allowed (Gupta et al., 2002; Galvin, 2003).

The health system of most of the countries with the SNS relies on private services. In most countries, both of these services coexist, as for example in Germany, where private services account 7% of the total supply, whereas in Portugal 11% and in Spain 18% (Cruz & Marques, 2012).

The PPPs developed in the health sector have focused mainly in hospitals. These units of the health system accounts between 45-60% of the sectors budget.

Currently, there are 6 PPPs in the health sector: a telephone helpline of the SNS Saúde 24, Centro de Reabilitação do Sul (Algarve) and Braga, Loures, Vila Franca de Xira and Cascais hospitals.

The first PPPs experience was the Amadora-Sintra Hospital, through a management contract settled in 1995.

⁷ According to the Secretary of State for Public Works, Sérgio Silva Monteiro.

There are two waves of PPPs in the health sector, which correspond to different models. In the first wave, the model adopted included infrastructure and clinical management, although with different durations and different contracts. The first contract was launched in 2003 concerning Loures Hospital (which began operating in 2012). These dates indicate one of the main problems of PPPs: the complexity. It took nine years to the Hospital to start its activity. This project was followed by three others: Cascais, Braga and Vila Franca de Xira. Two more projects with specific characteristics were also developed: the call center of the SNS and the rehabilitation center.

The second wave adopted the most common model, including only the infrastructure. This wave was started in 2006 and provided six new hospitals: Lisboa Oeste, Faro, Setúbal, Évora, Espinho / Vila Nova de Gaia and Póvoa do Varzim / Vila do Conde.

To evaluate the PPPs program it is necessary to consider whether or not the model offered VfM, that is, if the PPP option configured a more advantageous alternative to the public purse than the traditional procurement. The data available for the Hospitals of Cascais and Braga confirm this thesis.⁸

Railway

The PPPs of the railway sector have the particularity of having characteristics of very different projects: two underground systems (Metro Sul do Tejo and Metro do Porto), one heavy suburban rail system (Fertagus) and a high-speed (RAVE). Besides Fertagus, all other systems require the construction of railway infrastructure and, as such, required large investments.

Security

SIRESP, the operator of the National Security and Emergency of Portugal resulting by the PPPs promoted by the Ministry of Internal Administration, is the first in this sector. The purpose of the contract SIRESP was the conception, design, supply, installation, construction, management and maintenance of an integrated digital trunking

⁸ The PSC for the Cascais Hospital was estimated at 409 million euros, despite the initial proposals exceed this value - 4 proposals between 429 and 526 million euros, after selecting two proposals for the next phase of BAFO values dropped to 359 and 373 million euros. In Braga Hospital, the 6 initial proposals had levels between 851 and 1.136 billion euros, compared with a PSC of 1.186 billion euros. In the BAFO stage two competitors selected lowered their proposals for 843 and 794 million euros (Cruz & Marques, 2012).

technology for network security and emergency Portugal. The contract was signed on July 4, 2006, entering service in June 2007 and lasting 15 years.

Chapter 5 – Shadow-Benefits: Results

After analyzing the DGTF reports, the extracted output allowed to create figures 5, 6 and 7.

Figure 5 represents the number of shadow-benefits by PPP. This figure answers the research question 1, what the shadow-benefits in the risk allocation of the Portuguese PPPs are. It is possible to see that the values vary in a range between 1 and 13, being SIRESP in the bottom of the figure with only one shadow-benefit and Beiras Litoral e Alta with the highest number of shadow-benefits: 13.

In Figure 6, it is possible to see the number of shadow-benefits by type of benefit. This figure answers the research question 2, what kind of shadow-benefits can be identified in the PPPs projects in Portugal. In this case, the benefits analyzed were: equity, IRR, social capital, bank debt, maintenance plans, shareholders loans, capital, demand, other incomes, shareholders reimbursements, dividends, corporate tax, accessory revenues, financial burden, Opex, renegotiation costs, inflation rate and Capex. Equity, IRR and social capital are the type of shadow-benefits with lowest number, only one. On the opposite side, Capex presents the highest number with 21.

Figure 7 represents the percentage of shadow-benefits by sector. In this dissertation four different sectors were analyzed, namely health, railway, roads and security. The larger number of shadow-benefits is in the road sector with 66%, more than a half of the analyzed sample. It is expected that the majority of the shadow-benefits are in the road sector since this represents most of the 36 PPPs and there are also the oldest projects. The road sector is followed by the health sector with 26%, followed by the railway with 8% and the smallest one being the security sector with only 1%.

These shadow-benefits generate gains to the private sector that are not predicted in the base case and that are not shared with the public sector. It could be argued that it is due to risk management, but the truth is that it represents, in some PPPs, too many situations of benefit for the private sector, which should have been safeguarded by the public sector.

Chapter 6 – Results: gains and losses of interest rate risk

This section answers to the research questions number 3 and 4, namely, how the financial risk was allocated and what the results produced from 2007-2012 were, and which value the identified benefits have.

6.1 Euribor Evolution

Over the time, Euribor has taken an upward importance in monetary policy decisions and for the European financial stability, being used as a reference in a wide range of financial instruments and as an accurate guide to what is happening in the European money market.

Euribor has suffered large fluctuations since the year it was created in 1999 up to today. As we can see in the Figure 8, the values varied between 5% (in 2000) and near zero. Nowadays the Euribor is almost zero, with a rate of 0.3%.

When the financial crises started in 2007-2008, the rate started to decrease due to banking instability. Between 2007 and 2012 the rate decreased very significantly. It was this decrease of the Euribor rate that allowed the PPPs concessionaires to have so high gains.

6.2 SWAPS

The financial crisis triggered a huge volatility in Euribor, related to all banking instability. As an interbank interest rate, the doubts about the solvency of banks, causes among them, a high parsimony to lend to each other, often preferring not to, which leads to increases in Euribor. Thus, it makes sense economically to use swaps⁹ in 2009, since the evolution of the Euribor it was totally unexpected. The fact that the same falling consistently, as discussed above, led to decreases in rates of loans signed. However, the company does not enjoy these decreases since it agreed to pay fixed rates to hedge risk, which led to huge losses.

The problem with some of these swap contracts, that a few Portuguese PPPs resorted, was that these were speculative swaps contracts that contained knock-out

⁹ In an interest rate Swap a company agrees to pay cash flows equal to interest at a predetermined fixed rate on a notional principal for a number of years. In return, it receives at a floating rate on the same notional for the same period of time (Hull, 2009).

clauses. The companies agree to pay the bank a pre-defined loan until the end of the contract, regardless of Euribor return to its initial value and it is more advantageous. These exotic swaps not vary interest rates and have the function of protecting the companies face to increases in interest rates (when interest rate rises companies have profits, when it descends companies have losses).

As it is possible to verify in the Table II, there are 9 Portuguese PPPs that resorted to swap contracts, having a large range of rates between 3,83% to 7,14%.

Figure 9 presents the gains and losses by concession. Through the analysis of this figure, it is possible to see that the concession with the highest gains is Douro Litoral, with gains that almost reach 120 million Euros. The concession with the lowest values is Hospital de Braga – EGEST, with less than a half million. In this figure it is also possible to verify, beyond gains and losses that some concessions show, that Concession Norte has the highest amount of losses which round 12 million Euros.

Figure 10 shows the gains and losses in millions of Euros per year, between 2007 and 2012. The year of 2007 presented negative results, with losses that round the 24 million Euros. The following years all showed positive results, between 11.6 million and 148,6 million Euros (See Table V).

The decrease of the Euribor has allowed these additional gains from utilities and private parties. Therefore there is the need for the State to control and monitor these gains and to have mechanisms that above a certain amount, allow a sharing between the public and the private entity.

6.3 Euribor Futures

Based on the values of the Euribor Futures 6 months, which values are present in Table VI. The gains and losses of the concessionaires for the overcoming years from 2013 to 2016 were calculated. The results are in Table VII, and as can be seen in the current year, 2013, the values compared to the previous year of 2012 are the same. In 2014 and 2015, the values start to decrease smoothly. And in 2016 the values have a slightly more pronounced decrease. These values of the gains or losses of the concessionaires decreased between 2013 and 2016 when compared to 2012 (due to fluctuations in Euribor rate). As can be seen in Table VI, the Euribor rate in the current year is 0.34% (value on August

13, 2013¹⁰). In the following years, Euribor has a tendency to rise up to 0.53%, 0.74% and 1,15% in 2014, 2015 and 2016, respectively. With this increase of the Euribor in the years to come, the Concessionaires will have fewer and fewer gains.

Chapter 7 – Conclusions, limitations and future works

The present master thesis addresses an important topical issue concerning the shadow-benefits of the Portuguese PPPs. The research questions answered in this FMW were collected from the 36 reports of the DGTF and are the following:

- 1) What are the shadow-benefits in the risk allocation of the Portuguese PPPs?
- 2) What kind of shadow-benefits can be identified in the PPPs Projects in Portugal?
- 3) How was the financial risk allocated and what were the results produced from 2007-2012?
- 4) Which value have the identified benefits?

This master thesis aims to study the shadow-benefits in the Portuguese PPPs case. In this paper there are two separate analyzes. One in which the shadow-benefits presented in the 36 reports of DGTF were identified. The data collected led to the conclusion of the number of shadow-benefits by PPPs and also by type of benefit. The other, focused on the analysis of gains or losses of the financing contracts. In this case, there are two possible scenarios: when there are no swap contracts, whose beneficiary is the concessionaire, and when there are swap contracts, in which case the beneficiary is the bank. The existent problem is that the DGTF did not consider the gains of this second point as shadow-benefits.

The State hired PPPs and fixed the payments. These payments resulted from the assumptions of the base case.

Payments to PPPs by the State are according to the cost of debt of the base case and are not revised periodically. Therefore, the risk of interest rate is assumed by the private partner at the interest rate of the base case. When the cost of debt is above the cost of debt of the base case, the private partner incurs a loss. But if the cost of debt is below the cost of debt of the base case, the private partner wins. In case the private wins, there

¹⁰ Information available at: <http://www.euribor-rates.eu/euribor-rate-6-months.asp>

are two possible scenarios, as mentioned above. When the PPPs have swap contracts and the Bank benefits, and when there are no swap contracts, and the concessionaire profits. Since 2007/2008 Euribor has decreased substantially which consequently led to a decline in the cost of debt. The State continues to pay the rate relative to the base-case instead of reviewing this rate according to the current Euribor.

The PPPs sector that presents more shadow-benefits is the Road sector. This was already expected because the road sector represents the greatest number of the 36 PPPs analyzed, as well as the oldest projects.

In this article were identified different types of shadow-benefits in the PPPs Projects in Portugal. These are equity, IRR, social capital, bank debt, maintenance plans, shareholders loans, capital, demand, other incomes, shareholders reimbursements, dividends, corporate tax, accessory revenues, financial burden, Opex, renegotiation costs, inflation rate and Capex.

It was possible to conclude that the concessions with the highest gains were Douro Litoral, with profits of almost 120 million Euros, and Beira Interior with gains that nearly reach 93 million of Euros.

Through the analysis of the gains and losses of the concessionaires we can conclude that the year 2012 was the one that generated more earnings close to 150 million Euros. There is the need for the State to control and monitor these gains and to have mechanisms that above a certain amount, allow a sharing between the public and the private entity.

Through the analysis of Euribor Futures, it is predictable an increase in Euribor rate, which will lead to a decrease in the profits of the concessionaires.

This MFW presented some limitations to the author. The major limitation found was that the subject of the shadow-benefits present in the PPPs is a recent theme and somewhat innovative. For those reasons, the available literature about the shadow-benefits is hardly existent and scarce.

Other limitation to this dissertation was the data collection. Initially, besides the collection of the PPPs name, type of shadow-benefit, its description and item (Capex, Opex, Interest, etc.), it was also intended to collect its estimated amount. However this was not possible because not all 36 reports provide those values, because some were incomplete.

One believes this topic, the shadow-benefits, has much to be studied and discussed, namely the necessity to identify the values of the financial shadow-benefits analyzed in this dissertation. As noted above, these values were not identified as originally planned, because the values present in the reports were very incomplete. Additionally, a more detailed analysis of these aforementioned shadow-benefits, and also an international comparison with countries that have adopted this model of PPPs that could also have shadow-benefits in their PPPs.

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Appendices

Tables

Table I - PPPs advantages and disadvantages

Advantages	Disadvantages
Integration of the various phases of the project	Higher cost of capital
Eases innovative solutions	Contract fragility
Reduces the cost and time of projects development	Difficulty in predicting the long term
Attracts bigger and more capable international partners to the contest	High transaction costs
Allows the state to focus on its main objectives	Overspending (excessive investment)
Unlocks the public resources	
Ensures a dynamic and active management of infrastructure/ services	
Ensures a more rigorous selection of projects	
Budget failure	

Source: Author

Table II - Interest synthesis - PPP that contain evidence of presence of Shadow-benefits

PPP	Year	Debt - M€	Spread on Euribor	Euribor at the contract	Cost of Debt – Base case	Swap
Hospital de Cascais - Entidade Gestora do Edifício (EGED)	2008	17,5	1,25%	3,859%	4,290%	4,29%
Hospital de Cascais - Entidade Gestora do Estabelecimento (EGEST)	2008	17,5	0,75%	3,859%	5,060%	5,06%
Hospital de Braga - Entidade Gestora do Estabelecimento (EGEST)	2009	10	1,5%	0,997%	3,900%	3,90%
Hospital de Braga - Entidade Gestora do Edifício (EGED)	2009	10	1,90%	0,997%	4,330%	4,33%
Concessão Fertagus	1999	103,3	1,38%	3,074%	4,454%	-
Concessão Metro Sul do Tejo	2002	52,5	1,38%	3,381%	4,761%	-
Concessão Litoral Oeste	1999	209	0,50%	3,074%	3,574%	-
Concessão Litoral Centro	2004	262,7	1,20%	2,151%	3,830%	3,83%
Concessão Norte	1999	496,72	1,55%	3,074%	4,624%	-
Concessão Beira Interior	1999	388	1%	3,074%	7,140%	7,14%
Concessão Interior Norte	2000	325,2	1,30%	4,863%	6,163%	-
Concessão Algarve	2000	102,3	1,30%	4,863%	6,163%	-
Concessão Grande Porto	2002	280	1,20%	3,381%	4,480%	4,48%
Concessão Norte Litoral	2001	155,4	1,35%	3,320%	4,670%	-
Concessão Costa da Prata	2000	210	1,20%	4,863%	6,063%	-
Concessão Beiras Litoral e Alta	2001	450	1,25%	3,320%	5,620%	5,62%
Concessão Douro Litoral	2007	740	1,25%	4,775%	6,025%	-
Concessão Grande Lisboa	2007	67	1,10%	4,775%	4,770%	4,77%

Source: Author

Table III - PPP that do not contain evidence of the presence of shadow-benefits

PPP	Sector
Rave	Railway
Hospital Loures – EGED	Health
Hospital Loures	Health
Hospital Vila Franca de Xira – EGEST	Health
Hospital Vila Franca de Xira – EGED	Health
Brisa	Roads
Subconcessão Baixo Tejo	Roads
Subconcessão Algarve Litoral	Roads
Túnel do Marão	Roads
Subconcessão Transmontana	Roads
Subconcessão Pinhal Interior	Roads
Subconcessão Baixo Alentejo	Roads
Douro Interior	Roads
Subconcessão Litoral Oeste	Roads

Source: Author

Table IV - Road sector public-private partnership models

Model	Road length (Kms)	Payments	Notes	Principal governments risks
Wave 1: launched late 1980s. private concessions from the government (tolls paid by users)	1300	Private partner bears the costs of running the highway and obtains the toll revenue.	After 2028 these assets will progressively move to EP.	Limited, but return conceded to the private sector are very high.
Wave 2: launched end 1990s. Private concessions from the government. Seven shadow tolls paid by the government on behalf of users, highways, now converted to EP sub-concessions with users tolls.	900	Originally: EP made payments to private partner and no user toll. Now: EP makes availability payments to keep the road open in good condition to private partner. State receives tolls collected by the private partner from users.	Tolls introduced in 2010 and 2011. These assets will eventually move to EP.	Demand risk.
Wave 3: launched 2007-2008 to open 2013-2014 EP sub-concessions.	2000 of which 1000 are under construction, of which 430 are highways that could be tolled.	EP makes availability payments to private partner and receives tolls collected by the private partner.	Only 240 km of the new highways are tolled.	Demand risk.

Source: Adapted from Estradas de Portugal

Table V- PPPs gains and losses between 2007 and 2012

PPP	2007 G/L	2008 G/L	2009 G/L	2010 G/L	2011 G/L	2012 G/L
Hospital Cascais - Entidade Gestora do Edifício (EGED)	-0,3	-0,1	0,4	0,3	0,2	0,5
Hospital Cascais - Entidade Gestora do Estabelecimento (EGEST)	-0,1	0,1	0,6	0,5	0,5	0,7
Hospital Braga - Entidade Gestora do Estabelecimento (EGEST)	-0,2	-0,1	0,1	0,1	0,1	0,2
Hospital de Braga - Entidade Gestora do Edifício (EGED)	-0,2	-0,1	0,1	0,1	0,1	0,2
Concessão Fertagus	-1,8	-0,8	2,1	1,9	1,4	2,8
Metro Sul do Tejo	-0,7	-0,3	1,3	1,1	0,9	1,6
Concessão Litoral Oeste	-3,6	-1,6	4,3	3,8	2,9	5,7
Concessão Litoral Centro	-5,6	-3,2	4,3	3,6	2,5	6,0
Concessão Norte	-8,4	-3,9	10,3	9,0	6,8	13,6
Concessão Beira Interior	5,3	8,9	20,0	18,9	17,2	22,5
Concessão Interior Norte	0,3	3,3	12,6	11,7	10,3	14,7
Concessão Algarve	0,1	1,0	4,0	3,7	3,2	4,6
Concessão Grande Porto	-4,2	-1,6	6,4	5,7	4,4	8,2
Concessão Norte Litoral	-2,3	-0,8	3,6	3,2	2,5	4,6
Concessão Costa da Prata	0,2	2,1	8,1	7,6	6,6	9,5
Concessão Beiras Litoral e Alta	-1,8	2,3	15,2	14,0	12,0	18,1
Concessão Douro Litoral	0,0	6,8	28,0	26,0	22,8	32,8
Concessão Grande Lisboa	-0,7	-0,1	1,8	1,6	1,3	2,2
Total	-24,1	11,6	123,1	112,9	95,8	148,6

Source: Author

Table VI -Euribor Futures rates - 6months

Euribor 6M	
2013F	0,34%
2014F	0,53%
2015F	0,74%
2016F	1,15%

Source: Author

Table VII - Gains and Losses on Euribor Futures

PPP	2007 G/L	2008 G/L	2009 G/L	2010 G/L	2011 G/L	2012 G/L	2013 G/L	2014 G/L	2015 G/L	2016 G/L	Total
Hospitais Cascais - Entidade Gestora do Edifício (EGED)	-0,3	-0,1	0,4	0,3	0,2	0,5	0,5	0,4	0,4	0,3	2,6
Hospitais Cascais - Entidade Gestora do Estabelecimento (EGEST)	-0,1	0,1	0,6	0,5	0,5	0,7	0,7	0,7	0,6	0,6	4,8
Hospitais Braga - Entidade Gestora do Estabelecimento (EGEST)	-0,2	-0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,1	0,8
Hospital de Braga - Entidade Gestora do Edifício (EGED)	-0,2	-0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,1	0,9
Concessão Fertagus	-1,8	-0,8	2,1	1,9	1,4	2,8	2,8	2,6	2,4	2,0	15,5
Concessão Metro Sul do Tejo	-0,7	-0,3	1,3	1,1	0,9	1,6	1,6	1,5	1,4	1,2	9,5
Concessão Litoral Oeste	-3,6	-1,6	4,3	3,8	2,9	5,7	5,7	5,3	4,9	4,0	31,5
Concessão Litoral Centro	-5,6	-3,2	4,3	3,6	2,5	6,0	6,0	5,5	5,0	3,9	27,9
Concessão Norte	-8,4	-3,9	10,3	9,0	6,8	13,6	13,6	12,6	11,6	9,6	74,8
Concessão Beira Interior	5,3	8,9	20,0	18,9	17,2	22,5	22,5	21,8	21,0	19,4	177,4
Concessão Interior Norte	0,3	3,3	12,6	11,7	10,3	14,7	14,7	14,1	13,4	12,1	107,1
Concessão Algarve	0,1	1,0	4,0	3,7	3,2	4,6	4,6	4,4	4,2	3,8	33,7
Concessão Grande Porto	-4,2	-1,6	6,4	5,7	4,4	8,2	8,2	7,7	7,1	6,0	47,9
Concessão Norte Litoral	-2,3	-0,8	3,6	3,2	2,5	4,6	4,6	4,3	4,0	3,4	27,2
Concessão Costa da Prata	0,2	2,1	8,1	7,6	6,6	9,5	9,5	9,1	8,7	7,8	69,2
Concessão Beiras Litoral e Alta	-1,8	2,3	15,2	14,0	12,0	18,1	18,1	17,3	16,3	14,5	126,0
Concessão Douro Litoral	0,0	6,8	28,0	26,0	22,8	32,8	32,8	31,4	29,9	26,8	237,3
Concessão Grande Lisboa	-0,7	-0,1	1,8	1,6	1,3	2,2	2,2	2,1	2,0	1,7	14,1
Total	-24,1	11,6	123,1	112,9	95,8	148,6	148,7	141,3	133,1	117,1	1 008,1

Source: Author

Figures

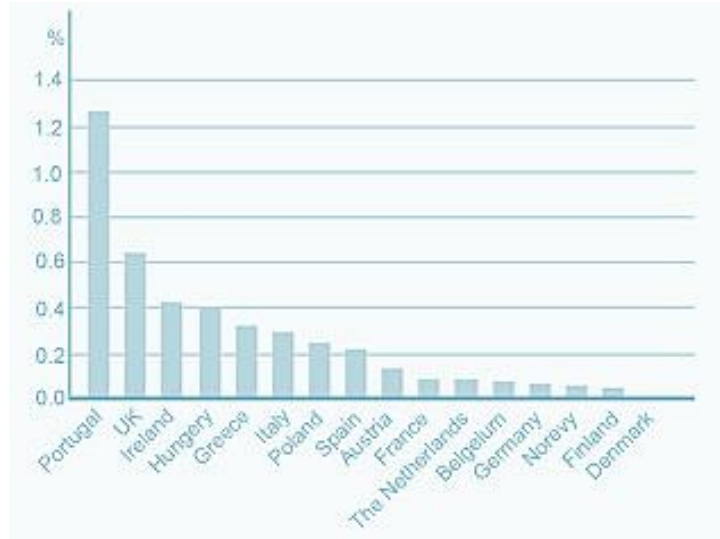


Figure 1 - Average 2000-2005 PPP activity as a percentage of mean GDP

Source: PriceWaterHouseCoopers, 2005



Figure 2 - Private gains and losses

Source: Author

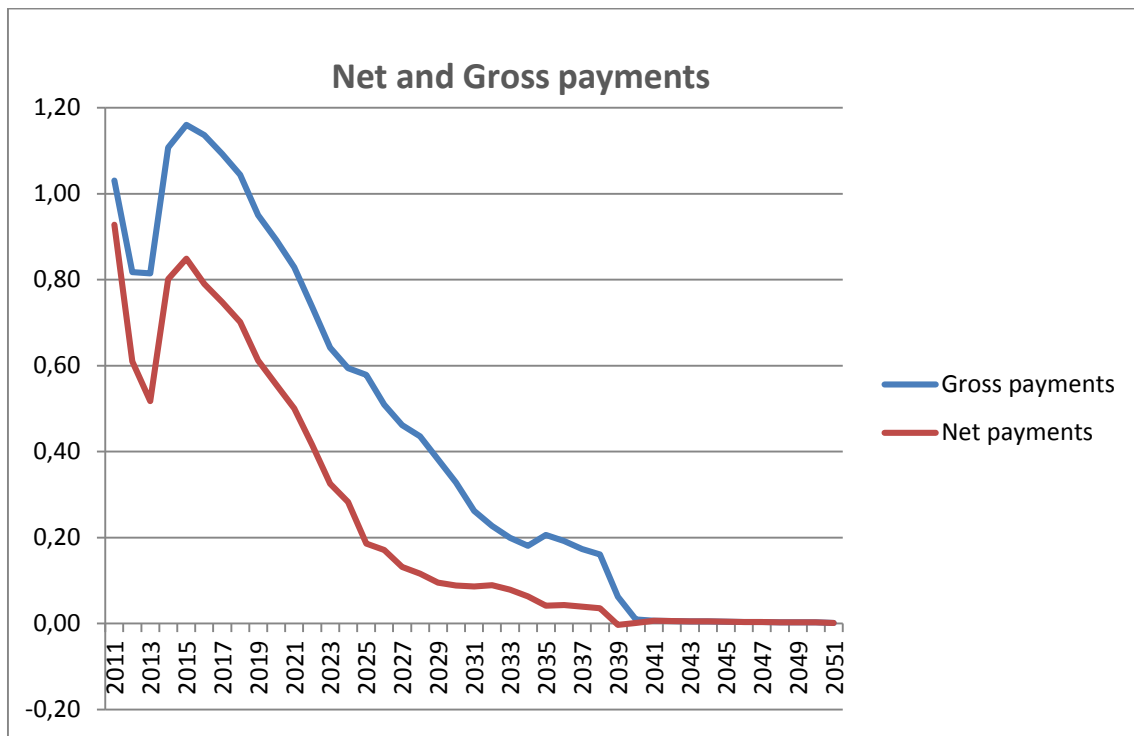


Figure 3 - Net and gross payments of Portuguese PPPs

Source: Author

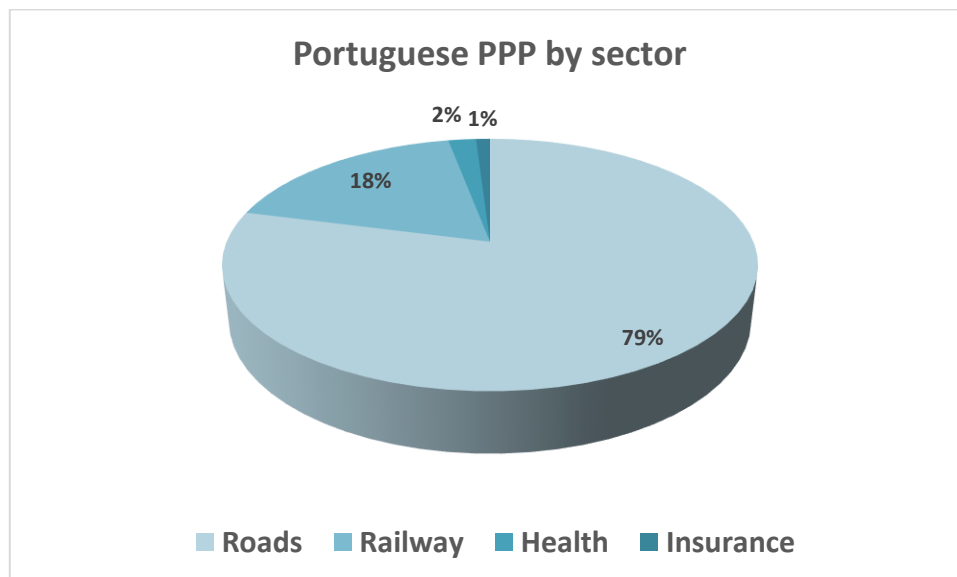


Figure 4 – Portuguese PPP by sector

Source: Author

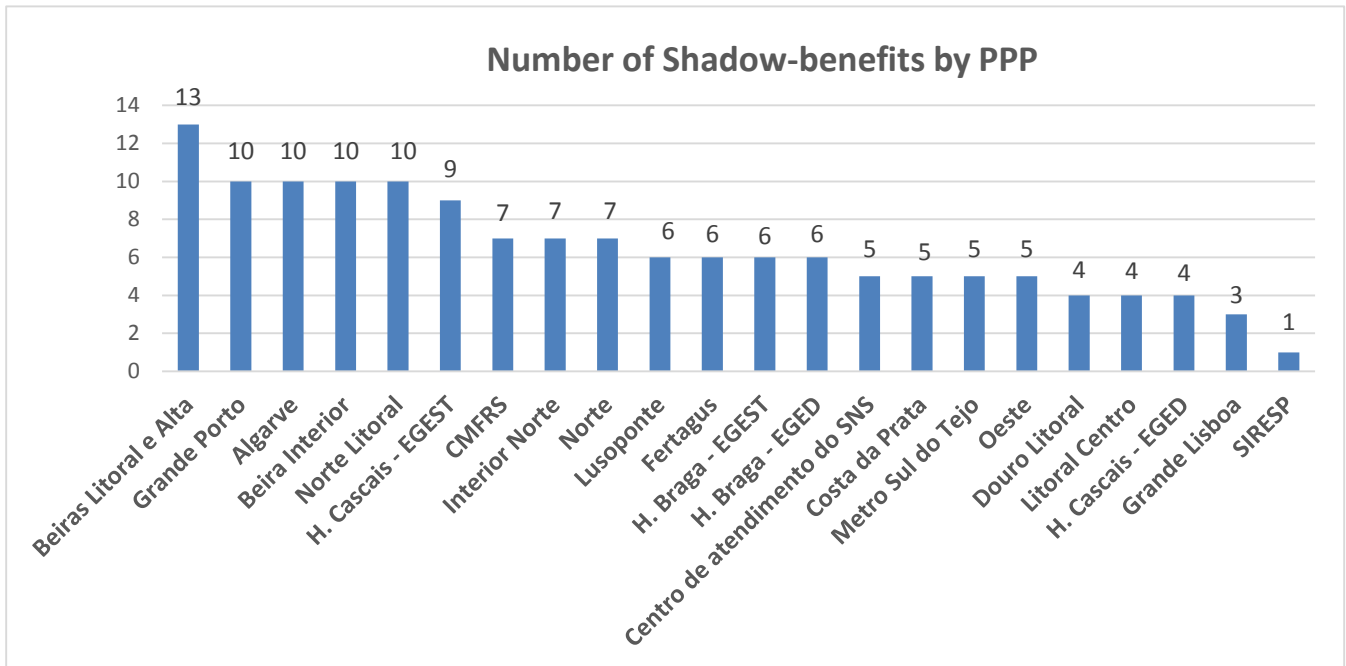


Figure 5 – Number of shadow-benefits by PPP

Source: Author

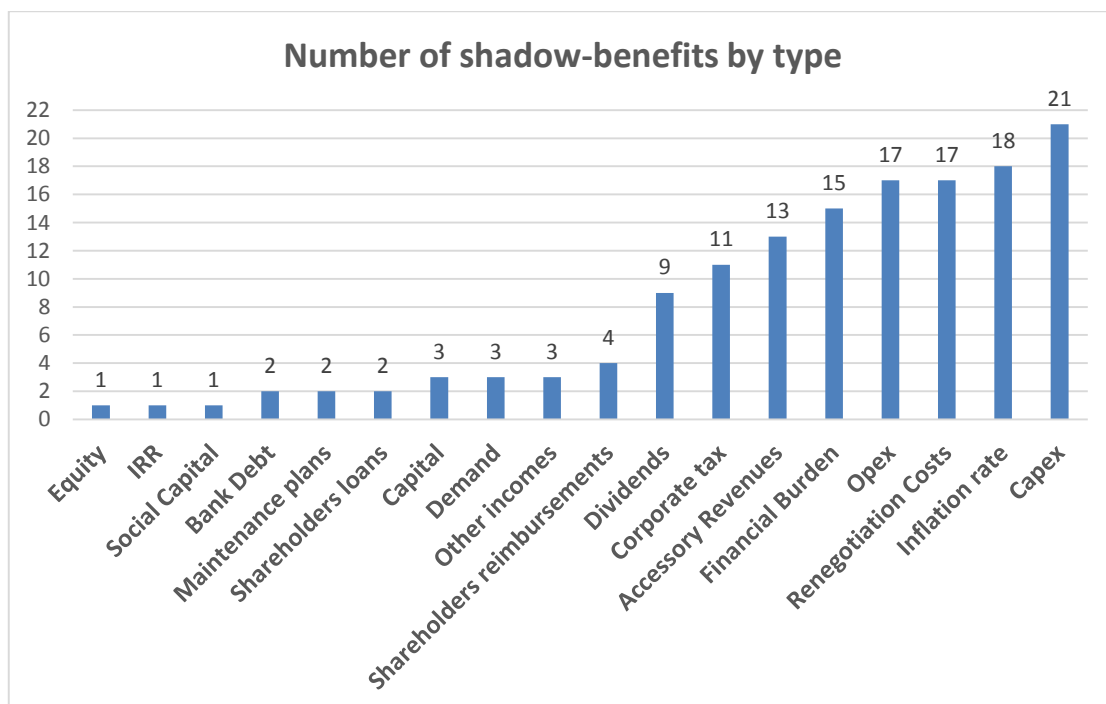


Figure 6 - Number of shadow-benefits by type

Source: Author

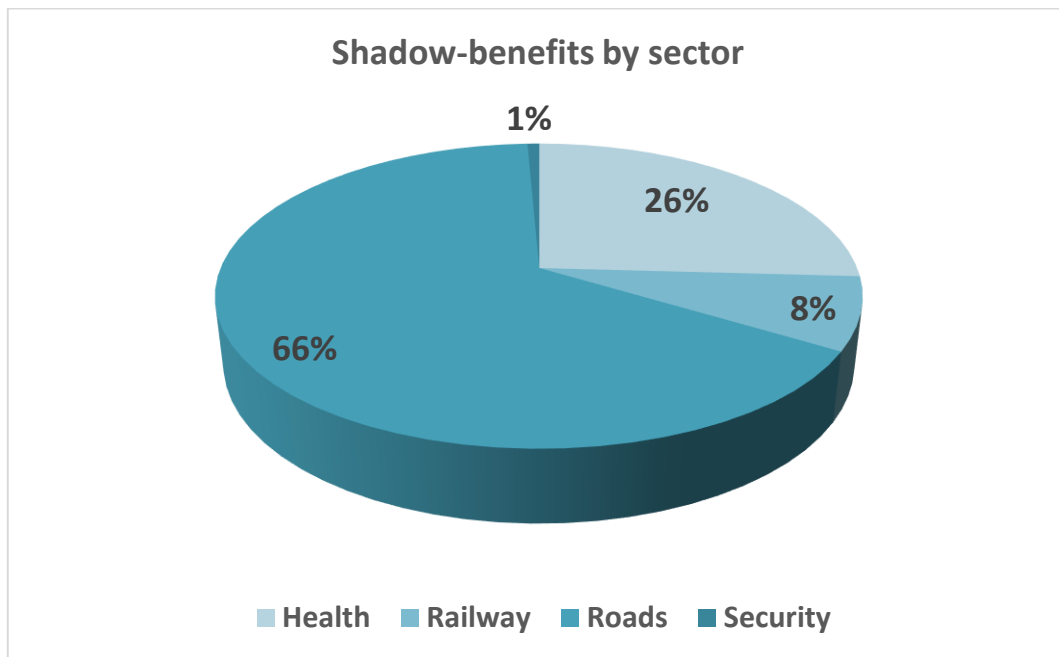


Figure 7 - Number of shadow-benefits by sector

Source: Author

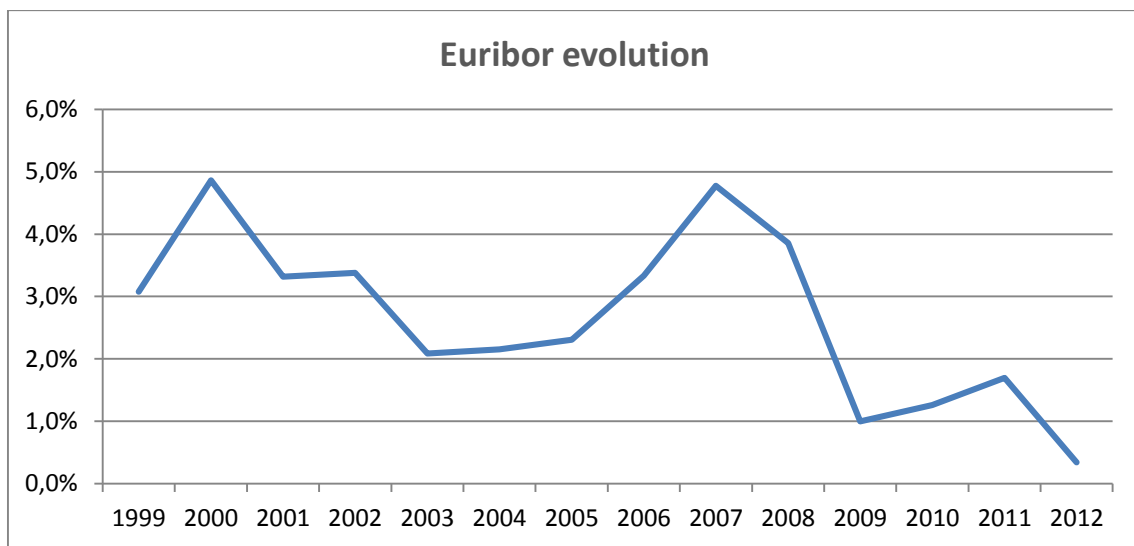


Figure 8 - The graph displays the evolution over the time, of Euribor (6-months) between 1999 and 2012

Source: Author

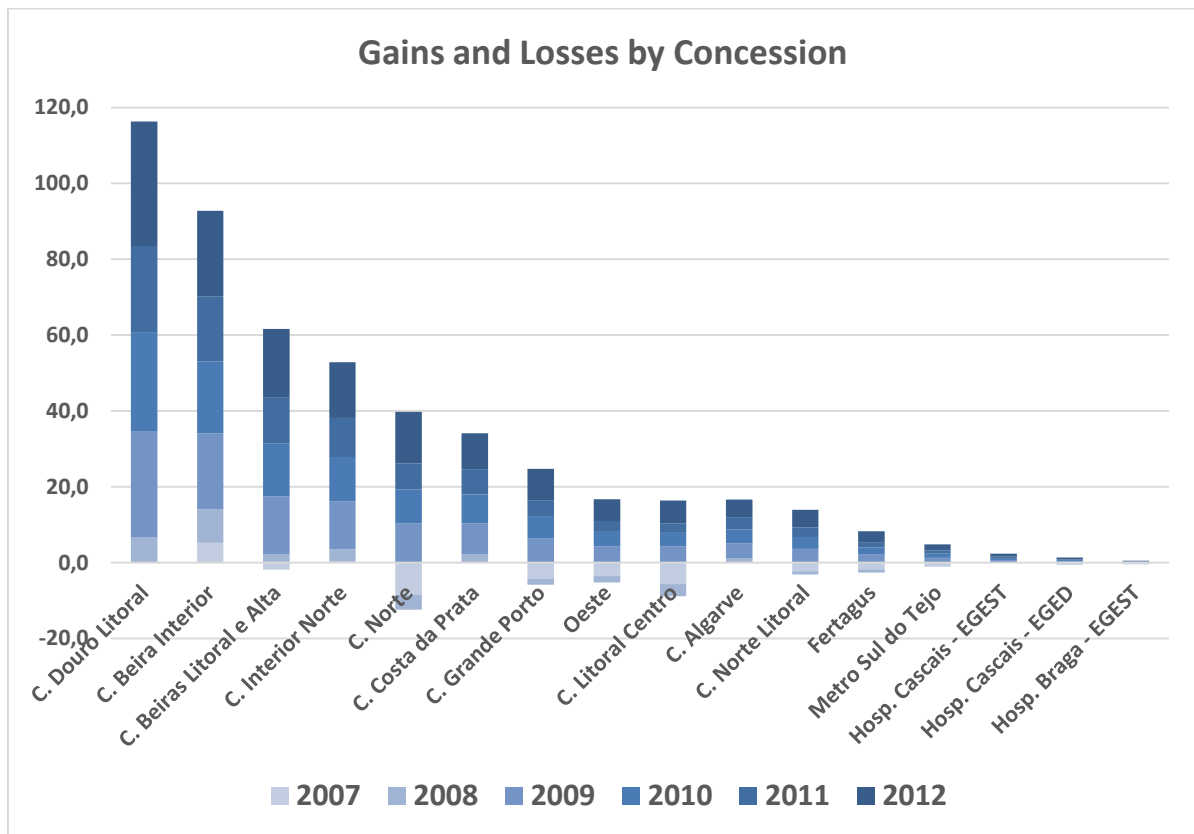


Figure 9 - Gains and losses by concession

Source: Author

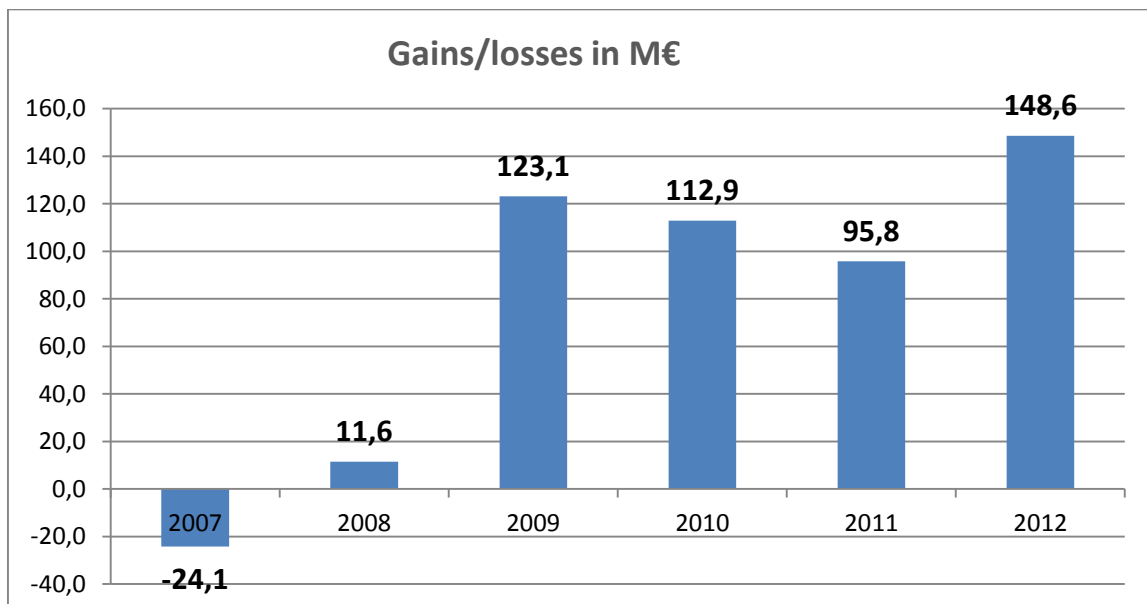


Figure 10 - Gains and losses between 2007 and 2012

Source: Author



Figure 11 – Several procurement models

Source: Author