



Disclosure Index and the Cost of Debt on Portugal, Ireland,  
Greece and Spain: An exploratory research regarding IFRS 7  
disclosures, cost of debt and its impact on 2011 and 2012

**Mário José Teresa de Sousa Martins**

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**Supervisor:**

Cláudio António Figueiredo Pais PhD, Assistant Professor, ISCTE Business School,  
Accounting Department

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*“The idea is to try to give all the information to help others to judge the value of your contribution,  
not just the information that leads to judgment in one particular direction or another”*

*Richard Feynman - American theoretical physicist*

## **Abstract**

In such an unstable environment highlighted by financial crisis such as the current sovereign debt crisis, the disclosed information by stock listed companies can have an important weight with its investors and other interested groups. The disclosed information, more than ever, is an important way to ease the mistrust of some suspicious stakeholders. The enforced disclosure of financial information and statements by stock listed companies compels them to give transparent, credible and comparable financial information, this way stakeholders are able to make the best informed decision possible. The objective of this study is to find if the quality of information regarding IFRS 7 has an impact on the perceived risk of the company and consequentially they affect the interest expenses of a company. Findings show that there is evidence that the market is affected by the quality of disclosure of information regarding the IFRS 7 and that it can impact, in a significant way, the cost of debt of a company.

**Keywords:** Cost of Debt, Disclosure Index, IFRS 7, Financial Instruments

**Jel Classification:** M40; M41

## **Resumo**

Em um momento tão instável destacado pela crise financeira atual da dívida soberana, as informações divulgadas pelas empresas cotadas pode ter um peso importante nos seus investidores e outras partes interessadas. A informação divulgada, mais do que nunca, é uma forma importante para aliviar a desconfiança que alguns acionistas têm. A divulgação obrigatória de informações financeiras por parte das empresas cotadas em bolsa obriga que estas forneçam informação financeira transparente, credível e comparável, para que as partes interessadas sejam capazes de tomar a decisão a mais informada possível. O objetivo deste estudo é descobrir se a qualidade da informação da IFRS 7 tem um impacto sobre a percepção de risco da empresa e, conseqüentemente, se esta informação afeta os juros das empresas. Os resultados mostram que o mercado é sensível perante a qualidade da informação financeira divulgada relativamente à IFRS 7 e que esta impacta, de forma significativa, o custo da dívida de uma empresa.

**Palavras-Chave:** Custo da Dívida, Índice de divulgação, IFRS 7, Instrumentos Financeiros

**Classificação Jel:** M40; M41

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## Index

<b>Abstract .....</b>	<b>I</b>
<b>Resumo .....</b>	<b>II</b>
<b>Acknowledgments.....</b>	<b>III</b>
<b>Index .....</b>	<b>IV</b>
<b>Figure Index.....</b>	<b>V</b>
<b>Table Index.....</b>	<b>V</b>
<b>Appendices Index.....</b>	<b>V</b>
<b>Abbreviations.....</b>	<b>VI</b>
<b>1. Introduction .....</b>	<b>1</b>
<b>2. Literature review.....</b>	<b>3</b>
<b>2.1. Concept of disclosure.....</b>	<b>3</b>
<b>2.2. Cost of capital and financial information.....</b>	<b>4</b>
<b>2.3. IFRS 7 .....</b>	<b>6</b>
<b>2.4. IFRS 9 .....</b>	<b>10</b>
<b>3. Methodology and test hypothesis.....</b>	<b>12</b>
<b>3.1. Introduction to the Methodology.....</b>	<b>12</b>
<b>3.2. Test Hypothesis .....</b>	<b>12</b>
<b>3.3. Statistical regression .....</b>	<b>12</b>
<b>3.4. Definition of variables .....</b>	<b>14</b>
<b>3.4.1. Dependent variable.....</b>	<b>15</b>
<b>3.4.2. Independent variable.....</b>	<b>15</b>
<b>3.4.3. Control Variables .....</b>	<b>16</b>
<b>4. Empirical Study and results.....</b>	<b>20</b>
<b>4.1. Selection of the sample .....</b>	<b>20</b>
<b>4.2. Descriptive Statistics and results.....</b>	<b>22</b>
<b>4.3. Multiple Linear Regression.....</b>	<b>24</b>
<b>5. Conclusion.....</b>	<b>27</b>
<b>5.1. Conclusion .....</b>	<b>27</b>
<b>5.2. Limitations and recommendations.....</b>	<b>28</b>

## **Figure Index**

<b>Figure 1 – IASC and IASB structure.....</b>	<b>4</b>
<b>Figure 2 - IFRS 9 Financial instruments classification .....</b>	<b>11</b>
<b>Figure 3 – Population of the stock listed companies by type of Industry 2011 and 2012 .....</b>	<b>20</b>
<b>Figure 4 – Distribution of the stock listed companies by industry segment (Sample) .....</b>	<b>21</b>

## **Table Index**

<b>Table 1 - List of Variables.....</b>	<b>14</b>
<b>Table 2 – Score of the Disclosure Index per category .....</b>	<b>16</b>
<b>Table 3 – Descriptive Statistics of the variables .....</b>	<b>22</b>
<b>Table 4 - Pearson Correlation .....</b>	<b>23</b>
<b>Table 5 - Results of the Linear Regression Model.....</b>	<b>25</b>

## **Appendices Index**

<b>Appendix 1 – Disclosure Index Items .....</b>	<b>34</b>
<b>Appendix 2 – List of the PIGS companies by sector .....</b>	<b>35</b>
<b>Appendix 3 – List of the selected sample for analysis .....</b>	<b>39</b>

## **Abbreviations**

**ATHEX - Athens Stock Exchange**

**IAS - International Accounting Standards**

**IASC - International Accounting Standards Committee**

**IASB - International Accounting Standards Board**

**IBEX - Índice Bursatil Español (Spanish Exchange Index)**

**ICB – Industry Classification Benchmark**

**IFRS – International Financial Reporting Standards**

**ISEQ - Irish Stock Exchange Quotient**

**FASB – Financial Accounting Standards Board**

**PIGS – Portugal, Ireland, Greece and Spain**

**PSI – Portuguese Stock Index**

**ROE - Return On Equity**

**US-GAAP – United States Generally Accepted Accounting Principles**

**VIF – Variation Inflation Factor**



## **1. Introduction**

The subject that is developed on this research pretends to study the information asymmetry regarding International Financial Reporting Standard (IFRS) 7 Financial Instruments: Disclosures and the tax rate of the companies. I'm motivated to do this line of inquiry because there are not many studies regarding the impact of qualitative information on its impact of the stakeholder view of a company. I believe it could be a good contribution to the current literature whether there are or there are not satisfactory results since there are limited researches done due to its complex nature. The study was done taking into account the companies of the following countries: Portugal, Ireland, Greece and Spain (PIGS<sup>1</sup>) largest stock listed companies, which are the major players affected by the recent sovereign debt crisis.

This research focuses between the period of 2011 and 2012 that corresponds, after some exclusions, to a sample size of 141 observations. The results of this study show that there is a significant relation between the IFRS 7 and the cost of debt which the companies incur.

Financial disclosure can be defined as any deliberate release of financial information (Gibbins, Richardson and Waterhouse, 1990). There are different ways for companies to disclose information such as annual reports, conference calls, websites, analyst presentations, investor relations, interim reports, prospectuses, press releases and others (Hassan and Marston, 2010).

It is possible to divide corporate disclosures into two categories, mandatory disclosures and voluntary disclosures (Hassan and Marston, 2010).

The mandatory disclosures can be defined as information that has to be necessarily revealed in order to fulfill some disclosure requirements that may be in the form of laws, professional regulations in the form of standards and listing of rules of stock exchanges markets. On the other hand voluntary disclosure can be considered as any information revealed in excess of mandatory disclosure but it can also include recommendations by

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<sup>1</sup> PIGS is an acronym used in economics and finance. Originating in the 1990s, the term usually refers to the economies of Portugal, Italy, Greece and Spain, four economies of southern Europe. With the onset of the European sovereign-debt crisis, Ireland became associated with the term, adding to and sometimes replacing Italy.

an authoritative code or body. In addition, disclosures can vary between firms with respect to timing, for example annual reports versus quarterly reports, items disclosed, for example quantitative versus qualitative information and types of news, for example good versus bad news disclosures (Hassan and Marston, 2010).

In the current global context, the voluntary disclosure of information has become even more relevant. On one hand, it can be a way of differentiating companies since they provide greater amount of information to its stakeholders (FASB, 2001). There is also evidence that a policy of disclosing more information on annual reports reflects on having economic benefits to the company such as decreasing the cost of capital (Botosan and Plumlee, 2006).

The main objective of this research is to explore whether the mandatory disclosures supplied by PIGS stock listed companies significantly affect directly debt indicators and has economic consequences. It is common in literature that disclosure level affects directly the cost of capital (Botosan, 1997) and so it would be correct to assume that these markets that are being analyzed would not be an exception to this.

As a secondary objective it is intended to do a qualitative analysis of the information disclosed by the major PIGS companies. This research will also try to assess the added value that the financial disclosures bring to the users on the specific issue of financial instruments.

This paper is organized into 5 sections. After this introduction the remainder of this study is organized as follows. In section two is presented the literature review and where some concepts like financial disclosure, cost of debt and cost of capital are explained, what connection does this have with mandatory and voluntary disclosure of information, focusing on the IFRS 7. In the section 3 it is presented the hypothesis that are tested and how the research is designed. Afterwards, in the fourth section take into account the sample, the results obtained and what those results mean. Finally, the fifth section presents the conclusion of the results and also what limitations this research has and the recommendations that may be useful for future research.

## **2. Literature review**

### **2.1. Concept of disclosure**

Financial disclosure is defined as the deliberate release of financial information which may be quantitative or qualitative, required or voluntary, via formal or informal channels according to Gibbins et al. (1990).

The studies on the voluntary disclosure of information are based on several perspectives, including the kind of voluntary disclosures that companies perform, the characteristics that influence corporate disclosure and the role of mandatory disclosures on voluntary disclosure (Hassan et al., 2010).

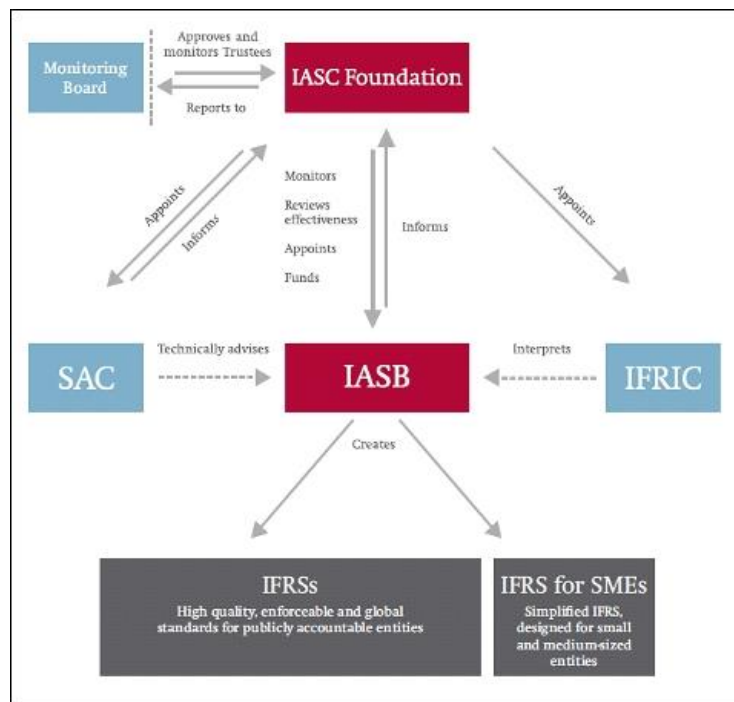
Regarding mandatory disclosures, the International Accounting Standards (IAS) 1 Presentation of Financial Statements *gives* guidelines for the presentation of financial statements and sets minimum requirements of their content that are applicable to all general purpose financial statements based on the International Financial Reporting Standards (IFRS).

The IAS 1 was an important step to the process of accounting harmonization, it was issued by International Accounting Standards Committee (IASC) in 1997 and it was the first comprehensive accounting standard to deal with the presentation of financial information. The importance of comprehensive financial information and disclosure has been an evolving process, due to an increasing need of stakeholders for corporate information and in 2001 IASB<sup>2</sup> created the IFRS which specific function was to harmonize all disclosed financial information for the companies that would follow it normative. The figure 1 helps exemplify the current structure of both IASC and IASB and where their responsibilities lie.

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<sup>2</sup> The IASC was restructured in 2001, the IASC remained as a monitoring body and the IASB was created and it assumed the technical responsibility that was held by IASC.

Figure 1 – IASC and IASB structure



As it is possible to see, with the current structure of the IASC, the organism IASB is the one that is responsible to centralize all the technical aspects regarding IFRS norms.

## **2.2. Cost of capital and financial information**

The cost of capital is an issue that has always bothered companies and has been the subject of several scientific studies. Also, the disclosure of financial information by companies has become a common requirement for stock listed companies and has been growing in consensus of their importance both nationally and internationally (Wallace, 1988).

Financial disclosure and information can be considered a product of accounting (Nobre, 2003). On another note, Gavin (2003) describes accounting as the blood of capital markets, due to the dependence of users of financial information by the existence of information financially transparent, credible and comparable. Some studies provide some evidence that the cost of debt can be directly related with the quality of corporate disclosures (Sengupta, 1998).

Benau and Mayoral (1993), for example, argue that voluntary disclosure does not happen spontaneously and Nobre (2003) reinforces this idea stating that it is "a product of a reflected decision". Diamond (1985) and Rodrigues et al. (2005) state that the decision to voluntarily disclose information may arise from an attempt by the company to prevent investors or others to incur in information costs.

Levinshon (2001) and Kang and Gray (2011) concluded that voluntary disclosure of various financial information can be a way for companies to differentiate themselves, since a great level of information can help users of financial information better understand the company. Additionally, Michels (2012) defends that even the information without any possibility of being confirmed produces changes in lenders' decisions.

Moreover, the relationship between the cost of financing, either by debt capital or equity has been explored by several authors originating numerous studies in several countries (Lima, 2009; Botosan and Plumlee, 2002; Indjejikian, 2007).

Despite the globalization of markets promoting convergence of capital disclosure practices of companies, making them similar (Branco and Rodrigues, 2008), countries differ in many respects, including the culture or political regimes and legal (Villiers and Staden, 2006; Boesso and Kumar, 2007; Bouvain and Chen, 2009; Bushman and Landsman, 2010).

These differences are evident in literature for a variety of countries studied, with a geographical spread which reaches the five continents. However, nowadays, the users of financial information want to know more about the companies than the data that is only on the financial disclosures (Tilley et al., 2011), assigning value to companies that disclose most reliable information that enables them to have more security in moments of decision-making (Rolim et al, 2010). Identifying and meeting these needs was recognized by Fremgen (1967) to define the utility as the objective of accounting. This utility is intertwined with the decision making on the part of stakeholders, who need useful information to help them make the best decisions as possible.

Existing studies related both voluntary and mandatory disclosure with multiple company characteristics, such as capital structure, cost of capital, corporate governance, the degree of indebtedness, the size of the company, the relationship with stakeholders, the relevance of intangible assets and market complexity and that the company characteristics can

influence its disclosure policy. (Cohen et al. 2004; Bertomeu et al., 2006; Gillan, 2006; Boesso et al., 2007). Bertomeu et al. (2011) developed a funding model that connects the capital structure, the policy of voluntary disclosure and the cost of capital of a company.

Findings by Ng (2011) suggest that information negatively affects the liquidity risk, which, in turn, lowers the cost of capital. It is also suggested that in periods of greater uncertainty this cost and this evidence is stronger and easier to be observed.

Additionally according to Armstrong et al. (2010) accounting information can play an important role in reducing agency costs that arise on debt-contracting process. If the firm's financial reporting system provides unreliable asset values or supply information that is either incomplete or hard to assess and forecast either its cash-flows or its risks then the lenders will have difficulty assessing the firm's credit quality.

Also, findings from Segupta (1998) shows that firms with high disclosure quality ratings from financial analysts enjoy a lower interest rate on issuing debt. Similarly to other findings, Sengupta results indicate that the importance of disclosures are also greater when the market is going to an uncertainty period.

### **2.3. IFRS 7**

As mentioned before, the changes in the information needs of stakeholders have also been a concern of international accounting. In 2001 the Financial Accounting Standards Board (FASB)<sup>3</sup> released a draft of voluntary disclosure of information that was premised that improving disclosures makes the process of capital allocation more efficient and reduces the average cost of capital. The FASB advocated in time of disclosure of the project, the importance of voluntary disclosure should increase in the future and wished that companies feel encouraged to continue improve its reporting.

IFRS 7 requires the disclosure of information about the significance of financial instruments of an entity, and the nature and extent of risks arising from those financial

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<sup>3</sup> FASB are the corresponding to IASB but regarding U.S. accounting standards that are called US-GAAP (US – Generally Accepted Accounting Principles).

instruments, both in qualitative and quantitative terms. Specific disclosures are required in relation to transferred financial assets and a number of other matters. The IFRS 7 was originally issued in August 2005 and applies to annual periods beginning on or after 1 January 2007.

The IFRS 7 revises and enhances the disclosures required by IAS 30 *Disclosures in the Financial Statements of Banks and Similar Financial Institutions* and IAS 32 *Financial Instruments: Presentation*, and makes a number of important improvements to disclosures in financial statements. These changes were applicable since 1<sup>st</sup> January 2007, but full comparatives were still required, which means that companies needed to gather the data for the disclosures in 2006.

Another important point to mention is that IFRS 7 does not apply solely to financial institutions and companies with large portfolios of financial instruments. The Standard applies to all entities irrespective of the size of financial instruments held as it focuses on the risks inherent in financial instruments, it is only the extent of disclosure that changes.

This norm can be divided in several subjects, the following tries to give a simplified view of the main points of the IFRS 7:

- Objective

In this part is defined that the objective of this IFRS is to provide disclosures in order for users to evaluate (i) the significance of financial instruments for the entity's financial position and performance and (ii) the nature and extent of risk arising from financial instruments to which the entity is exposed.

- Scope

In this section it is defined that this norm will be applied to all entities and all types of financial instruments except (a) on some defined cases where there already exists specific norms like IAS 27, IAS 28 or IAS 31 regarding subsidiaries, associates and joint ventures, (b) IAS 19 regarding employee benefits, (c) regarding the acquirer position on IFRS 3 Business Combinations, (d) IFRS 4 Insurance Contracts and (e) financial instruments under IFRS 2 Share-based payment.

- Classes of financial instruments and level of disclosure

The IFRS 7 defines that an entity shall group the financial instruments into classes that are appropriate to the nature of the information disclosed.

- Significance of financial instruments for financial position and performance

In this section the IFRS defines, regarding the balance sheet (i) the disclosure of categories of financial assets and financial liabilities, (ii) defines what the entity shall disclose in case of having financial assets or financial liabilities at fair value through profit or loss, (iii) the disclosures in case the entity has reclassified a financial asset, (iv) in case of derecognition what shall be disclosed, (v) what shall be disclosed regarding any collateral regarding financial assets or liabilities, (vi) in case of allowance account for credit losses in separates accounts a reconciliation must be disclosed, (vii) the disclosure of features like multiple embedded derivatives and finally the entity shall also disclose (viii) the occurrence of defaults and breaches regarding financial instruments.

Regarding the Income statement and equity the IFRS 7 defines that an entity shall disclose regarding financial instruments the net losses and gains on (i) financial assets and financial liabilities at fair value, (ii) available-for-sale financial assets, (iii) held-to-maturity investments, (iv) loans and receivables and (v) financial liabilities measured at amortized cost.

It will also disclose the total interest income expense and income regarding financial disclosures, the fee income or expense arising from financial assets/liabilities that are not at fair value and trust and other fiduciary activities that results from holding or investing on behalf of a third party.

Interest income on impaired financial assets accrued in accordance to IAS 39 paragraph 93 and the amount of any impairment loss for each class of financial asset shall be disclosed.

Other disclosures required to be disclosed are:

- ✓ Accounting policies regarding financial instruments.
- ✓ The entity shall also various information regarding hedge accounting such as: Description of the hedge; description of financial instrument and the fair value on the reporting date.



- ✓ For cash flow hedges the entity shall disclose: the periods when the cash flows are expected to occur; description of any forecast transaction; the amount that was recognized in equity during the period; the amount removed from equity and included in profit or loss.

This section also defines, in broad terms that the fair value must be disclosed in a way that is comparable with the carrying amount, except in the following cases:

- ✓ When the carrying amount is a reasonable approximation of the fair value;
- ✓ For an investment in equity instruments that do not have a quoted market price in an active market, or derivative linked to such investments and its fair value cannot be measured reasonably;
- ✓ For a contract containing a discretionary participation feature if the fair value cannot be measured reasonably.
- Nature and extent of risks arising from financial instruments

The IFRS 7 defines that an entity shall disclose information that enables users to evaluate the nature and risk arising from financial instruments.

The entity shall disclose quality information for each type of financial instrument, such as:

- ✓ The exposures to risk;
- ✓ Its objectives, policies and processes of managing risk;
- ✓ Any changes on the above.

The entity shall also disclose quantitative information for each financial instrument as follows:

- Summary of quantitative data;
- ✓ The disclosures of the credit risk and its financial assets that are either past due or impaired and collateral and other credit enhancements obtained

- ✓ The disclosures of liquidity risk;
- ✓ The disclosure of market risk with a sensitivity analysis, or other market risk disclosures if not representative;
- ✓ The entity may not disclose the above information only if it's not material.
- Effective date and transition

The defined effective date for the application of IFRS 7 was on the 1<sup>st</sup> of January of 2007.

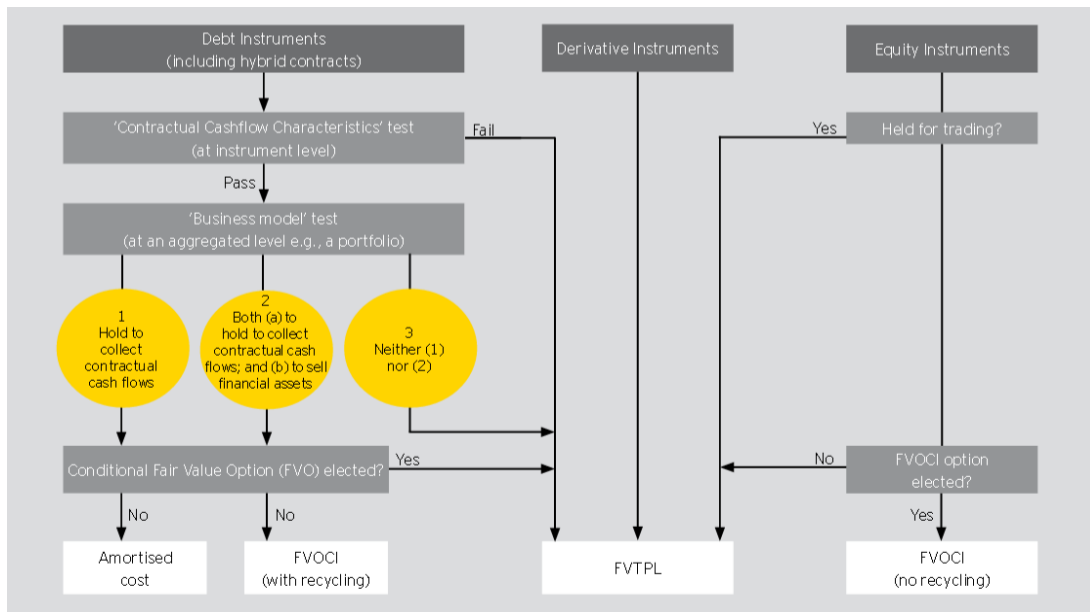
#### **2.4. IFRS 9**

The IFRS 9 Financial instruments, was originally issued in November 2009, reissued in October 2010, and then amended again in November 2013. The current version of IFRS 9 had set the effective date of its applications starting on the 1<sup>st</sup> of January of 2015, however due to some uncertainty, this effective date was left open. On a recent IASB meeting in February 2014 this mandatory effective date was tentatively defined to 1<sup>st</sup> January of 2018.

Arguably, IFRS 9 has simplified and improved accounting for financial assets in comparison with its predecessor, IAS 39 Financial Instruments: Recognition and Measurement. The number of classifications has been reduced from four to two, as the available-for-sale classification has not been retained within IFRS 9. This will consequently result in elimination of the requirement to recycle gains and losses previously taken to equity upon derecognition of the financial asset and also the held to maturity investments, bringing the benefit of reduced complexity of financial reporting information.

One of the IFRS 9 simplifications is to classify all financial assets into solely two categories, the amortized cost and the fair value, although the fair value have two sub-categories, the new proposed model will have this structure of classification:

**Figure 2 - IFRS 9 Financial instruments classification**



This standard helps support the idea that the international community is working on delivering the most reliable information possible in a harmonized way and it is a step towards the simplification of disclosure information, especially regarding financial instruments.

### **3. Methodology and test hypothesis**

#### **3.1. Introduction to the Methodology**

This empirical research sets to analyze, in a qualitative and descriptive manner, the relationship and impact regarding the disclosed information of financial instruments on the cost of debt.

In order to analyze the data it is used a statistical model to test the relationship between interest rate and the disclosure information index based on the IFRS 7. The following sections of this paper present the steps taken into consideration, the information that is collected and the support for data regarding this research.

#### **3.2. Test Hypothesis**

The hypothesis that will be tested in this research is:

H1: The higher the quality of the disclosure of the financial instruments (measured using a disclosure index) under the provisions of the IFRS 7, the lower is the cost of the debt/interest rate of the PIGS companies.

#### **3.3. Statistical regression**

In order to analyze the impact of the disclosure index on the interest rate it is used a logistical regression model that is a methodology used for group classification by “employing predictor variables, logistic regression derives an equation which provides a probability a subject/observation will be member of a specific category/group” (Sheskin, 2007).

The logistical regression model used to test the hypotheses in this research is presented in equation 1.

(1)

$$\begin{aligned}
 IR_{it} = & \\
 & \beta_0 + \beta_1 DI_{it} + \text{Controls} (\beta_2 SIZE_{it} + \beta_3 SG_{it} + \beta_4 VOL_{it} + \beta_5 PERF_{it} + \beta_6 RISK_{it} \\
 & + \beta_7 BIG4_{it}) + \beta_8 Yr_{it} + \varepsilon_{it}
 \end{aligned}$$

In the equation, IR is the dependent variable, the DI is the independent variable and Size, SG, VOL, PERF, RISK, BIG4 are variables of control and Yr is a dummy variable to control year.

The  $\varepsilon_{it}$  is the error term and  $\beta_j$  (j= 1,2,3,4..., 7) is the coefficient of the independent variable to be analyzed. *Controls* refers to other independent variables that are presented in the next sub-section and summarized in the table 1, 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 that was used to obtain its values.

Table 1 - List of Variables

Acronym	Full Name	Formula
<b>Dependent</b>		
IR	Interest rate	$IR = \frac{\text{Interest Expense on Debt } N}{\left(\frac{\text{Total Debt } N + \text{Total Debt } N - 1}{2}\right)}$
<b>Independent</b>		
DI	Disclosure Index	Qualitative variable based on Disclosure index which value can go from 0 to 1
<b>Controls:</b>		
SIZE	Size	$\text{Size} = \text{Log}_{10}(\text{Total Assets})$
SG	Sales Growth	$SG = \frac{\text{Net Sales or Revenue}}{\text{Last year net sales}} - 1$
VOL	Volatility	$VOL = \text{stock's average annual price movement to a high and low}$
PERF	Performance	$PERF = \frac{(\text{Net Income before Pref Dividends} - \text{Pref Dividend Requirement})}{\text{Average of Last Year's and Current Year's Common Equity}}$
RISK	Market Risk	Market Beta
BIG4	Audit Company	1 = Company is audited by a Big4 Company   0 = the company is not audited by Big 4
<b>Dummy Variables:</b>		
Year	Yr	1= Observation from the year 2012   0= Observation from the year 2011

### 3.4. Definition of variables

As said before, this research focus on determining if there exists a statically significant impact of the disclosure index of financial instruments (independent variable) on the interest rate of companies (dependent variable).

### 3.4.1. **Dependent variable**

The dependent variable represents what is measured in an experiment and what is affected during that experiment, it responds to the independent variable. It is called dependent because it "depends" on the independent variable (Sincich, 1996).

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

### 3.4.2. **Independent variable**

An independent variable is a controllable variable, that its data can be chosen and manipulated. It is usually a variable that will affect the dependent variable. In some cases, it may not be able to manipulate the independent variable since it may be fixed but it is something that necessary to evaluate with respect to how it affects something else, which is the dependent variable (Sincich, 1996).

The independent variable in this research is the disclosure index (DI). To construct this DI it is taken into account the idea of Bardin (2009) who states that content analysis is divided into three phases: (i) pre-analysis, (ii) material exploration, and (iii) treatment of the results and their interpretation. The exploitation of the documents to be examined needs to have pre-defined indicators to help guide the reading of the documents. Additionally, the definition and categorization of these indicators is one of procedures of analysis required to make the process of data-collection easier. However, it should be noted that content analysis has implied that the categorization does not introduce deviations, but makes known indexes of information (Bardin, 2009).

The DI used in this research was based on some considerations of the IFRS 7 and was grouped into 4 different categories:

- a) Classes of financial instruments and level of disclosure.
- b) Significance of financial instruments for financial position and performance.

c) Risk information.

d) Non-covering operations.

In each category there are different items which are awarded by a binary value of 1 or 0 accordingly if the analyzed company meets the requirement in a satisfactory way or not. The Appendix 1 lists all the items of each category used in order to reach a final disclosure index regarding the IFRS 7. This disclosure index results by dividing the total score regarding each company by the total of possible applicable items, the construction of a disclosure index was done in a similar way as it was on studies such as Peterson (2006) and Mutawaa (2010). The final score, per category, is shown in the table 2.

**Table 2 – Score of the Disclosure Index per category**

<b>Category of Disclosure</b>	<b>N° of items</b>	<b>Final Score</b>
Classes of financial instruments and level of disclosure	1	1
Significance of financial instruments for financial position and performance	6	0,58
Risk Policies	5	0,55
Non-coverage operations:	1	0,61
<b>Total</b>	<b>13</b>	<b>0,60</b>

The table above shows that the results obtained regarding the disclosure index are all consistently around 60%, which means that only 60% of the items selected are being complied.

### 3.4.3. Control Variables



Control variables are variables that remains unchanged or held constant to prevent its effects on the outcome and therefore may verify the behavior and the relationship between independent and dependent variables. In this study the control variables are Size, Sales Growth, Volatility, Performance, Market Risk, Audit Company that also have been identified has related to the cost of debt in some studies (Kaplan and Urwitz, 1979; Campbell and Taksler, 2003).

- **Size**

In several studies, size is one of the factors associated with the use of financial instruments (Hassan and Marston, 2010), and considering that the companies under analysis are some of the biggest of each country it is pretended to control this effect. It is also associated that a bigger company have less associated risks (Chan, K. 1985) since they have the assets that should be able to cover any unpredicted events and due to this it in this study it is predicted that the bigger the company is the lower will be the interest rate.

The variable size (SIZE) is used and measured by the natural logarithm of total assets (Huldah, 1996).

- **Sales Growth**

As mentioned by Brealey and Myers (1998) a good sales growth is a good indicator of financial sustainability of an entity.

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 and it is an important in measuring the risk, or possible future risk of the companies (Hribar and Jenkins, 2004) and it is expected that a higher sales growth will produce a lower interest rate.

- **Volatility**

Other researches considered volatility of future cash flows has an important variable to control when exploring the impact of the cost of debt (Minton and Schrand, 1999). In this research it was also assumed has one of the variables whose effect should be controlled, because highly volatile companies are usually looked at with some mistrust by the lenders and underwriters (Gu and Zhao, 2006) so it is predicted that a high volatility will be associated with high interest rates.

In this research, volatility (VOL) is measured by the degree of fluctuation in the share prices during the previous year.

- **Performance**

According to some literature, companies with high performance usually disclose more willingly its information, both in terms of quality and quantity, than a company than a company that has lower performance (Muhammad et al., 2004). It is expected that a higher ROE will give a lower interest rate.

The measure chosen for performance is the Return on Equity (ROE) which 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 its shareholders (Mota, 2007; Brealey and Myers, 1998).

- **Market Risk**

The market risk is directly linked to cost of capital through the Capital Asset Pricing Model (Brealey and Myers, 2007) and, hence, expected to be positively associated to the disclosure index and to the interest rate and so a higher risk is expected to show a higher interest rate

The market risk in this research will be measured based on Beta (RISK) that is included in the model to control for systematic risk (Brealey and Myers, 1998).

- **Audit company**

According to some studies the audit company has a significant impact regarding the quality of disclosures (Al Mutawaa and Hewaidy, 2010).

The Audit Company (BIG4) is intended to test if the size of the Audit Company, that is linked to being a Big 4<sup>4</sup> company, has any influence on the perception of the stakeholders on the value of the information that the entities analyze report and disclose. Since the

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<sup>4</sup>The Big 4 are the four largest international professional services networks, offering audit, assurance, tax, consulting, advisory, actuarial, corporate finance, and legal services. They handle the vast majority of audits for publicly traded companies as well as many private companies, creating an oligopoly in auditing large companies. The companies are: Deloitte Touche Tohmatsu, Pricewaterhouse Coopers, Ernst & Young and KPMG.

Big4 audit firms are usually associated with the largest companies it is also assumed that the presence of a Big4 firm will be present in companies with also lower interest rate.

#### 4. Empirical Study and results

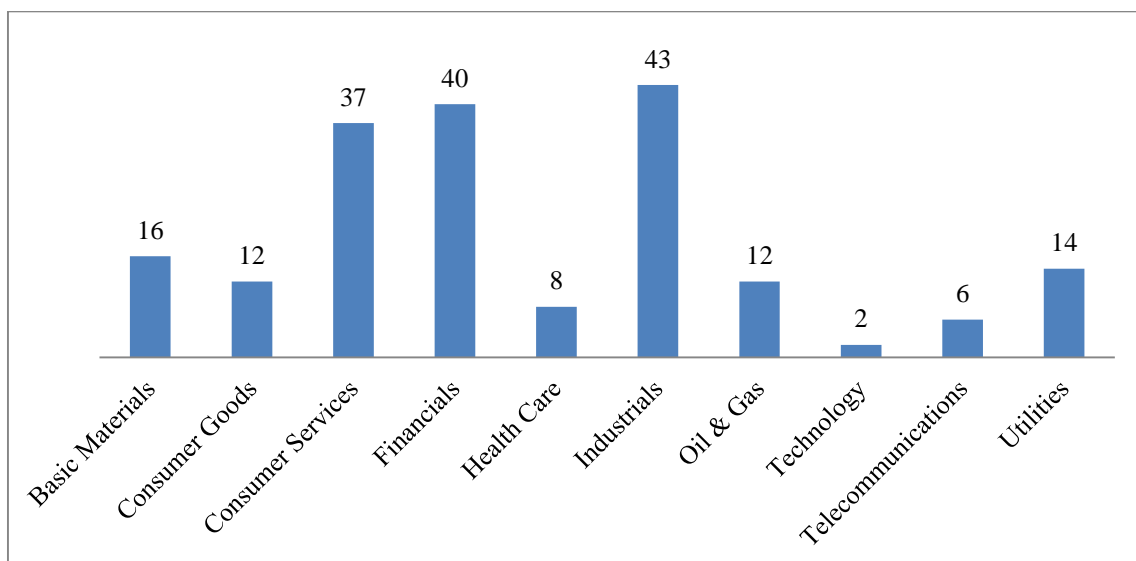
The analysis of the data is done in three separate phases. The first step is the construction matrix with indicators. In a second phase, the information find in classified documents is analyzed to calculate the index of disclosure. Finally, the third phase corresponds to the attempt to find factors that influence the rate of disclosure previously computed by performing bivariate data and doing statistical iterations. The statistical software used was the IBM SPSS Statistics (version 22), which according Laureano and Botelho (2010:18), is presented as a comprehensive product and a facilitator of Data Analysis.

##### 4.1. Selection of the sample

The markets explored in this research are the capitalized companies of PIGS which is composed of the PSI-20 (Portuguese Stock Index), ISEQ-20 (Irish Stock Exchange Quotient), ATHEX-20 (Athens Stock Exchange) and IBEX-35 (Indices Bursatil Español). This markets together represents a total of 95 stock listed companies and 190 observations if considering the years of 2011 and 2012.

The market analyzed is composed by a variety of industries, the most significant in weight are the Industrial, the Financial and finally the Consumer Services industry, as presented in figure 2, and these three industries represent approximately 63% of the companies given.

Figure 3 – Population of the stock listed companies by type of Industry 2011 and 2012



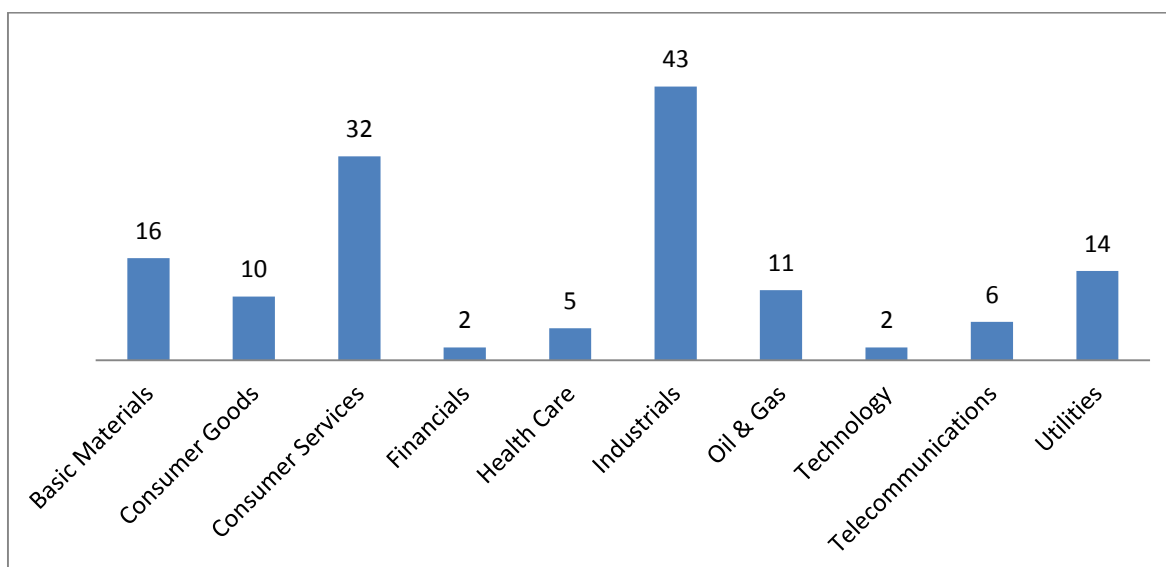
It is important to take into account that in 2011 and 2012 there exists some difference on the companies, this happens because these indexes are composed by the biggest companies at one given time and so each year it is subject to changes.

The type of industry is classified based on the classification of the Industry Classification Benchmark (ICB) standards and the breakdown of the companies considered for figure 3 can be seen on Appendix 2.

Regarding the data that is being analyzed, in order to achieve a more veritable result there are some companies, out of the 190 observations that compose the general population, which are excluded. The withdrawal of some of the companies from this study sample is done taking into consideration two main characteristics. Firstly, the companies from the bank sector have a completely different reporting procedure, accounting and their results may make the current study return with odd results and secondly, the companies with negative common equity also were excluded, since this companies can distort some variables such as profitability and volatility. Additionally, it was also withdrawn 5 observations which had an abnormal interest rate in a particular year since it could be the result of an undetermined error.

After all these exclusions it was finally reached the study sample that was composed of 146 observations that are distributed by industry as illustrated by figure 3.

**Figure 4 – Distribution of the stock listed companies by industry segment (Sample)**



As it is possible to see in figure 4, most of the company observations from financial industry have been withdrawn from the sample, leaving the financial industry with only two observations. This happens because most companies of the financial industry are either banks or insurance companies. The breakdown of the considered sample is available on the Appendix 3.

This sample shows a great concentration on two main industries that are the consumer Services and the Industrial industries both represent around 53% of the total.

#### **4.2. Descriptive Statistics and results**

The descriptive statistic of the sample of this research is present in the table 3.

**Table 3 – Descriptive Statistics of the variables**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std.</b>
IR	141	0,00%	10,89%	4,86%	2,10%
DI	141	0,38	0,88	0,60	0,10
Size	141	4,70	8,09	6,52	0,73
SG	141	-304,35%	398,10%	5,80%	51,33%
VOL	141	2,00	20,00	6,42	3,58
RISK	141	0,13	1,56	0,89	0,32
ROE	141	-136,37%	305,30%	10,25%	36,30%
BF	141	0,00	1,00	0,82	0,39
Valid N	141				

The descriptive statistics displayed in table 3 suggest that on average the interest rate (dependent variable) of the analyzed companies are around 4, 86%. Considering the fact that these companies are all in countries in the center of the European sovereign debt crisis, this value is not that high if we consider that this companies are under stress due to the sovereign debt crisis that is affecting their countries. Regarding the disclosure index the data shows that there is an average disclosure value of 60%, this may mean that only half of the items used in this study are being complied in a clear and sufficient manner.

Table 4 - Pearson Correlation

	IR	DI	Size	SG	VOL	RISK	ROE	BF	VIF
IR	1								
DI	-,369**	1							1,073
Size	,186*	-,083	1						1,165
SG	,294**	-,082	0,1418	1					1,062
VOL	,189*	-,092	-,196*	-0,092	1				1,473
RISK	,178*	-,117	,158	-,004	,280**	1			1,184
ROE	-,204*	,103	,201*	,069	-,442**	-0,135	1		1,414
BF	-,033	,002	,274**	0,11455	-,373**	0,06125	,420**	1	1,375

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

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

In table 4 it is presented the Pearson Correlation Coefficients for the dependent and independent variables. The correlation matrix gives the relation between the interest rate and all the independent variables and also the relation between the various independent variables with each other. These correlations permits understand if there is a statistical relationship between the dependent variable and all the other independent variables. Additionally, the VIF value test was run in order to check for Multicollinearity issues. “Multicollinearity exists when two or more of the independent variables used in regression are correlated” (Sincich, 1996:760) and this check allow us to make sure that none of the variables are highly correlated with another. There is no VIF value above 5, which should indicate that there is no significant multicollinearity issue.

Additional to this and in order to guarantee and improve the consistency of the analysis two steps were considered before running the Pearson correlation:

1. In order to make sure the consistency of the equation was preserved it was also run a studentized residual check. This consists on a method that excludes from the observations the values that have Studentized Residual (SRE) higher than 1.96 for standards errors of 0.05 (Pestana et. al: 123-124).

2. In order to guarantee that only the observations regarding the observations with the most impact in the equation were being used, it was used the Cook's distance measure which permits the selection and subsequent exclusion of the observations which cause more impact to the equation giving it more consistency (Pestana et. al: 146-147).

The Pearson correlation between the interest rate and the independent variables shows that there is statistical significance between almost all of them, only BF variable does not show signs of being significant. The DI variable does not seem to have any correlation with another variable besides the interest rate. The SIZE variable seem to be significant to variables such as VOL, ROE and BF. The SG variable, in a similar way to the DI variable is only significant to the interest rate. The VOL variable is only non-significant to DI and SG. The Risk variable is only significant to SIZE, IR and VOL. Finally ROE is significant to the variables BF, VOL, SIZE and IR.

This results are good indicators that it should be able to find good relations with the linear regression model.

### **4.3. Multiple Linear Regression**

In the following table 5 it will be presented the results of the linear regression model.



**Table 5 - Results of the Linear Regression Model**

<b>Model</b>	<b>Predictor</b>	<b>Coefficient</b>	<b>T</b>	<b>Sig.</b>
(Constant)		0,044676	3,240150	0,0016
DI	-	-0,048496	-3.805686	0,0002
Size	-	0,003858	2,330067	0,0215
SG	-	0,016241	2,747996	0,0069
VOL	+	0,000622	1,561260	0,1212
RISK	+	0,003031	0,684350	0,4951
ROE	-	-0,010472	-2,112688	0,0368
BF	-	0,000176	0,055482	0,9558
Y (Dummy)	Dummy	-0,000383	-0,139750	0.8891
N	141			
Adjusted R	0,28941			
F-Statistic	5,95653 (0,01)			

The results shown were done considering the same two steps as detailed in the prior chapter.

Regarding the Disclosure index variable, the main focus of this research, the results shows that the variable is statistically significant and that the higher DI will usually indicate a lower interest rate which follow the predicted value.

In addition to this the test results are based on a variance using regression coefficients that are valid even if there exists heterocedasticity, meaning that I used a robust test in that the degree of significance for the test White for heterocedasticity was less than 10 percent (Johnston et. al, 1997). This procedure was used in all cases which was found heterocedasticity according to the White test.

Additionally, VOL and RISK have a are positive has predicted at first, meaning that in theory, the higher the VOL and RISK the higher will be the interest rate paid by the entity. However this results are not statistically significant at any confidence level.

Regarding the remaining variables, SIZE, SG, ROE and BF are all statistically significant, at 1% to 10% confidence levels, to the equation used in this research, meaning that they all influence its final result. They all were predicted to have a negative, meaning that a higher SIZE, SG, ROE and BF should result in a lower interest rate, however of all this variables only the variable ROE was able us to reach at a conclusion that it negatively influences the interest rate, and SIZE, SG and BF influence positively the interest rate.

The results shows an F-Statistic of 5,957 (Sig 0,001), this results support the statistical significance of the linear model. The regression also shows an R-square adjusted of 0,028941 which means that the variables included in the model explains up to 28,9% of the variation of the interest rate.

This means that the Disclosure Index regarding IFRS 7 have a statistically significant impact in the observed samples. This means that the variable interest rate can be at least partly explain with this model, at least taking into account the observed samples on the years at hand, meaning that the research hypothesis is supported by this research.

## **5. Conclusion**

### **5.1. Conclusion**

The purpose of this research is to explore whether the disclosures regarding the IFRS 7 supplied by PIGS stock listed companies significantly affect directly debt indicators and has economic consequences. It is common knowledge that the information disclosed to the diverse stakeholders has an important impact on the cost of debt and cost of capital.

In this research we tested if the interest rate could be related to disclosure index, which is focused on the IFRS 7, on sensitive stock markets such as Portugal, Greece, Ireland and Spain, which have been on the spotlight recently due to the sovereign debt crisis.

As mentioned on some studies the disclosure level can have impact on the cost of capital of companies, which means that a higher disclosure should lead to a lower uncertainty and a lower risk which would subsequently lower the cost of capital. On the same manner has the disclosure index can be related to the cost of capital it was expected that the disclosure index on such a sensitive issue like financial instruments, specially taking into account that the companies analyzed were selected from countries that are considered to have a high sovereign debt risk of failure, this fact alone should make them more sensitive to interest rate variations. The results have indicated there exists an association between the disclosure index based on the IFRS 7 and the cost of debt.

To summarize, it can be concluded that this research helps show that the disclosure quality of information on IFRS 7 can impact the interest rate of an entity.

## **5.2. Limitations and recommendations**

There are some limitations on this research, firstly, the focus of the research is limited to the countries mainly affected by the sovereign debt crisis and this fact may bias the end results regarding the debt variable, which is the interest rate.

Secondly, the research only has stock listed companies because they are the only ones that guarantee public information due to mandatory disclosure of the stock markets. Although the mandatory disclosure gives important information and data to research, it is important to always keep in mind that only a limited number of companies have the size, structure and strategy to be stock listed, so this research does not try to illustrate each countries business environment based only on these observations, which are just a limited part of the countries business environment.

Also there is a limitation due to the fact that the study was limited to only two years and 141 observations which may be considered a limited scope.

Finally, the fact that the variable Disclosure Index is a qualitative variable and can be highly subjective, this fact can make the study more bias and more prone to mistakes.

Regarding the recommendations for future research, the disclosure index variable could be expanded to include other disclosures that could impact on the interest rate asked by the lenders and the underwriters.

Another line of investigation that could be followed is to study the impact prior to the mandatory IFRS 7 and the sovereign debt crisis. This would be interesting and could help see to what extent have both, IFRS 7 and the debt crisis, impacted these companies. However this line of enquiry may have an increased difficulty since during the beginning and prior to the debt crisis there was no IFRS 7 and the mandatory disclosures regarding financial instruments were far more limited.

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## Appendices

### Appendix 1 – Disclosure Index Items

<b>Classes of financial instruments and level of disclosure:</b>	<b>Ponderation</b>
Does the entity disclose in an appropriate way categories of financial assets and financial liabilities?	1
<b>Significance of financial instruments for financial position and performance</b>	
Does the entity disclose in an appropriate way categories of financial assets and financial liabilities?	1
Does the entity clearly disclose the information regarding financial instruments at fair value through profit or loss?	1
In case it is applicable does the entity disclose clearly information regarding reclassifications of financial assets and derecognitions?	1
Does the entity, if applicable, did a reconciliation between separated allowance accounts regarding credit losses?	1
Does the entity clearly provide information regarding the occurrence of defaults and breaches regarding financial instruments?	1
Does the entity clearly show the net losses and gains on its financial assets and liabilities at fair value, its available-for-sale financial assets, held-to-maturity investments, loans and receivables and financial liabilities measured at amortized cost?	1
<b>Risk Policies:</b>	
Does the entity clearly define the Risk Categories	1
Does the entity disclose Qualitative information regarding risk	1
Does the entity measure Risk in a clear and simple manner?	1
Does the entity elaborate a sensitive analysis for each type of risk	1
Does the entity make a Maturity Analysis clear?	1
<b>Non-coverage operations:</b>	
Does the entity clearly defines and disclose Gains and losses reported on non-coverage operations	1

Appendix 2 – List of the PIGS companies by sector

	Market	Country	Year	Industry Name
COCA COLA HBC AG	ATHEX 20	Greece	2011	Consumer Goods
ALPHA BANK SA	ATHEX 20	Greece	2011	Financials
BANK OF GREECE SA	ATHEX 20	Greece	2011	Financials
BANK OF PIRAEUS SA	ATHEX 20	Greece	2011	Financials
AEGEAN AIRLINES SA	ATHEX 20	Greece	2011	Consumer Services
CENTRIC HOLDINGS SA	ATHEX 20	Greece	2011	Consumer Services
ALAPIS SA	ATHEX 20	Greece	2011	Health Care
ATH.WT.SUPP.& SEWAGE CO.	ATHEX 20	Greece	2011	Utilities
ATTICA BANK SA	ATHEX 20	Greece	2011	Financials
COSTAMARE INCO.	ATHEX 20	Greece	2011	Industrials
ALCO HELLAS SA	ATHEX 20	Greece	2011	Basic Materials
CORINTH PIPE WORKS SA	ATHEX 20	Greece	2011	Basic Materials
ATTICA HOLDINGS SA	ATHEX 20	Greece	2011	Consumer Services
ANEK LINES SA	ATHEX 20	Greece	2011	Consumer Services
ATHENS MEDICAL CENTRE SA	ATHEX 20	Greece	2011	Health Care
ALUMIL ALUMINIUM IND.SA	ATHEX 20	Greece	2011	Basic Materials
AXON HOLDINGS SA	ATHEX 20	Greece	2011	Health Care
CRETE PLASTICS SA	ATHEX 20	Greece	2011	Basic Materials
AUTOHELLAS SA	ATHEX 20	Greece	2011	Consumer Services
AVENIR LEIS.&ENTM.INTC.	ATHEX 20	Greece	2011	Consumer Services
COCA COLA HBC AG	ATHEX 20	Greece	2012	Consumer Goods
BANK OF GREECE SA	ATHEX 20	Greece	2012	Financials
BANK OF PIRAEUS SA	ATHEX 20	Greece	2012	Financials
ALPHA BANK SA	ATHEX 20	Greece	2012	Financials
AEGEAN AIRLINES SA	ATHEX 20	Greece	2012	Consumer Services
CENTRIC HOLDINGS SA	ATHEX 20	Greece	2012	Consumer Services
ATH.WT.SUPP.& SEWAGE CO.	ATHEX 20	Greece	2012	Utilities
COSTAMARE INCO.	ATHEX 20	Greece	2012	Industrials
ALCO HELLAS SA	ATHEX 20	Greece	2012	Basic Materials
ATTICA HOLDINGS SA	ATHEX 20	Greece	2012	Consumer Services
ATTICA BANK SA	ATHEX 20	Greece	2012	Financials
CORINTH PIPE WORKS SA	ATHEX 20	Greece	2012	Basic Materials
ATHENS MEDICAL CENTRE SA	ATHEX 20	Greece	2012	Health Care
AXON HOLDINGS SA	ATHEX 20	Greece	2012	Health Care
CRETE PLASTICS SA	ATHEX 20	Greece	2012	Basic Materials
ANEK LINES SA	ATHEX 20	Greece	2012	Consumer Services
ALUMIL ALUMINIUM IND.SA	ATHEX 20	Greece	2012	Basic Materials
AUTOHELLAS SA	ATHEX 20	Greece	2012	Consumer Services
GENERAL PARTNER LP.	ATHEX 20	Greece	2012	Industrials
ATHENA SA	ATHEX 20	Greece	2012	Industrials
AER LINGUS GROUP PLC.	ISEQ	Ireland	2011	Consumer Services
ARYZTA AG	ISEQ	Ireland	2011	Consumer Goods
BANK OF IRELAND	ISEQ	Ireland	2011	Financials
C&C GROUP PLC.	ISEQ	Ireland	2011	Consumer Goods
CRH PLC.	ISEQ	Ireland	2011	Industrials
DCC PLC.	ISEQ	Ireland	2011	Industrials
DRAGON OIL PLC.	ISEQ	Ireland	2011	Oil & Gas
ELAN CORPORATION PLC.	ISEQ	Ireland	2011	Health Care
GLANBIA PLC.	ISEQ	Ireland	2011	Consumer Goods
GRAFTON GROUP PLC.	ISEQ	Ireland	2011	Industrials
GREENCORE GROUP PLC.	ISEQ	Ireland	2011	Consumer Goods
INDE.NEWS & MEDIA PLC.	ISEQ	Ireland	2011	Consumer Services
IRISH CONT.GP.PLC.	ISEQ	Ireland	2011	Consumer Services
KENMARE RESOURCES PLC.	ISEQ	Ireland	2011	Basic Materials
KERRY GROUP PLC.	ISEQ	Ireland	2011	Consumer Goods
KINGSPAN GROUP PLC.	ISEQ	Ireland	2011	Industrials
PADDY POWER PLC.	ISEQ	Ireland	2011	Consumer Services

RYANAIR HOLDINGS PLC.	ISEQ	Ireland	2011	Consumer Services
SMURFIT KAPPA GROUP PLC.	ISEQ	Ireland	2011	Industrials
UDG HEALTHCARE PUB.LTD.	ISEQ	Ireland	2011	Consumer Services
AER LINGUS GROUP PLC.	ISEQ	Ireland	2012	Consumer Services
ARYZTA AG	ISEQ	Ireland	2012	Consumer Goods
BANK OF IRELAND	ISEQ	Ireland	2012	Financials
C&C GROUP PLC.	ISEQ	Ireland	2012	Consumer Goods
CRH PLC.	ISEQ	Ireland	2012	Industrials
DCC PLC.	ISEQ	Ireland	2012	Industrials
DRAGON OIL PLC.	ISEQ	Ireland	2012	Oil & Gas
ELAN CORPORATION PLC.	ISEQ	Ireland	2012	Health Care
FBD HOLDINGS PLC.	ISEQ	Ireland	2012	Financials
GLANBIA PLC.	ISEQ	Ireland	2012	Consumer Goods
GRAFTON GROUP PLC.	ISEQ	Ireland	2012	Industrials
IRISH CONT.GP.PLC.	ISEQ	Ireland	2012	Consumer Services
KENMARE RESOURCES PLC.	ISEQ	Ireland	2012	Basic Materials
KERRY GROUP PLC.	ISEQ	Ireland	2012	Consumer Goods
KINGSPAN GROUP PLC.	ISEQ	Ireland	2012	Industrials
PADDY POWER PLC.	ISEQ	Ireland	2012	Consumer Services
RYANAIR HOLDINGS PLC.	ISEQ	Ireland	2012	Consumer Services
SMURFIT KAPPA GROUP PLC.	ISEQ	Ireland	2012	Industrials
TOTAL PRODUCE PLC.	ISEQ	Ireland	2012	Consumer Services
UDG HEALTHCARE PUB.LTD.	ISEQ	Ireland	2012	Consumer Services
ALTRI SGPS S A	PSI-20	Portugal	2011	Basic Materials
BANCO BPI SA	PSI-20	Portugal	2011	Financials
BANCO ESPIRITO SANTO SA	PSI-20	Portugal	2011	Financials
BNC.COMERCIAL PORTUGUES	PSI-20	Portugal	2011	Financials
BRISA-AUTSDS.DE PORTUGAL	PSI-20	Portugal	2011	Industrials
CMTS.DE PORTL.SGPS SA	PSI-20	Portugal	2011	Industrials
CORTICEIRA AMORIM SA	PSI-20	Portugal	2011	Industrials
EDP ENERGIAS DE PORTL.SA	PSI-20	Portugal	2011	Utilities
EDP RENOVAVEIS	PSI-20	Portugal	2011	Utilities
GALP ENERGIA SGPS	PSI-20	Portugal	2011	Oil & Gas
JERONIMO MARTINS SA	PSI-20	Portugal	2011	Consumer Services
MOTA ENGIL SGPS SA	PSI-20	Portugal	2011	Industrials
PORTUCEL EMPRESA	PSI-20	Portugal	2011	Basic Materials
PORTUGAL TELECOM SGPS SA	PSI-20	Portugal	2011	Telecommunications
REN	PSI-20	Portugal	2011	Utilities
SONAE CAPITAL	PSI-20	Portugal	2011	Financials
SONAE COM SGPS SA	PSI-20	Portugal	2011	Telecommunications
SONAE INDUSTRIA SGPS SA	PSI-20	Portugal	2011	Industrials
SONAE SGPS SA	PSI-20	Portugal	2011	Consumer Services
ZON MULTIMEDIA SA	PSI-20	Portugal	2011	Consumer Services
ALTRI SGPS S A	PSI-20	Portugal	2012	Basic Materials
BANCO BPI SA	PSI-20	Portugal	2012	Financials
BANCO ESPIRITO SANTO SA	PSI-20	Portugal	2012	Financials
BRISA-AUTSDS.DE PORTUGAL	PSI-20	Portugal	2012	Industrials
CMTS.DE PORTL.SGPS SA	PSI-20	Portugal	2012	Industrials
CORTICEIRA AMORIM SA	PSI-20	Portugal	2012	Industrials
EDP ENERGIAS DE PORTL.SA	PSI-20	Portugal	2012	Utilities
EDP RENOVAVEIS	PSI-20	Portugal	2012	Utilities
GALP ENERGIA SGPS	PSI-20	Portugal	2012	Oil & Gas
JERONIMO MARTINS SA	PSI-20	Portugal	2012	Consumer Services
MOTA ENGIL SGPS SA	PSI-20	Portugal	2012	Industrials
PORTUCEL EMPRESA	PSI-20	Portugal	2012	Basic Materials
PORTUGAL TELECOM SGPS SA	PSI-20	Portugal	2012	Telecommunications
REN	PSI-20	Portugal	2012	Utilities
SOARES DA COSTA SA	PSI-20	Portugal	2012	Industrials
SONAE CAPITAL	PSI-20	Portugal	2012	Financials
SONAE COM SGPS SA	PSI-20	Portugal	2012	Telecommunications
SONAE INDUSTRIA SGPS SA	PSI-20	Portugal	2012	Industrials

SONAE SGPS SA	PSI-20	Portugal	2012	Consumer Services
ZON MULTIMEDIA SA	PSI-20	Portugal	2012	Consumer Services
BANCO SANTANDER SA	IBEX 35	Spain	2011	Financials
TELEFONICA SA	IBEX 35	Spain	2011	Telecommunications
REPSOL YPF SA	IBEX 35	Spain	2011	Oil & Gas
BBV.ARGENTARIA SA	IBEX 35	Spain	2011	Financials
IBERDROLA SA	IBEX 35	Spain	2011	Utilities
ENDESA SA	IBEX 35	Spain	2011	Utilities
ACS ACTIV.CONSTR.Y SERV.	IBEX 35	Spain	2011	Industrials
GAS NATURAL SDG SA	IBEX 35	Spain	2011	Utilities
MAPFRE SA	IBEX 35	Spain	2011	Financials
INTL.CONS.AIRL.GROUP SA	IBEX 35	Spain	2011	Consumer Services
INDITEX SA	IBEX 35	Spain	2011	Consumer Services
FOMENTO CONSTR.Y CNTR.SA	IBEX 35	Spain	2011	Industrials
CAIXABANK SA	IBEX 35	Spain	2011	Financials
DISB.INTNAC.DE AMEN.SA	IBEX 35	Spain	2011	Consumer Services
BANKIA SA	IBEX 35	Spain	2011	Financials
FERROVIAL SA	IBEX 35	Spain	2011	Industrials
ABENGOA SA	IBEX 35	Spain	2011	Oil & Gas
ACCIONA SA	IBEX 35	Spain	2011	Industrials
BANCO POPULAR ESPANOL SA	IBEX 35	Spain	2011	Financials
BNC.ESPN.DE CREDITO SA	IBEX 35	Spain	2011	Financials
OBRASCON HUARTE LAIN SA	IBEX 35	Spain	2011	Industrials
ACERINOX SA	IBEX 35	Spain	2011	Basic Materials
BANCO DE SABADELL SA	IBEX 35	Spain	2011	Financials
SACYR VALLEHERMOSO SA	IBEX 35	Spain	2011	Industrials
ABERTIS INFSTS.SA	IBEX 35	Spain	2011	Industrials
GAMESA CORPN.TEGC.SA	IBEX 35	Spain	2011	Oil & Gas
BANCA CIVICA SA	IBEX 35	Spain	2011	Financials
GRUPO CATALANA OCCIDENTE	IBEX 35	Spain	2011	Financials
PROSEGUR CIA.SECURIDAD	IBEX 35	Spain	2011	Industrials
BANKINTER SA	IBEX 35	Spain	2011	Financials
AMADEUS IT HOLDING SA	IBEX 35	Spain	2011	Industrials
INDRA SISTEMAS SA	IBEX 35	Spain	2011	Technology
PROMOTORA DE INFIC.SA	IBEX 35	Spain	2011	Consumer Services
TECNICAS REUNIDAS SA	IBEX 35	Spain	2011	Oil & Gas
LIBERBANK SA	IBEX 35	Spain	2011	Financials
BANCO SANTANDER SA	IBEX 35	Spain	2012	Financials
TELEFONICA SA	IBEX 35	Spain	2012	Telecommunications
REPSOL YPF SA	IBEX 35	Spain	2012	Oil & Gas
BBV.ARGENTARIA SA	IBEX 35	Spain	2012	Financials
ACS ACTIV.CONSTR.Y SERV.	IBEX 35	Spain	2012	Industrials
IBERDROLA SA	IBEX 35	Spain	2012	Utilities
ENDESA SA	IBEX 35	Spain	2012	Utilities
GAS NATURAL SDG SA	IBEX 35	Spain	2012	Utilities
MAPFRE SA	IBEX 35	Spain	2012	Financials
INTL.CONS.AIRL.GROUP SA	IBEX 35	Spain	2012	Consumer Services
INDITEX SA	IBEX 35	Spain	2012	Consumer Services
CAIXABANK SA	IBEX 35	Spain	2012	Financials
FOMENTO CONSTR.Y CNTR.SA	IBEX 35	Spain	2012	Industrials
DISB.INTNAC.DE AMEN.SA	IBEX 35	Spain	2012	Consumer Services
BANKIA SA	IBEX 35	Spain	2012	Financials
ABENGOA SA	IBEX 35	Spain	2012	Oil & Gas
FERROVIAL SA	IBEX 35	Spain	2012	Industrials
ACCIONA SA	IBEX 35	Spain	2012	Industrials
BANCO POPULAR ESPANOL SA	IBEX 35	Spain	2012	Financials
BANCO DE SABADELL SA	IBEX 35	Spain	2012	Financials
OBRASCON HUARTE LAIN SA	IBEX 35	Spain	2012	Industrials
ACERINOX SA	IBEX 35	Spain	2012	Basic Materials
ABERTIS INFSTS.SA	IBEX 35	Spain	2012	Industrials
SACYR VALLEHERMOSO SA	IBEX 35	Spain	2012	Industrials

BNC.ESPN.DE CREDITO SA	IBEX 35	Spain	2012	Financials
PROSEGUR CIA.SECURIDAD	IBEX 35	Spain	2012	Industrials
INDRA SISTEMAS SA	IBEX 35	Spain	2012	Technology
AMADEUS IT HOLDING SA	IBEX 35	Spain	2012	Industrials
GRUPO CATALANA OCCIDENTE	IBEX 35	Spain	2012	Financials
BANKINTER SA	IBEX 35	Spain	2012	Financials
GAMESA CORPN.TEGC.SA	IBEX 35	Spain	2012	Oil & Gas
PROMOTORA DE INFIC.SA	IBEX 35	Spain	2012	Consumer Services
TECNICAS REUNIDAS SA	IBEX 35	Spain	2012	Oil & Gas
GRIFOLS SA	IBEX 35	Spain	2012	Health Care
EBRO FOODS SA	IBEX 35	Spain	2012	Consumer Goods

Appendix 3 – List of the selected sample for analysis

Name	Market	Country	Year
AEGEAN AIRLINES SA	ATHEX 20	Greece	2011
ALCO HELLAS SA	ATHEX 20	Greece	2011
ALUMIL ALUMINIUM IND.SA	ATHEX 20	Greece	2011
ANEK LINES SA	ATHEX 20	Greece	2011
ATH.WT.SUPP.& SEWAGE CO.	ATHEX 20	Greece	2011
ATHENS MEDICAL CENTRE SA	ATHEX 20	Greece	2011
ATTICA HOLDINGS SA	ATHEX 20	Greece	2011
AUTOHELLAS SA	ATHEX 20	Greece	2011
CENTRIC HOLDINGS SA	ATHEX 20	Greece	2011
COCA COLA HBC AG	ATHEX 20	Greece	2011
CORINTH PIPE WORKS SA	ATHEX 20	Greece	2011
COSTAMARE INCO.	ATHEX 20	Greece	2011
CRETE PLASTICS SA	ATHEX 20	Greece	2011
AER LINGUS GROUP PLC.	ISEQ	Ireland	2011
C&C GROUP PLC.	ISEQ	Ireland	2011
CRH PLC.	ISEQ	Ireland	2011
DCC PLC.	ISEQ	Ireland	2011
DRAGON OIL PLC.	ISEQ	Ireland	2011
ELAN CORPORATION PLC.	ISEQ	Ireland	2011
GLANBIA PLC.	ISEQ	Ireland	2011
GRAFTON GROUP PLC.	ISEQ	Ireland	2011
GREENCORE GROUP PLC.	ISEQ	Ireland	2011
IRISH CONT.GP.PLC.	ISEQ	Ireland	2011
KENMARE RESOURCES PLC.	ISEQ	Ireland	2011
KERRY GROUP PLC.	ISEQ	Ireland	2011
KINGSPAN GROUP PLC.	ISEQ	Ireland	2011
RYANAIR HOLDINGS PLC.	ISEQ	Ireland	2011
SMURFIT KAPPA GROUP PLC.	ISEQ	Ireland	2011
UDG HEALTHCARE PUB.LTD.	ISEQ	Ireland	2011
ALTRI SGPS S A	PSI-20	Portugal	2011
BRISA-AUTSDS.DE PORTUGAL	PSI-20	Portugal	2011
CMTS.DE PORTL.SGPS SA	PSI-20	Portugal	2011
CORTICEIRA AMORIM SA	PSI-20	Portugal	2011
EDP ENERGIAS DE PORTL.SA	PSI-20	Portugal	2011
EDP RENOVAVEIS	PSI-20	Portugal	2011
GALP ENERGIA SGPS	PSI-20	Portugal	2011
JERONIMO MARTINS SA	PSI-20	Portugal	2011
MOTA ENGIL SGPS SA	PSI-20	Portugal	2011
PORTUCEL EMPRESA	PSI-20	Portugal	2011
PORTUGAL TELECOM SGPS SA	PSI-20	Portugal	2011
REN	PSI-20	Portugal	2011
SONAE CAPITAL	PSI-20	Portugal	2011
SONAE COM SGPS SA	PSI-20	Portugal	2011
SONAE INDUSTRIA SGPS SA	PSI-20	Portugal	2011
SONAE SGPS SA	PSI-20	Portugal	2011
ZON MULTIMEDIA SA	PSI-20	Portugal	2011
ABENGOA SA	IBEX 35	Spain	2011
ABERTIS INFSTS.SA	IBEX 35	Spain	2011
ACCIONA SA	IBEX 35	Spain	2011
ACERINOX SA	IBEX 35	Spain	2011
ACS ACTIV.CONSTR.Y SERV.	IBEX 35	Spain	2011
AMADEUS IT HOLDING SA	IBEX 35	Spain	2011
DISB.INTNAC.DE AMEN.SA	IBEX 35	Spain	2011
ENDESA SA	IBEX 35	Spain	2011
FERROVIAL SA	IBEX 35	Spain	2011
FOMENTO CONSTR.Y CNTR.SA	IBEX 35	Spain	2011
GAMESA CORPN.TEGC.SA	IBEX 35	Spain	2011
GAS NATURAL SDG SA	IBEX 35	Spain	2011

IBERDROLA SA	IBEX 35	Spain	2011
INDRA SISTEMAS SA	IBEX 35	Spain	2011
INTL.CONS.AIRL.GROUP SA	IBEX 35	Spain	2011
OBRASCON HUARTE LAIN SA	IBEX 35	Spain	2011
PROMOTORA DE INFIC.SA	IBEX 35	Spain	2011
PROSEGUR CIA.SECURIDAD	IBEX 35	Spain	2011
REPSOL YPF SA	IBEX 35	Spain	2011
SACYR VALLEHERMOSO SA	IBEX 35	Spain	2011
TECNICAS REUNIDAS SA	IBEX 35	Spain	2011
TELEFONICA SA	IBEX 35	Spain	2011
AEGEAN AIRLINES SA	ATHEX 20	Greece	2012
ALCO HELLAS SA	ATHEX 20	Greece	2012
ALUMIL ALUMINIUM IND.SA	ATHEX 20	Greece	2012
ANEK LINES SA	ATHEX 20	Greece	2012
ATH.WT.SUPP.& SEWAGE CO.	ATHEX 20	Greece	2012
ATHENA SA	ATHEX 20	Greece	2012
ATHENS MEDICAL CENTRE SA	ATHEX 20	Greece	2012
ATTICA HOLDINGS SA	ATHEX 20	Greece	2012
AUTOHELLAS SA	ATHEX 20	Greece	2012
CENTRIC HOLDINGS SA	ATHEX 20	Greece	2012
COCA COLA HBC AG	ATHEX 20	Greece	2012
CORINTH PIPE WORKS SA	ATHEX 20	Greece	2012
COSTAMARE INCO.	ATHEX 20	Greece	2012
CRETE PLASTICS SA	ATHEX 20	Greece	2012
GENERAL PARTNER LP.	ATHEX 20	Greece	2012
AER LINGUS GROUP PLC.	ISEQ	Ireland	2012
C&C GROUP PLC.	ISEQ	Ireland	2012
CRH PLC.	ISEQ	Ireland	2012
DCC PLC.	ISEQ	Ireland	2012
DRAGON OIL PLC.	ISEQ	Ireland	2012
ELAN CORPORATION PLC.	ISEQ	Ireland	2012
GLANBIA PLC.	ISEQ	Ireland	2012
GRAFTON GROUP PLC.	ISEQ	Ireland	2012
IRISH CONT.GP.PLC.	ISEQ	Ireland	2012
KENMARE RESOURCES PLC.	ISEQ	Ireland	2012
KERRY GROUP PLC.	ISEQ	Ireland	2012
KINGSPAN GROUP PLC.	ISEQ	Ireland	2012
PADDY POWER PLC.	ISEQ	Ireland	2012
RYANAIR HOLDINGS PLC.	ISEQ	Ireland	2012
SMURFIT KAPPA GROUP PLC.	ISEQ	Ireland	2012
TOTAL PRODUCE PLC.	ISEQ	Ireland	2012
UDG HEALTHCARE PUB.LTD.	ISEQ	Ireland	2012
ALTRI SGPS S A	PSI-20	Portugal	2012
BRISA-AUTSDS.DE PORTUGAL	PSI-20	Portugal	2012
CMTS.DE PORTL.SGPS SA	PSI-20	Portugal	2012
CORTICEIRA AMORIM SA	PSI-20	Portugal	2012
EDP ENERGIAS DE PORTL.SA	PSI-20	Portugal	2012
EDP RENOVAVEIS	PSI-20	Portugal	2012
GALP ENERGIA SGPS	PSI-20	Portugal	2012
JERONIMO MARTINS SA	PSI-20	Portugal	2012
MOTA ENGIL SGPS SA	PSI-20	Portugal	2012
PORTUCEL EMPRESA	PSI-20	Portugal	2012
PORTUGAL TELECOM SGPS SA	PSI-20	Portugal	2012
REN	PSI-20	Portugal	2012
SOARES DA COSTA SA	PSI-20	Portugal	2012
SONAE CAPITAL	PSI-20	Portugal	2012
SONAE COM SGPS SA	PSI-20	Portugal	2012
SONAE INDUSTRIA SGPS SA	PSI-20	Portugal	2012
SONAE SGPS SA	PSI-20	Portugal	2012
ZON MULTIMEDIA SA	PSI-20	Portugal	2012
ABENGOA SA	IBEX 35	Spain	2012



ABERTIS INFSTS.SA	IBEX 35	Spain	2012
ACCIONA SA	IBEX 35	Spain	2012
ACERINOX SA	IBEX 35	Spain	2012
ACS ACTIV.CONSTR.Y SERV.	IBEX 35	Spain	2012
AMADEUS IT HOLDING SA	IBEX 35	Spain	2012
DISB.INTNAC.DE AMEN.SA	IBEX 35	Spain	2012
EBRO FOODS SA	IBEX 35	Spain	2012
ENDESA SA	IBEX 35	Spain	2012
FERROVIAL SA	IBEX 35	Spain	2012
FOMENTO CONSTR.Y CNTR.SA	IBEX 35	Spain	2012
GAMESA CORPN.TEGC.SA	IBEX 35	Spain	2012
GAS NATURAL SDG SA	IBEX 35	Spain	2012
GRIFOLS SA	IBEX 35	Spain	2012
IBERDROLA SA	IBEX 35	Spain	2012
INDRA SISTEMAS SA	IBEX 35	Spain	2012
INTL.CONS.AIRL.GROUP SA	IBEX 35	Spain	2012
OBRASCON HUARTE LAIN SA	IBEX 35	Spain	2012
PROMOTORA DE INFIC.SA	IBEX 35	Spain	2012
PROSEGUR CIA.SECURIDAD	IBEX 35	Spain	2012
REPSOL YPF SA	IBEX 35	Spain	2012
SACYR VALLEHERMOSO SA	IBEX 35	Spain	2012
TELEFONICA SA	IBEX 35	Spain	2012