



**FIRM-SPECIFIC DETERMINANTS OF LISTED PORTUGUESE FIRMS  
HAVING PPP - CONCESSIONS CONTRACTS**  
**An exploratory research**

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## **Abstract**

This research examines the firm-specific determinants of listed Portuguese firms having Public Private Partnerships -Concessions Contracts (PPP-CC) compared to those who haven't got. Based on accounting standards and other specific legislation regarding PPP-CC, a set of determinants was tested in order to find some firm specific characteristics that are linked with the probability of having those forms of arrangements. The sample under analysis covers a period of four years, between 2008 and 2011. This sample contains 33 companies that give a total of 132 firm-year observations that are analyzed using a binary logistic regression model. The results of this research show that, as expected, larger firms, more leveraged and with higher level of Working Capital have more probability of having PPP-CC. On the other hand, Asymmetric Information, which was expected to have a negative impact, has shown to affect positively the probability of having PPP-CC. Furthermore, the results put in evidence, as expected, that growing opportunities is not a distinguishing characteristic between these two groups of companies. This research contributes to the scarce but growing literature on PPP-concession subject, that in the last few years have been drawing some attention from the Portuguese media and the general public.

**Key words:** Public-Private Partnerships; Concessions; IFRIC 12; Portugal

**JEL Classification System:** M41– Accounting and M48 -Government Policy and Regulation

## **Resumo**

Este estudo analisa determinantes específicos de empresas portuguesas cotadas com Parcerias-Público-Privadas - Contratos de concessão (PPP-CC) comparando estas empresas com as restantes que não têm. Com base em normas contabilísticas e outra legislação específica relativamente às PPP-CC, foi testado um conjunto de determinantes com o objectivo de encontrar características específicas que possam estar relacionadas com a probabilidade de ter ou não ter este tipo de acordos de concessão. A amostra abrange um período de quatro anos, entre 2008 e 2011. Esta amostra contém 33 empresas que totaliza 132 observações, analisadas com base num modelo de regressão logística binária. Os resultados desta pesquisa mostram que, tal como esperado, as empresas maiores, mais alavancadas e com um nível mais elevado de “*working capital*” têm maior probabilidade de ter PPP-CC. Por outro lado, a informação assimétrica, que se esperava ter um impacto negativo em empresas com relações com o Estado, mostrou afetar positivamente a probabilidade de ter PPP-CC. Os resultados encontrados evidenciaram, tal como esperado, que as oportunidades de crescimento não é uma característica de distinção entre os dois grupos de empresas analisados. Esta pesquisa pretende contribuir para o conhecimento escasso existente mas de crescente interesse relativamente às PPP, cujo tema tem chamado à atenção dos media e do público em geral nos últimos anos.

**Palavras-chave:** Parcerias Público-Privadas; Concessões; IFRIC 12; Portugal

**Classificação JEL :** M41 – Accounting and M48 - Government Policy and Regulation

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## **Acronyms:**

EPEC – European PPP Expertise Centre

IAS - International Accounting Standards

IASB - International Accounting Standards Board

ICB – Industry Classification Benchmark

IMF - International Monetary Fund

IFRIC - International Financial Reporting Interpretations Committee

IFRS – International Financial Reporting Standards

PPP – Public Private Partnerships

PPP-CC - Public Private Partnerships -Concession Contracts

ROE - Return On Equity

SIC - Standing Interpretations Committee

VIF - Variance Inflation Factor

# **1. Introduction**

The Public Private Partnerships (PPP) model appeared as a measure that sovereign States could use in order to respond to their financial limitations and need to provide public services. These type of contracts, the PPP, can be defined as arrangements characterized by joint working by two sides, the public and the private sector where the delivery of public services involves private sector investment on infrastructure and/or maintenance (Heald and Georgiou, 2011).

This model was born due to the recognition by the States that, despite their responsibilities and need to intervene on sectors considered of the public interest, they sometimes could not do these interventions solely by themselves due to numerous factors, namely budget constraint, size of investment or due to the fact that they did not have certain expertise in areas that some private companies have.

Due to these increasingly financial limitations that Governments have and the recent economic and financial crisis, these deals offer a valid alternative to share financial risk with private partners. Also, it helps to take out of the hands of governments some responsibilities so that they can focus their resources on other more relevant public responsibilities.

In recent years, Governments have more and more pressure to invest in infrastructure to enable the development of the country. The PPPs are an important tool to achieve this goal and is playing an increasingly bigger role on the importance and impact of national and local policies of countries all over the world. Portugal is no exception, with the recent crisis and the intervention of the International Monetary Fund (IMF) all of Portugal expenditure has been a target of the public and media scrutiny that includes the PPPs.

This increasingly impact has not passed by unnoticed by the accounting community. Its complex relationship between public and private sector has created the need for new accounting interpretations and guidelines. The International Accounting Standards Board (IASB) has been working on this issue and has inclusively created in recent years international guidelines regarding the accounting for concession and similar kind of contracts called IFRIC 12 – Service Concessions Arrangements (IFRIC 12).



In spite of the existence of public and media attention around these mechanisms in Portugal, there is still not much information regarding it and what is the impact on the Portuguese companies. These factors stated above are the main reason that contributed for choosing this subject and develop it in this research.

With this research it is pretended to broaden the knowledge of the PPP in Portugal, specially contributing to the general knowledge of the PPP framework in this country. It is presented a binary logistic regression model that pretends to analyze possible determinants that have more probability to explain the engagement on Public Private Partnerships -Concession Contracts (PPP-CC).

The sample under analysis comprehends 33 companies in a total of 132 firm-year observations, between the periods of 2008 to 2011.

The research is divided into 5 chapters. After this introductory chapter (chapter 1) it is presented the literature review, chapter 2, in which is explained the concept of PPP, the regulation that exists and some important aspects about this types of contracts, why they appear and why they became more important in the last years referring to former studies regarding the theme at hand. The chapter 3 presents an overview about the PPP concessions contracts in Portugal and what type of companies has concessions.

Afterwards the 4<sup>th</sup> chapter presents the Empirical Research, namely, hypotheses data and sample, the statistical methodology and the results that have been obtained by running the statistical models.

Finally, 5<sup>th</sup> chapter presents the summary of the conclusions of the research and it problems and limitations.

## **2. Literature Review**

### **2.1. General PPP Framework**

According to Burger et al. (2008:9) Public-Private Partnership, also known as “PPP”, are “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”.

Some literature suggest that PPP do indeed have potential to be very beneficial for services specially when there is sufficient past experience and when the uncertainty is somewhat limited (Iossa and Martimort,2011).

However, according to Froud (2003) it is questionable whether PPP are truly beneficial for the State to shed risk to the Private Sector. Froud does not argue that private sector can deliver a range of lower cost services but instead questions if shouldn't be the State the one with the role of managing those specific risks. Regarding the State role the same author mentions“(…) it can be argued that the State has a particular capability for managing risk because of it size and its motivation” (Froud, 2003:585).

Some studies also suggested that despite having good benefits, PPPs can have limited efficiency gains when facing highly innovative and complex services which there is not much past experience (Iossa and Martimort,2011).

According to the European PPP Expertise Centre (EPEC) the PPP is a business model and a contract between the State and one or more private companies and differs from conventional public procurement in various manners, as the following:

- It is typically a long-term contract based on the procurement of services, not assets;
- Some of the business risks are transferred to the private sector;

- Payment of the services based on the services delivered, which can be made through user charges, as a financial rent or by a combination of both.

Several authors (e.g., Sarmiento, 2010) state that over the last few decades PPP have been increasingly used by governments around the world to finance and manage complex operations. However, some questions have been raised regarding its efficiency. Some of the criticism Sarmiento (2010) points at PPP regards to the fact that governments usually use them as “off-budget” actions in order to avoid fiscal and financial limitations.

Additionally, PPPs have obtained a large international attention due to political and public concerns regarding the deterioration of public infrastructure and the need to renew them in order to provide economic opportunities to grow (e.g., Heald and Georgiou, 2011). It is also pointed out that this concern is shared both by developed and in developing nations. These authors state that one of the great benefits of the usage of concessions agreements by Governments is due to the fact that these agreements are a way of obtaining public infrastructure without requiring immediate funding. In fact, there have been some discussions regarding the deficiencies of the creation of public infrastructure and these deficiencies are usually based on two ideas. Firstly, the fact that, in general, the private sector is more efficient in management than the public sector. Secondly, because of financial constraints that Governments have, and as a consequence, there are profitable investments that cannot be undertaken by them.

The concern regarding PPP arrangements was also reflected in the accounting world. There are two major interpretations by an international accounting entity that address this issue. The first is an interpretation issued by Standing Interpretations Committee (SIC) in 2001, called SIC Interpretation 29 - “ *Service Concession Arrangements: Disclosures*”(SIC-29), that defines in broad terms what a concession arrangement is and what should be disclosed regarding these contracts. Later on, there was a need to expand this definition and to give guidelines in order to harmonize the measurement and recognition of this type of contracts. After that IFRIC<sup>1</sup> (International Financial Reporting Interpretations Committee) issued in 2006 another interpretation, called IFRIC 12 - “*Service Concession Arrangements*” (IFRIC 12). Both of these interpretations will be object to greater detail in the next two sections.

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<sup>1</sup>In the final of 2001 the Standing Interpretations Committee (SIC) changed its name to IFRIC ( International Financial Reporting Interpretations Committee)

## **2.2. SIC Interpretation 29-“Service Concession Arrangements: Disclosures”**

The SIC-29 was released in December 31, 2001. In this interpretation it is described that a service concession usually aims to transfer, for a limited period of time, the right that incurs in the obligation to provide public services in return of a retribution, being this the main characteristic common to all concession contracts. Following this transference of rights of use sometimes also follows the right of use of tangible assets, intangible assets and / or financial assets from the grantor to the operator. Additionally, the SIC-29 also states that at the end of the concession period the operator is obliged to return the right of use and the assets inherent to it, under the conditions defined in the concession contract to the grantor.

In this interpretation it is also mentioned that in some cases there are specific standards that must be followed regarding the treatment of tangible assets (which is described in IAS 16), intangible assets (IAS 38) and the special case of assets under a leasing agreement (IAS 17).

The SIC 29 also defines in paragraph 6 that “An operator and a grantor shall disclose the following in each period:

- (a) a description of the arrangement;
- (b) significant terms of the arrangement that may affect the amount, timing and certainty of future cash flows (eg the period of the concession, re-pricing dates and the basis upon which re-pricing or re-negotiation is determined);
- (c) the nature and extent (eg quantity, time period or amount as appropriate) of:
  - (i) rights to use specified assets;
  - (ii) obligations to provide or rights to expect provision of services;
  - (iii) obligations to acquire or build items of property, plant and equipment;
  - (iv) obligations to deliver or rights to receive specified assets at the end of the concession period;
  - (v) renewal and termination options; and
  - (vi) other rights and obligations (eg major overhauls);
- (d) changes in the arrangement occurring during the period; and
- (e) how the service arrangement has been classified.”

It is also important to note that all disclosures previously identified should appear separately for each service concession arrangement or for each class of service concession arrangements.

### **2.3. The IFRIC interpretation 12 - “Service Concession Arrangements”**

The IFRIC 12 was approved by IASB in November 2006 and was considered mandatory from January 1<sup>st</sup> 2008. This interpretation give guidelines and standardize the method of accounting, measurement and recognition of rights and obligations of public contracts.

The IFRIC 12 guidelines must be used when there is a service concession arrangement between the public and the private sector that have as main characteristic that during a large period of time the private counterpart assumes the responsibility to render a specific public service, to construct an infrastructure or to do specific maintenances in exchange of a contractual remuneration.

As mentioned in the original version (IFRIC 12, par.1) of this interpretation “in many countries, infrastructure for public services – such as roads, bridges, tunnels, prisons, airports, water distribution facilities, energy supply and telecommunication network has traditionally been constructed, operated and maintained by the public sector and financed through public budget appropriation”.

According to this interpretation, some governments have started to encourage the private sector to take part of the “development, financing, operating and maintenance” of the public infrastructures for public services and as a measure of incentive they created the concession contractual service arrangements.

The IFRIC 12 starts by identifying the parts in a concession contract arrangement. Usually there are two sides: (i) the grantor which is a public entity responsible for providing public services and needs to find a form to finance and manage this service; and, (ii) the operator, that is a private entity, willing to finance and share some of the risk by taking the responsibility to provide the public service for a period of time, known as concession period, in return of exploration, financial or other kind of counterparts.

This does not necessarily mean that the operator has to construct infrastructures, sometimes he only has to maintain, manage or upgrade the public services or infrastructures.

It is also important to remark that the IFRIC 12 only gives accounting guidelines regarding the operator's side, focusing essentially on recognizing and measuring the obligations regarding the concession contract on the private company side.

For a concession contract to be considered within the scope of the IFRIC 12 there are two essential characteristics that this contract has to have: (i) firstly, the public services provided by the operator must be controlled or regulated by the grantor/public entity and, (ii) secondly, the grantor at the end of the concession period must control through ownership, beneficial entitlement or otherwise any interest of the conceded infrastructure.

The IFRIC 12 focuses essentially in the recognizing and measuring of the concession arrangements having as main issues the following:

- (i) The operator contractual right over the infrastructure, its recognition and measuring;
- (ii) Classification of nature of the operator's asset;
- (iii) Accounting treatment of costs incurred by the operator; and
- (iv) Other contractual obligations.

Then, it will be provided more detailed information about the issues mentioned before.

#### **(i) Operators contractual rights over the infrastructure, recognition and measuring**

Usually there is an infrastructure associated with the provided service but the operator does not truly have the control on that asset so he cannot recognize it as plant, property and/or equipment on his balance sheet. Instead he should recognize as intangible asset or financial asset.

At the same time he should recognize the inherent right of exploration of a public service and/or asset and its revenue and costs regarding this asset should be recognized taking into

account the IAS 11 - *Construction Contracts*, when relating with construction and upgrade services, and IAS 18 – *Revenue* when regarding operation services.

There are different types of concessions contracts and not all are considered in the framework of IFRIC 12. To provide some general guidelines regarding typical public-private arrangements, in which IFRIC 12 is applicable the IASB prepared the table presented in the figure 1.

**Figure 1 - Types of concessions contracts**

Category	Lessee	Service provider			Owner	
Typical arrangement types	Lease (eg Operator leases assets from grantor)	Service and/or maintenance contract (specific tasks eg debt collection)	Rehabilitate-operate-transfer	Build-operate-transfer	Build-own-operate	100% Divestment/Privatisation/Corporation
Asset ownership	Grantor				Operator	
Capital investment	Grantor		Operator			
Demand risk	Shared	Grantor	Operator and/or Grantor		Operator	
Typical duration	8–20 years	1–5 years	25–30 years		Indefinite (or may be limited by licence)	
Residual interest	Grantor				Operator	
Relevant IFRSs	IAS 17	IAS 18	IFRIC 12		IAS 16	

Source: Information note 2 of IFRIC 12

This figure 1 provides an overview of the typical contract that the State could involve with other private companies.

The figure shows that there are three main classes of arrangements, namely Leases, Service-provider arrangements, and owner arrangements. These types of arrangements listed differ from each other regarding their asset ownership, their capital investment, who is assuming the demand risk, the typical duration of contract and, finally, to whom is the residual interest. Depending on the characteristics above there are specific international standards that regulate them as shown in the figure.

This research takes only in consideration the arrangements that are in the scope of IFRIC 12, in which the typical arrangement are of build-operate-transfer or rehabilitate-operate-transfer. In the case of build-operate-transfer arrangements, the operator has the obligations to build the infrastructure. In the rehabilitate-operate-transfer type of arrangements the operator only has the obligation to rehabilitate and/or maintain an asset conceded by the State.

According to figure 1, this type of arrangements is characterized by:

- The asset ownership belongs to the grantor;
- The capital investment must be done by the operator;
- Demand risk shared by the two sides or just by one of the sides of the arrangement;
- 25 to 30 year of duration (However, in reality the duration of these arrangements can be higher and there are some Portuguese examples of it);
- The residual interest in the end of the concession must be transferred to the grantor.

## **(ii) Classification of nature of the operator's asset**

As previously mentioned, the operator cannot recognize the infrastructure as a tangible fixed asset itself, since it does not actually have the control over the fixed asset. The IFRIC 12 refers that the operator has to recognize just the contractual right that he has. Thus, this contractual right must be recognized as an intangible asset or as a financial asset depending on the contract that the operator has with the grantor. In both models the asset under contract arrangement must be recognized at fair value.

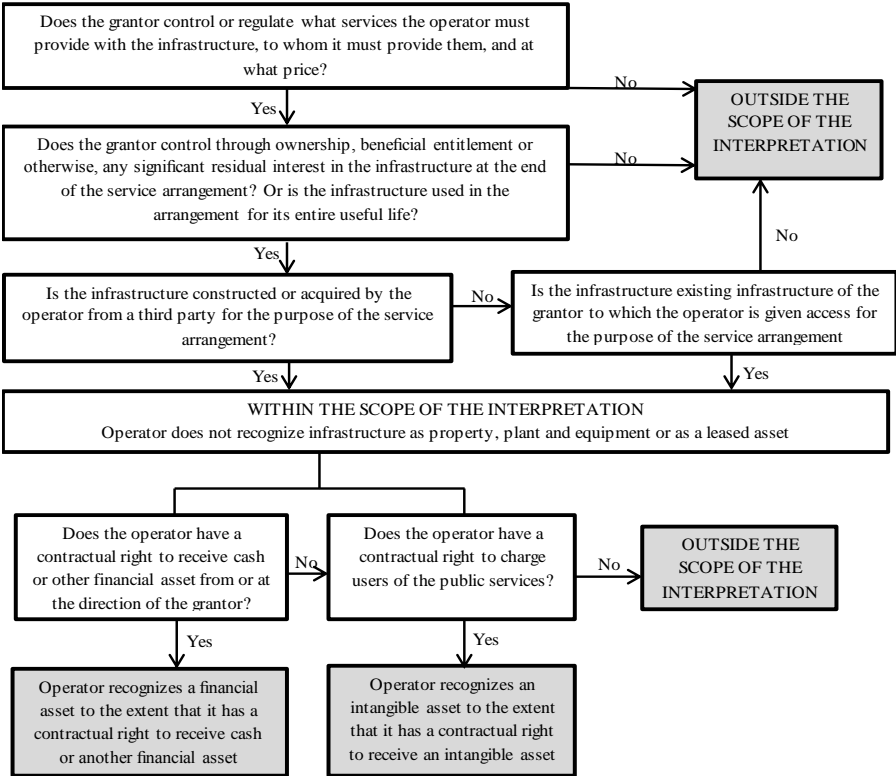
The operator should recognize a financial asset to the extent that it has an unconditional right to receive cash or another financial asset, namely when the operator receives from the grantor a fixed amount over the terms of the arrangement. It is also possible to specify over the terms of the agreement that the operator instead of receiving a fixed amount from the grantor, he receives the amount equal to the difference between what he already received from the public service users and the amount contractually defined with the grantor.



On the other hand, the operator should recognize an intangible asset to the extent that it receives a contractual right (a license) to charge users of the public service or, at least, charge the grantor in the proportion of the use of the public service. This right to charge users does not grant the operator a fixed revenue since the remuneration will depend on the extent that the public uses the service, thus, is not an unconditional right to receive cash.

Because IFRIC 12 applies to a broad range of concession arrangements, and because of the specific scope criteria that must be met to classify them, a flowchart was released by IASB summarizing the complex analysis process that must be considered since it tries to simplify it (see figure 2).

**Figure 2 – Accounting framework for public-to-private service arrangement**



Source: Adapted from the information note 1 of IFRIC 12

This flowchart gives a summarized guideline/process in which it is possible to conclude if a specific arrangement comes into the scope of the IFRIC 12. It also shows that there are three control factors that are essential on evaluating the scope of the IFRIC 12, in particular, the control of services provided, the control of the price and the control of the residual interest.

**Control of the services provided** - The grantor has to be able to control the services to be provided by the operator. This control does not necessarily come from the concession contract, there are other ways of regulating the service provided such as time of delivery and other specificities.

**Control of the price** – The grantor should control the price at which the operator renders it, by fixing it, establishing a gap or even indexing it to its performance.

**Control of residual interest** – the grantor may control the residual interest of the arrangement by requesting that the operator deliver, at the end of the arrangements, all the assets assigned to the concession.

### **(iii) Accounting treatment of costs incurred by the operator**

The recognition of the costs depends on the classification of the concession. When a concession is classified using the financial asset model, the costs incurred should be recognized as financial expenses in the specific period of their incurrence. By opposite, when a concession is classified in the scope of intangible asset model, the costs should be capitalized during the phase of construction taking into account the IAS 23 - *Borrowing Costs*.

### **(iv) Contractual obligations**

With the concession arrangements there is usually an obligation that goes along with the operator. This obligation could be only related to the maintenance of the infrastructure in an accorded condition or to the recovery of the infrastructure at the end of the arrangement before it returns to the grantor.

In order to recognize and measure this obligation the IFRIC 12 forwarded to the IAS 37 – “Provisions, Contingent Liabilities and Contingent Assets”. IAS 37 defines the recognition and measurement criteria to recognize provisions, contingent liabilities and contingent assets and identify what is the information that the companies should disclose in the financial statements report. This standard clarifies some concepts about the contractual obligation and how they should be treated.

When an entity has a present obligation (legal or constructive) as a result of a past event, and it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and also, a reliable estimate can be made of the amount of the obligation, the company should recognize a provision according to the paragraph 14 of IAS 37. However, if a company has a possible obligation based on past events and this possibility is not controlled by the company or if a company has a present obligation based on past events and is not likely that the company has to pay an amount or is not possible to measure with reliability the possible amount, then according to IAS 37 the company just need to disclose this obligation on the notes to the financial statements.

#### **2.4. Legal Framework in Portugal**

In Portugal there are specific regulations regarding PPP-concession agreements. In 2003 the Ministry of Finance published the Decree-law n° 86/2003 of April 26<sup>th</sup> that provide a framework of PPP in Portugal, defining a set of general rules, concepts, general rules for the preparation of proposal, the adjudication, attribution, supervision and the accompaniment of the contract.

According to the same Decree-law the PPP have become more important with the transformations of social systems that had happened during the century XX where the State mission incorporated the obligation to render social and public needs. Sill regarding the same Decree-law the use of PPP has led to the conclusion that it is possible to take the benefits of the capacity of the traditional best management that is associated to the private sector and also at the same time giving a better public service and financial counterparts to the State. This happens because the PPP transfers some technological and operational risks to the private sectors, which in some cases have more expertise on some specific sectors.

About 3 years later, in 2006, the Ministry of Finances published another decree denominated has Decree-law n° 141/2006, July 27<sup>th</sup>, presenting some changes regarding the prior law.

According to those Decree-law mentioned before the steps for concurring and evaluate a proposal for a PPP are:

- Preparation of the proposal, containing the public contest program, the contract specifications<sup>2</sup>, the analysis done regarding the project, the description of the project and how it will be funded, an exposition of its public interest, explanation of the partnership model chosen, demonstration of the capacity of bearing with costs and risks of the public planning and finally, if applicable, the environmental impact statement;
- Evaluation and approval by the PPP committees of proposals;
- Launch of the partnership taking into account the rules that have to be taken in consideration for hiring to the public sector;
- Presentation of the proposal of adjudication of the contract based on the best evaluation and the final offer;
- Final adjudication.

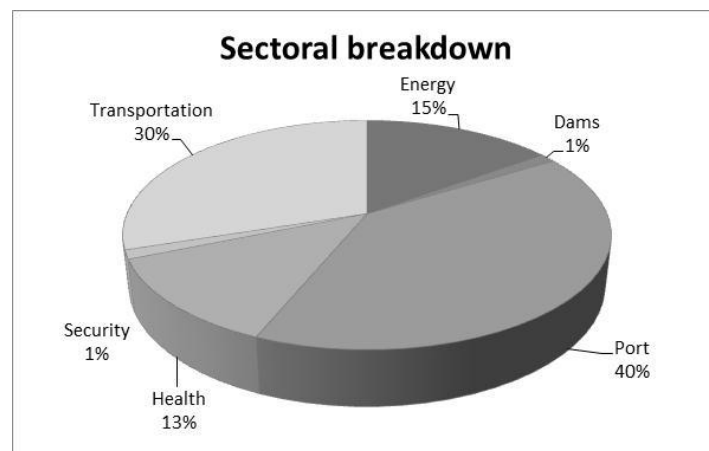
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<sup>2</sup> In some literature it is also denominated as tender documents.

### **3. Characterization of the Portuguese PPP and concession environment**

According to the annual report of public-private partnerships concessions published in 2012 provided by the Finance Ministry of Portugal there exists in Portugal around 80 PPP concessions at later 2011. The breakdown by industry is concentrated in two main industries (see figure 3): the Port (40%) and the Public Transportation (30%). However there are two other industries that also have a significant weight, namely, the Energy industry (15%) and the Health Care Industry (13%). The other industries only represent 2% of the population.

**Figure 3 - Concession Breakdown by Industry in 2011**



The number of PPP concessions contracts in Portugal has fluctuated over the years but it is not possible to say that it has declined because during the last years, the criterion to define concessions services has been slightly adjusted.

In fact, in 2011, the annual report of the Ministry of Finance on public concessions, named “*Parcerias Público Privadas e Concessões*”, that reports the PPP-concession contracts did not include for the first time contracts under some industries. Namely the water supply services, sanitation and solid waste treatment due to the economic characteristics and financial capital to the ownership of the business and to the risks inherent in the activity, has considered as not fitting the typical figure of PPP because the owner is not a private entity but a State controlled entity (*Ministério das Finanças; 2012*).

To have the most possible comparable information for this analysis it was also excluded the companies that are regarded as State controlled concessions because it does not fit the scope of the study of PPP-CC.

**Figure 4 – Evolution of PPPs during the period year 2009 to 2011**

<b>Business sector</b>	<b>2011</b>	<b>2010</b>	<b>2009</b>
Energy	12	13	12
Dams	1	6	6
Port	32	32	32
Health	10	10	8
Security	1	1	1
Transportation	24	26	24
<b>Total</b>	<b>80</b>	<b>88</b>	<b>83</b>

According with figure 4, it is possible to see that the number of concessions has not changed much over the last years. As previously mentioned, the industries that have a higher weight are the port, transportation and energy companies and this keeps constant in the last years, without a significant fluctuation (except for Dam Industry).

The list of concessions is presented in the appendix 1 and was based on information of Finance Ministry of Portugal.

Figure 5 reports the life-span of Portuguese PPPs based on content of the annual reports of PPP and concessions provided by the finance ministry. It includes the minimum, the maximum and the average of the life-span by industry in 2011.

**Figure 5 - Life-span of Portuguese PPPs 2011**

<b>Business sector</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average of sector</b>
Energy	35	50	40
Dams	75	75	75
Port	10	57	32
Health	4	30	17
Security	15	15	15
Transportation	20	36	30

It is also important to mention that for the industry of dams and security there is only one concession in 2011 that is why the minimum, maximum and average is equal to the number of years of the concession.

Based on the figure 5 it is possible to see that the companies in average have a bigger life-span are the dams, followed closely by energy sector concessions, then by the port and transportations concessions. This high life-span is easily explained, since PPP are by themselves usually very complex structures that involve huge amounts of investments. In order to be able to create this kind of arrangements they need to be diluted in a long time period, so that it generates enough return regarding the initial period marked by heavy investment. That's why, even though IFRIC 12 characterizes PPPs with a typical duration of 25 to 30 years, it is possible to find longer periods of time, like it happens in Portugal.

## **4. Empirical Research**

### **4.1. Firm-specific determinants of companies having PPP-CC and test hypothesis**

This empirical research investigates the impact of some firm specific determinants on the probability of a company having PPP-CCs taking into account the Portuguese stock listed companies.

#### **a) Size**

As mentioned before the PPP-CCs are usually contracts that involve large investments. Broadly speaking, higher investments are made by larger firms. The use of firm size has a determinant of the probability of a firm having PPP-CCs appears in order to find and confirm whether there is an association between higher firms and the likelihood of having these type of contracts.

According to IFRIC 12 firms that are provider of PPP usually have the inherent infrastructure or must have ability to construct or rehabilitate one existing infrastructure. These contracts are more likely to exist on companies with a bigger structure since larger companies usually can absorb larger investments. Because of this, it is expected that larger firms have more probability of having PPP.

In this research, the variable size (SIZE) is used and measured by the natural logarithm of total assets (e.g. Wasiuzzanan and Arumugam et al., 2013). It is expected that size has a positive impact on this probability.

The hypothesis considered is the following:

**Hypothesis 1 (H1):** Size has a significant positive impact on the probability of a company having PPP-CC.



## b) Leverage

The financial leverage is a concept that has impact in the financial structure of the company and concerns to the mix between equity and debt (e.g. Mota, 2007). Leverage usually is presented as a ratio, used to assess how a company is financed, measuring its ability to meet its financial obligations.

According to the IFRIC 12, firms that are providers of PPP services must have ability to render services during the concession period, and ability to deliver the structure (at the end of the contract) in the conditions mentioned in the concessions contract.

Thus, because of the financing need to support it, it is expected that leverage has a positive impact on the probability of a company having a PPP-CC because this type of companies are usually associated to have a strong financial structure to provide the specific services.

In this research, the variable leverage (LEV) ratio is measured considering the weight of long term debt on the total debt and market capitalization based on Wasiuzzanan and Arumugam et al. (2013).

The hypothesis under test is:

**Hypothesis 2 (H2):** Leverage has a positive impact on the probability of a company having PPP-CC.

## c) Growing Opportunities

According to the IFRIC 12 this type of contracts usually aim to provide basic public services. Due to the constant nature of basic public services it can be probable that the PPP also have a constant sales behavior, especially when these services are provided directly to citizen.

Bearing this argument in mind, it is anticipated less growing opportunities for companies with PPP, when compared with companies without. Nonetheless, it can also be true that for some

type of specific contracts rendered directly to the State (and not to citizens) is possible that other situations may occur.

There is no unique definition for measuring growth opportunities. Sales growth is used by several authors as a proxy for it (e.g., D'Mello et al., 2008; Wasiuzzanan and Arumugam et al., 2013).

In this research the variable Sales Growth (SG) is given by the difference in percentage of the net sales of one year with the prior year. It is expected that sales growth do not has an impact on the probability of a company having PPP-CC.

This leads to the following hypothesis:

**Hypothesis 3 (H3):** Sales Growth has no impact on the probability of a company having PPP-CC.

**d) Asymmetric Information**

Anecdotal evidence suggests that firms with PPP should disclose more information than other companies to their stakeholders, especially to the State.

Due to the public nature of each PPP there is more regulation and supervision by the State on these companies. It is also possible that due to their nature the companies with PPP-concessions are subject to public scrutiny or, at least, a more demanding public eye.

Due to the high level of supervision and regulation it is expected that there is a negative impact of asymmetric information on the probability of a company having PPP-CC.

The level of asymmetry is not directly observable. Therefore, the asymmetric information (AI) will be measured based on Wasiuzzanan and Arumugam et al. (2013), Cai et al. (2008), and Hill et al. (2010). These authors used Tobin's Q (measured as book assets minus book value of equity plus market value of equity all divided by book assets) as a proxy for measuring the level of asymmetry of information.

The hypothesis considered is:

**Hypothesis (H4):** Asymmetric Information has a significant negative impact on the probability of a company have PPP-CC.

e) **Volatility**

Similar to what was explained for growth opportunities, also the kinds of activity of companies that have PPP are expected to be constant over time.

Namely, and according to the type of contracts arranged with the State, usually these companies do not expect surprises and, accordingly, also the players on the markets don't, reason why it is expected that fluctuations be minor. Therefore, it is expected that volatility is not a determinant for the probability of a company having PPP-CC.

In this research, volatility (VOL) is measured by the degree of fluctuation in the share prices during the previous year, in an approach similar to Wasiuzzanan and Arumugam (2013) and Palia (2001).

The hypothesis to be tested is the following:

**Hypothesis 5 (H5):** Volatility has a significant negative impact on the probability of a company have PPP-CC.

f) **Profitability**

According to IFRIC 12 the receipts of a company with PPP are regulated by contract. So they cannot increase returns from services rendered. Thus, it can be accepted that compared with other companies, those with PPP presents a lower level of profitability. The argument is that this type of contracts regulates returns, namely, defines the price that is chargeable by specific service, making the returns more predictable which may make it less keen to market variances. Those companies without PPP have certainly more pressure to obtain higher profits.

Due to the potentially lower risk and higher return's predictability of companies with PPP, it is expected a significant negative influence of this indicator.

In this research the profitability (PROF) is measured by the ratio Return on Equity (ROE), that evaluates the ability of a company to create earnings and can be defined by the relation between the amount that can be distributed by the company to its shareholders and the amount invested by shareholders (Mota, 2007).

The hypothesis posed is the following:

**Hypothesis 6 (H6):** Profitability has a significant negative impact on the probability of a company have PPP-CC.

**g) Working Capital**

According to IFRIC 12 this type of contracts require a large amount of debt or equity to finance the assets under arrangements, since the operator has the obligation to support the capital investment. This cash management will be well planned and applied on the assets underlying the PPP. Additionally, firms with PPP rendering services directly to citizens will probably have more liquidity since they will pay immediately.

Altogether, it is expected that firms with PPP have a higher amount of working capital than companies without PPP, and accordingly to that it is expected that it will have a positive impact on the probability of a company having PPP.

In this research Working Capital (WC) is measured as Hill et al. (2010) and D'Mello et al. (2008) by the difference between net current assets and net current debt, that is exactly the same that the difference between fixed capital and non-current assets.

This leads to the following hypothesis:

**Hypothesis 7 (H7):** Working Capital has a significant positive impact on the probability of a company have PPP-CC.

## **h) Interest Rate**

Based on the arguments presented above, namely the fact that firms with PPP have more predictability of returns and profitability, usually they are considered by creditors as less riskier.

Inamura (2009) predicted a negative relation between interest rates and setting covenants. In this research it is used a similar approach, predicting also a negative relation between the interest rates and the probability of a company having PPP-CC. This is because all PPP-CC also has a set of requirements regarding finance that must be filled, and even when a company is highly leveraged, if its ability to pay back the debt is high, the interest rates can be lower. This type of argument can be applied to companies with PPP. Also Fosberg (2012) argues that firms increasing debt capital financing should reduce the firm's interest expense. So, it is expected that cost of external debt has a negative impact on the probability of a company having PPP-CC.

In this research the interest rate (IR) represents the retribution a borrower has to pay as compensation for the use of money owned by a third party. It is measured by dividing the interest expense on debt by the sum of the short term debt, the current portion of long-term debt and the long term debt.

The hypothesis under test is:

**Hypothesis 8 (H8):** Interest Rate has a significant negative impact on the probability of a company having PPP-CC.

## **i) Intangible to asset ratio**

According with IFRIC 12 there are two different models for recognize a PPP, namely the intangible asset model and the financial asset model. Analyzing the financial annual reports of the Portuguese companies it is possible to see that the great majority of them uses the Intangible asset model.

Thus, it is expected that the Intangible-to-Asset-Ratio (ITAR) has a positive impact in the probability of a company having PPP-concession contracts.

The variable ITAR is measured by the ratio between intangible assets and the total of assets.

The hypothesis proposed is the following:

**Hypothesis 9 (H9):** Intangible-to-Asset-Ratio has a significant positive impact on the probability of a company having PPP-CC.

## **4.2. Data and Methodology**

### **4.2.1. Data and sample of the research**

Data used in this research was collected from DataStream database, Bloomberg database and hand-collected from the company's Annual Reports in order to complete some information that was not available on the referred databases.

The period under analysis was between 2008 and 2011.

The research started by selecting all the Portuguese Firms listed in the NYSE Euronext Lisbon Stock Exchange. In order to get a more homogenous and comparable sample it was excluded the companies of the financial services (Banks, insurances and financial services) and companies of the recreational services (football clubs), due to the fact that they are very specific sectors. After the exclusion mentioned 37 companies gave a panel dataset of 148 firm-year observation during the 4 periods under analysis. Additionally, it was also excluded 4 companies from this sample due to the fact they had a negative equity during the period in analysis and this could bias the results.

Thus, the final sample is composed by 132 firm- year observations. The list of companies that contains this sample is presented in the appendix 2. The panel A presents the name of all companies included. The panel B presents the name of those that have PPP-CC.

The classification of each company sector mentioned before was based on the Industry Classification Benchmark (ICB) of the DataStream.

#### 4.2.2. Statistical Methodology

In order to analyze the determinants on the probability of a company having PPP-CC it was tested the impact of the independents variables using a logistic regression model, specifically a binary logistic model.

A logistic regression is a methodology for group classification, by “employing predictor variables(s), logistic regression derives an equation which provides a probability a subject/observation will be member of a specific category/group” (Sheskin, 2007:1581).

A binary regression model is similar to the logistic model but the dependent variable has only two possible results, having PPP-CC or not.

The binary regression model used to test the hypotheses in this research is presented in eq. 1 below:

$$\begin{aligned}
 \text{PPP}_{it} = & \beta_0 + \beta_1 \text{SIZE}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{SG}_{it} + \beta_4 \text{AI}_{it} + \beta_5 \text{VOL}_{it} + \beta_6 \text{PROF}_{it} \\
 & + \beta_7 \text{WC}_{it} + \beta_8 \text{IR}_{it} + \beta_9 \text{ITAR}_{it} + \text{Controls} + \varepsilon_{it}
 \end{aligned}
 \tag{1}$$

In this equation, PPP is a binary variable which assumes 1 for the firms that have PPP-CC and 0 otherwise.

The  $\varepsilon_{it}$  is the error term and  $\beta_j$  ( $j= 1,2,3,4,\dots, 9$ ) is the coefficient of the independent variable to be analyzed. *Controls* refers to industry (sectors mentioned on the point 4.2.1) and year effects that were included, as usually presented in the majority researches on accounting. Each one assumes 1 if it belongs to a certain industry and/or a certain year, and 0 otherwise. The other independent variables used are presented in the previous section and summarized in the figure 6, in which the first column indicates the acronym of the variable used in the equation (1), the second column shows the full name of the variable, and the third column presents the formula to get it.

**Figure 6 - Independent and control variables**

Acronym	Full Name	Formula
<b>Independent:</b>		
SIZE	Size	$Size = \log_{10}(\text{Total Assets})$
LEV	Leverage	$LEV = \frac{\text{Long term Debt}}{(\text{Long term debt} + \text{Market Capitalization})}$
SG	Sales Growth	$SG = \frac{\text{Net Sales or Revenue}}{\text{Last year net sales}} - 1$
AI	Assymmetric Information	$AI = \frac{(\text{Book value of total liabilities} - \text{Market value of firm})}{(\text{Book value of total assets})}$
VOL	Volatility	$VOL = \text{stock's average annual price movement to a high and low}$
PROF	Profitability	$PROF = \frac{(\text{Net Income before Preferred Dividends} - \text{Preferred Dividend Requirement})}{\text{Average of Last Year's and Current Year's Common Equity}}$
WC	Working capital	$WC = \frac{(\text{current assets} - \text{current liabilities})}{10000}$
IR	Interest rate	$IR = \frac{\text{Interest Expense on Debt}}{(\text{Short Term Debt \& Current Portion of Long Term Debt} + \text{Long term Debt})}$
ITAR	Intangible assets/total assets ratio	$ITAR = \frac{\text{Intangible Assets}}{\text{Total Assets}}$
<b>Controls:</b>		
IND	Industry	Grouped by ICB, assumed 1 or 0
YEAR	Year	Years 2008-2011, assumed 1 or 0

### 4.3. Descriptive and results

#### 4.3.1. Description statistics and correlation of sample

Figure 7 presents the distribution of the sample across sectors.

**Figure 7 - Sampling Distribution by sectors**

Sampling Distribution						
	Observations	N° of Firms	% of Total Sum	Firms that have PPP	% of Total Sum PPP	
Basic Resources	20	5	15%	0	0%	
Ind. Goods & Services	8	2	6%	1	13%	
Construct. & Material	24	6	18%	3	38%	
Utilities	8	2	6%	2	25%	
Travel & Leisure	12	3	9%	0	0%	
Chemicals	4	1	3%	0	0%	
Oil & Gas	4	1	3%	1	13%	
Technology	12	3	9%	0	0%	
Media	12	3	9%	0	0%	
Retail	12	3	9%	0	0%	
Telecommunications	8	2	6%	1	13%	
Food & Beverage	4	1	3%	0	0%	
Automobiles & Parts	4	1	3%	0	0%	
<b>Total</b>	<b>132</b>	<b>33</b>	<b>100%</b>	<b>8</b>	<b>100%</b>	

The supersector decomposition follows the ICB for classifying industries that was extract by Datastream.



The results in the figure 7 indicate some differences, as there is a predominance of the Construction & Material with 18%, followed by Basic Resources industry with 15% (Paper, Iron and Steel).

Regarding the companies with PPP-Concession contracts the industry of Construction & Material is also the most represented with 38% of the sample followed, but now by Utilities (Electricity) with 25%.

The mean, minimum, maximum and standard deviations are calculated for each variable to each group and are presented in the figure 8.

**Figure 8 - Descriptive Statistics**

		Descriptive Statistic								
		SIZE	LEV	SG	AI	VOL	PROF	WC	IR	ITAR
Without PPP	Mean	5,82	0,45	0,05	1,05	7,92	0,02	-7,59	0,05	0,26
	N	100	100	100	100	100	100	100	100	100
	Minimum	4,74	0,01	-0,38	0,51	1,00	-0,73	-132,82	0,02	0,00
	Maximum	6,88	0,90	1,26	2,50	17,00	0,45	42,42	0,25	0,74
	Std. Deviation	0,55	0,25	0,26	0,32	4,07	0,16	31,46	0,03	0,22
With PPP	Mean	6,79	0,60	0,10	1,15	6,63	0,07	-5,25	0,05	0,22
	N	32	32	32	32	32	32	32	32	32
	Minimum	6,14	0,15	-0,20	0,90	2,00	-1,02	-344,15	0,02	0,00
	Maximum	7,61	0,92	0,63	2,08	13,00	0,48	617,17	0,09	0,88
	Std. Deviation	0,42	0,22	0,18	0,31	3,77	0,26	142,79	0,01	0,25
Total	Mean	6,06	0,48	0,06	1,08	7,61	0,03	-7,02	0,05	0,25
	N	132	132	132	132	132	132	132	132	132
	Minimum	4,74	0,01	-0,38	0,51	1,00	-1,02	-344,15	0,02	0,00
	Maximum	7,61	0,92	1,26	2,50	17,00	0,48	617,17	0,25	0,88
	Std. Deviation	0,67	0,25	0,24	0,32	4,02	0,19	74,66	0,03	0,23

Based on the figure 8 it is possible to see that the companies with PPP CC in average are bigger, more leveraged, higher sales growth, have more Asymmetric Information and more profitability than those without PPP. In opposite they are subject to less volatility, use less working capital, have lower interest rates, and lower intangible to asset ratio.

In the figure 9 is presented the Pearson correlation for the variables included in the regressions. The Pearson correlation coefficient is a “descriptive statistical measures which represent the degree of relationship between two of more variables” (Sheskin,2007:1221).

There are several significant coefficients between some of the independent continuous variables. However, there is no pairwise correlation coefficient in excess of 0,80 indicating limited multicollinearity (Gujarati,2008).

Even so, before running the regression, the correlation was checked to test this possible effect of multicollinearity issues between the variables. “Multicollinearity exists when two or more of the independent variables used in regression are correlated” (Sincich,1996:760).

The last column of figure 9 shows that the variables have low values of correlation with Variance Inflation Factor (VIF) less or equal than 1,8.

**Figure 9-** Person Correlation Coefficients

Pearson Correlations Coefficients											Colinearity Statistic
	PPP	SIZE	LEV	SG	AI	VOL	PROF	WC	IR	ITAR	VIF
<b>SIZE</b>	,622***	1									1,734
<b>LEV</b>	,263***	,196**	1								1,795
<b>SG</b>	,087	,069	-,027	1							1,045
<b>AI</b>	,137	,275***	-,470***	,096	1						1,608
<b>VOL</b>	-,138	-,438***	0,160*	-,036	-,200**	1					1,402
<b>PROF</b>	,107	,265***	-,351***	0,145*	,335***	-,346***	1				1,524
<b>WC</b>	,013	-,106	,014	-,025	-,109	,045	-,085	1			1,028
<b>IR</b>	-,032	-0,147*	-,064	,015	,763	,081	-,270***	-,056	1		1,153
<b>ITAR</b>	-,078	-,043	-,057	,117	,009	-,065	,106	-,013	-,133	1	1,051

\*\*\*. is significant at the 0.01 level (2-tailed).

\*\* . is significant at the 0.05 level (2-tailed).

\*. is significant at the 0.10 level (2-tailed).

#### **4.3.2. Regression results and discussion**

Figure 10 reports the results from applying the Binary Logistic Model presented in the equation 1 to Portuguese listed firms to test variables that may influence the probability of having PPP-CCs. The dependent variable, thus, is measured as 1 or 0, according to the existence or not of this type of contract arrangement in each firm included in the sample. All the continuous independent variables were included. The control variables, regarding industries and years, are also included.

Figure 11 complements the analyses of our previous hypotheses, presenting those that were supported and not supported.

**Figure 10-** Binary Logistic Model Results

Binary Logistic Regression Results		
	Predictable sign	I
SIZE	+	7,378***
LEV	+	11,331**
SG	no impact	1,737
AI	-	4,646**
VOL	-	0,690
PROF	-	0,321
WC	+	0,017**
IR	-	17,680
ITAR	+	0,135
Constant		-61,477
Industry effect		Yes
Year effects		Yes
N		132
Nagel Kerke R-Square		0,753

\*\*\*. is significant at the 0.01 level (2-tailed).  
 \*\*. is significant at the 0.05 level (2-tailed).  
 \*. is significant at the 0.10 level (2-tailed).

**Figure 11-** Hypotheses tests

Hypotheses	Decision
H1	Supported
H2	Supported
H3	Supported
H4	Not Supported
H5	Not Supported
H6	Not Supported
H7	Supported
H8	Not Supported
H9	Not Supported

The results show that several possible determinants of this probability are significant and support some of the hypothesis previously presented.

The variable Size (SIZE) is positive and significant at 0.01 level ( $\beta=7.378$ ;  $p\text{-value}<0.01$ ), offering evidence that larger firms are more likely compromised with PPP-CCs. This finding is in line with prior expectations, since firms having PPP present more asset resources, principally included as financial investments or intangible assets, as IFRIC 12 claims.

As expected, also Leverage (LEV) matches our prediction, since this variable presents a positive and significant coefficient at 0.05 level ( $\beta=11.331$ ;  $p\text{-value}<0.05$ ). This finding suggests that highly leveraged firms are more likely to have PPP-CCs. Firms with This type

of arrangements have strong necessities for debt financing, related also with the high level of assets that it is required by the contract itself, as claimed by IFRIC 12.

The Working Capital (WC) variable also is positive and significant at 0.05 level ( $\beta=0,017$ ;  $p\text{-value}<0, 05$ ). Firms with higher amounts of working capital are more likely having PPP-CCs. This finding must be also related with the size of a company and, also, with the type of financing needs. In fact, these firms are strongly supported in fixed capital (equity and long term debt) to finance non-current assets, and, at the same time, they can be highly liquidity because they have ability to receive in short periods of time the receivables from services rendered, especially from citizens.

The Sales Growth (SG) presents a positive but not significant coefficient ( $\beta=1,737$ ;  $p\text{-value}>0, 10$ ). This result is consistent with our prediction. Bearing in mind the characteristics and terms of PPP-CC contracts, the revenues and receipts are well planned and are consistent along the duration of the arrangement. The findings suggest that there is no relation between firms with growing opportunities, measured by sales growth, and the probability of having PPP-CCs.

The findings for Asymmetric Information (AI) do not support our previous hypothesis. This variable, contrary to first expectations, is positive (instead of negative) and significant at 0.05 level ( $\beta=4.646$ ;  $p\text{-value}<0.05$ ). This mean that firm with higher level of Asymmetric Information have more probability of having PPP-CCs, which is a surprise. Supposedly, firms with PPP-CCs are much more transparent and subject to State scrutiny, which could be a good indicator of absence of asymmetric information.

The variables Volatility (VOL), Interest Rate (IR) and Profitability (PROF) do not support prior expectations, because none of them get statistical significance (VOL:  $\beta=0,690$ ; IR:  $\beta=17.68$ ; PROF:  $\beta=0,321$ ; for all three  $p\text{-value}>0.10$ ). These findings mean that neither the fluctuation of share prices, nor the interest rate, or the profitability, are determinants for the probability of a company having PPP-CCs.

Finally, it was predicted that the variable Intangible-to-assets-ratio (ITAR) would be positive. Surprisingly, the results did not confirm our predictions since there is no statistical significant detected on results ( $\beta=0,135$ ;  $p\text{-value}>0, 10$ ). To justify this finding, it was analyzed all the

annual reports for the firms included in the sample. From this content analysis, it was possible to identify that there are significant number of companies with a high level of Intangible assets that does not have PPP-CC, namely, those belonging to Technology and Media industries (software licenses and TV rights). All the great majority of firms included in the sample present similar level of ITAR, withdrawing ITAR from a set of possible determinants.

## **5. Conclusion , limitations and recommendations**

### **5.1. Summary and conclusions**

The objective of this research was to identify some firm-specific determinants to the probability of a company having PPP-CCs.

The PPP-CC are agreements between the Government and a private companies, in which the private takes the duty to render a service in exchange for the right of a retribution that is defined in the concession contract. The use of these contracts has risen in the last decades, due to a serious of factors such as State financial limitations, the crisis and the general idea that the agreements permits that the State sheds some of its risk to private entities.

These contracts already existed for many years and because of their specific and complex nature, accounting organization also gave particular attention to them. Proof of this is the appearance of internationally accepted accounting norms and interpretations, like SIC-29 and IFRIC-12, which were issued specifically to address concession contracts issues.

The IFRIC-12 was created in order to give guidelines and standardize the method of accounting, measurement and recognition of rights and obligations of these contracts, so that their complex nature could be somewhat guided and it recognition would be harmonized. However, despite these efforts there is still very few information regarding PPP-CC type of arrangements concessions and what impacts they have. This was one of the main reasons that contributed for wanting to do this research on this subject.

Using a sample of 33 companies listed on NYSE Euronext Lisbon Stock Exchange Portuguese stock listed Index between 2008 and 2011, a total of 132 firm-year observations were used in this research.

To reach the goal of the research, a binary logistic model was applied, in which firm-specific characteristics based on IFRIC 12 were tested in order to find whether they were related with the probability of a company having PPP-CC.

It was justified why each one of the possible determinants was chosen, setting a group of nine different firm-characteristics, namely, size, leverage, growing opportunities, asymmetric information, volatility, profitability, working capital, interest rate and intangible-to-asset ratio.

Findings suggested positive and statistical significance for four firm-specific characteristics. Larger firms, leveraged, with high level of asymmetric information and higher amount of working capital are more likely to have PPP-CCs. The results also show that growth opportunities are not a differential determinant for justifying the probability of a company having PPP-CCs. As well, volatility, profitability, interest rate and intangible-to-asset ratio are not good determinants for the probability of having PPP-CCs. These findings confirm prior expectations just for some of the firm-specific determinants, as it was reported in detail in the discussion of the results section.

This research contributes to the scarce but growing literature on PPP-CC subject that in the last few years have been drawing some attention from the Portuguese Media and the general public.

## **5.2. Limitations and Recommendations**

There are some limitations that can be pointed at this research.

Firstly, the focus of the research is limited to only one country and there is no data comparison with companies from other countries.

Secondly, due to the fact that not all companies report publicly their accounts the study had to be concentrated exclusively on Portuguese stock listed companies because their financial information is public. From all the Portuguese stock listed companies there were also some companies that had to be excluded because of some issues and possible incompatibilities. In addition to this it was observed that there was only 8 companies that could be classified as having PPP-concession contracts and due to this the research sample became relatively small and produced very few observations.

Further analysis is needed regarding the Portuguese framework of PPP-concession contracts. If it was possible, an investigation could be done taking into account all of the companies that have PPP-concession contracts that are listed in Appendix 1.

It is also recommended to do additional international research regarding companies with PPP-concession contracts from other countries, and do a cross-comparison between the different characteristics of this type of companies from each country. This way it would be possible to compare whether this type of companies have similar characteristics in a panel of different countries.



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## Appendices

### Appendix 1 – List of the PPP Concession

Sector	Name of concession	Company	
1	Transportation	Concessão Lusoponte	Lusoponte - Conc. para a Travessia do Tejo em Lisboa, SA
2	Transportation	Concessão Norte	Ascendi Norte - Auto Estradas do Norte, SA
3	Transportation	Concessão Oeste	Auto-Estradas do Atlântico, SA
4	Transportation	Concessão Brisa	Brisa - Auto-Estradas de Portugal, SA
5	Transportation	Concessão Litoral Centro	Brisal - Auto-estradas do Litoral, SA
6	Transportation	Concessão da Beira Interior	Scutvias - Auto-Estradas da Beira Interior, SA
7	Transportation	Concessão da Costa de Prata	Ascendi Costa de Prata - Auto Estradas da Costa de Prata, S
8	Transportation	Concessão do Algarve	Euroscut - Sociedade Concessionária da SCUT do Algarve, SA
9	Transportation	Concessão Interior Norte	Norscut - Concessionária de Auto-Estradas, SA
10	Transportation	Concessão das Beiras Litoral e Alta (IP5)	Ascendi Beiras Litoral e Alta - Auto Est. das Beiras Litoral e Alta, SA
11	Transportation	Concessão Norte Litoral	Euroscut Norte - Soc. Concessionária da SCUT do Norte Litoral, SA
12	Transportation	Concessão Grande Porto	Ascendi Grande Porto - Auto Estradas do Grande Porto, SA
13	Transportation	Concessão Grande Lisboa	Ascendi Grande Lisboa - Auto Estradas da Grande Lisboa, SA
14	Transportation	Subconcessão Douro Litoral	AEDL - Auto-Estradas do Douro Litoral, SA
15	Transportation	Subconcessão AE Transmontana	Auto-Estradas XXI - Subconcessionária Transmontana, SA
16	Transportation	Subconcessão Douro Interior	Ascendi Douro - Estradas do Douro, SA
17	Transportation	Concessão Tunel do Marão	Auto Estrada do Marão, SA
18	Transportation	Subconcessão Baixo Alentejo	SPER - Soc. Port. para a Construção e Exploração Rodoviária, SA
19	Transportation	Subconcessão Baixo Tejo	VBT - Vias do Baixo Tejo, SA
20	Transportation	Subconcessão Litoral Oeste	AELO - Auto-Estradas do Litoral Oeste, SA
21	Transportation	Subconcessão Algarve Litoral	Rotas do Algarve Litoral, SA
22	Transportation	Subconcessão Pinhal Interior	Ascendi Pinhal Interior - Auto Estradas do Pinhal Interior, SA
23	Transportation	Metro Sul Tejo (1)	MTS,SA
24	Transportation	Transp. Ferroviário eixo-norte/sul (2)	Fertagus,SA
25	Health	Gestão do Centro de Atendimento do SNS	LCS,SA
26	Health	Gestão Centro Medicina Física Reabilitação Sul	GP Saúde
27	Health	Gestão do H. Braga - Ent. Gestora do Edifício	Escala Braga, Gestora do Edifício SA
28	Health	Gestão do H. Braga - Ent. Gestora Estabelecimento	Escala Braga, Gestora do Estabelecimento SA
29	Health	Gestão H. Cascais-Ent. Gestora Estabelecimento	HPP,SA
30	Health	Gestão H. Cascais - Ent. Gestora do Edifício	TDHOSP,SA
31	Health	Gestão H. Loures-Ent. Gestora Estabelecimento	SGHL - Soc. Gestora do Hospital de Loures SA
32	Health	Gestão H. Loures - Ent. Gestora do Edifício	HL - Sociedade Gestora do Edifício SA
33	Health	Gestão H. V. Franca - Ent. Gestora do Edifício	Escala Vila Franca - Gestora do Edifício, S.A
34	Health	Gestão H. V. Franca - Ent. Gestora Estabelecimento	Escala Vila Franca - Gest. do Estabelecimento, S.A.
35	Security	SIRESP	SIRESP - Redes digitais de Seg. e Emergência
36	Dams	Barragem de Foz Tua	EDP
37	Energy	Armaz. Subterrâneo de Gás Natural (Guarda)	Transgás Armazenagem, SA
38	Energy	Distribuição Regional de Gás Natural (Lisboa)	Lisboagás GDL Soc. Dist. Gás Natural de Lisboa, SA
39	Energy	Distribuição Regional de Gás Natural (Centro)	Lusitaniagás - Comp. Gás do Centro, SA
40	Energy	Distribuição Regional de Gás Natural (Setúbal)	Setgás - Soc. Prod. Distrib. Gás, SA
41	Energy	Distribuição Regional de Gás Natural (Porto)	Portgás - Soc. Prod. Distrib. Gás, SA
42	Energy	Armaz. Regasificação de Gás Natural (Sines)	REN Atlântico, SA
43	Energy	Armaz. Subterrâneo Gás Natural (Guarda, Pombal)	REN Armazenagem, SA
44	Energy	Distribuição Regional de Gás Natural (Beiras)	Beiragás- Companhia Gás das Beiras, SA
45	Energy	Distribuição Regional de Gás Natural (Vale do Tejo)	Tagusgás - Empresa Gás Vale do Tejo, SA
46	Energy	Gestão Rede Nacional Transporte de Gás Natural	REN Gasodutos, SA
47	Energy	Rede Eléctrica Nacional	REN-Rede Eléctrica Nacional, SA
48	Energy	Exploração da Rede Nac. Distribuição de elect.	EDP-Distribuição Energia, SA
49	Port	Terminal de Contentores de Leixões	Terminal de Contentores de Leixões SA
50	Port	Terminal de Carga a Granel de Leixões	Terminal de Carga Geral e de Graneis de Leixões SA
51	Port	Silos de Leixões	Silos de Leixões, unipessoal Lda
52	Port	Terminal Produtos Petrolíferos	Petrogal, SA
53	Port	Terminal de Granéis Líquido Alimentares	E.D. & F. Man Portugal Lda
54	Port	Terminal Expedição de Cimento a Granel	SECIL - Comp. Geral de Cal e Cimento, SA
55	Port	Serviço de Descarga, Venda e Expedição de Pescado	Docapesca - Portos e Lotas SA
56	Port	Instalações de Apoio à Navegação de Recreio	Marina de Leixões - Associação de Clubes
57	Port	Exploração Turística-Hoteleira	Dourocais - Inv. Imobiliários SA
58	Port	Exploração Restaurante e Bar	Companhia de Cervejas Portuárias, SA
59	Port	Terminal Sul Aveiro	Socarpor - Soc. De Cargas Portuárias (aveiro), SA
60	Port	Serviço de Reboque Aveiro	Tínita - Transportes e Reboques Marítimos, SA
61	Port	Terminal de Contentores de Alcântara	Liscont - Operadores de Contentores SA
62	Port	Terminal de Contentores de Santa Apolónia	Sotagus - Terminal de Contentores de Santa Apolónia, SA
63	Port	Terminal Multipurpose de Lisboa	Transinsular, Transportes Marítimos Insulares, SA
64	Port	Terminal Multiusos do Beato	TMB - Terminal Multiusos do Beato Op. Portuárias, SA
65	Port	Terminal Multiusos do Poço do Bispo	Empresa de Tráfego e Estiva, SA
66	Port	Terminal de Granéis Alimentares da Trafaria	SILOPOR - Empresa de Silos Portuários, SA
67	Port	Terminal de Granéis Alimentares da Beato	SILOPOR - Empresa de Silos Portuários, SA
68	Port	Terminal de Granéis Alimentares de Palença	Sovena Oilseeds Portugal, S.A.
69	Port	Terminal do Barreiro	ATLANPORT - Sociedade de Exploração Portuária, SA
70	Port	Terminal de Granéis Líquidos do Barreiro	LBC - TANQUIPOR, S.A.
71	Port	Terminal do Seixal - Baía do Tejo	Baía do Tejo,S.A.
72	Port	Terminal Multiusos Zona 1	Tersado - Terminais Portuários do Sado, SA
73	Port	Terminal Multiusos Zona 2	Sadoport - Terminal Marítimo do Sado, SA
74	Port	Terminal de Granéis Sólidos De Setúbal	Sapec - Terminais Portuários, SA
75	Port	Terminal de Granéis Liq. De Setúbal	Sapec - Terminais Portuários, SA
76	Port	Terminal Contentores de Sines XXI	PSA Sines - Terminal de Contentores, SA
77	Port	Terminal Multipurpose de Sines	Portsines - Terminal Multipurpose de Sines, SA
78	Port	Terminal de Petroleiro e Petroquímico	Petróleos de Portugal - Petrogal, SA
79	Port	Serviço de Reboque e Amarração Sines	Reboport-Soc.Portuguesa Reboques Marítimos, SA
80	Port	Terminal de Granéis Liq. e Gestão de Resíduos	CLT - Companhia Logística de Terminais Marítimos, SA

## Appendix 2 – List of the companies included in the research

### Panel A – Total list of companies

	<b>Companies</b>	<b>Sector</b>
1	ALTRI SGPS S A	Basic Resources
2	BRISA-AUTSDS.DE PORTUGAL	Ind. Goods & Services
3	CMTS.DE PORTL.SGPS SA	Construct. & Material
4	CORTICEIRA AMORIM SA	Ind. Goods & Services
5	EDP ENERGIAS DE PORTL.SA	Utilities
6	ESTORIL SOL SA	Travel & Leisure
7	F RAMADA INVESTIMENTOS	Basic Resources
8	FISIPE SA	Chemicals
9	GALP ENERGIA SGPS	Oil & Gas
10	GI.GLB.INTEL.TECHS.SGPS	Technology
11	IBERSOL - SGPS SA	Travel & Leisure
12	IMMOBL.CON.GRAO-PARA SA	Travel & Leisure
13	IMPRESA SGPS	Media
14	INAPA SA	Basic Resources
15	JERONIMO MARTINS SA	Retail
16	MARTIFER	Construct. & Material
17	GRUPO MEDIA CAP.SGPS SA	Media
18	MOTA ENGIL SGPS SA	Construct. & Material
19	NOVABASE	Technology
20	PORTUCEL EMPRESA	Basic Resources
21	PORTUGAL TELECOM SGPS SA	Telecommunications
22	REDITUS SA	Technology
23	REN	Utilities
24	SAG GEST	Retail
25	SEMAPA SA	Basic Resources
26	SOARES DA COSTA SA	Construct. & Material
27	SONAE COM SGPS SA	Telecommunications
28	SONAE INDUSTRIA SGPS SA	Construct. & Material
29	SONAE SGPS SA	Retail
30	SUMOL COMPAL SA	Food & Beverage
31	TEIXEIRA DUARTE SA	Construct. & Material
32	TOYOTA CAETANO SA	Automobiles & Parts
33	ZON MULTIMEDIA SA	Media

### Panel B – List of the companies with PPP-CC

	<b>Companies</b>	<b>Sector</b>
1	BRISA-AUTSDS.DE PORTUGAL	Ind. Goods & Services
2	EDP ENERGIAS DE PORTL.SA	Utilities
3	GALP ENERGIA SGPS	Oil & Gas
4	MOTA ENGIL SGPS SA	Construct. & Material
5	PORTUGAL TELECOM SGPS SA	Telecommunications
6	REN	Utilities
7	SOARES DA COSTA SA	Construct. & Material
8	TEIXEIRA DUARTE SA	Construct. & Material