The effects of Global Financial Crisis on the Value Relevance of accounting information: Portuguese evidence

A Master in Finance Dissertation

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Abstract

This study presents two main research goals since it addresses two different areas of research, value relevance and its association with the Global Financial Crisis. Firstly, we investigate whether accounting information is value relevant in Portugal for the period 2002-2012. We found that the accounting information of listed Portuguese companies is value relevant throughout the investigation period. Secondly, the aim of the study is to examine whether and how value relevance phenomenon has been affected by Global Financial Crisis. Our results suggest that indeed this event impacted the value relevance of Portuguese accounting information. Additionally, we observed that book value is value relevant before and after the Global Financial Crisis, which suggest that, under extreme circumstances, share’s market prices are highly correlated with the information content in book value because it is seen as a proxy for an abandonment option.

Regarding the earnings, we concluded that, before the crisis they were irrelevant in explaining stock prices. This may be due to the increasing euphoria that usually affects investors in the years before a crash, when the market is going up, which make them believe in huge profits regardless of current accounting information, in this case, earnings.

However, earnings became value relevant after the Global Financial Crisis. This finding can be explained by the fact that balance sheets lack information regarding the long term ability of companies creating future earnings after turbulent times. Therefore, investors believe that the future growth of a company is better reflected in earnings.

Key-words: Value relevance, earnings, book value, global financial crisis, stock prices, Portugal

JEL-Codes: G01; G10; G14; M41.
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1. Introduction

The present study has two main research goals since it addresses two different areas of research, value relevance of accounting information - which is defined by the “empirical relation between stock market values (or its changes) and a particular accounting numbers” (Holthausen and Watts, 2001) - and its association with the Global Financial Crisis.

Despite the increasing number of studies conducted in the value relevance field since the works of Ball and Brown (1968) and Beaver (1968), value relevance, as well as its changes over time, is still not a consensual fact.

Indeed, there has been concerns about whether accounting information is losing value relevance over time due to the incapacity of financial reporting systems to understand the change of the business environment (Lev and Zarowin, 1999), i.e., the increasing number of companies from the so-called New Economy, which is more related with intensity of intangibles due to the transition “from an industrialized economy to a high-tech, service-oriented economy” (Collins et al., 1997).

However, many academics, such as Collins et al. (1997), Ely and Waymire (1999) and Francis and Schipper (1999), concluded that value relevance did not decrease over time, even after taking into account the increased intangible intensity across time (Francis and Schipper, 1999).

Therefore, firstly, we intend to investigate whether accounting information is value relevant in Portugal for the period between 2002 and 2012. To accomplish this goal, we will apply the valuation framework presented in Ohlson (1995). We will focus on earnings and book value as representatives of accounting information because they are the primary summary measures of the income statement and balance sheet, respectively (Barth et al., 1998), and are the most common explanatory variables used in value relevance tests.

This topic should be of high interest to investors as they use financial statements as main source of information to take important investment decisions, evaluate equity and predict future value of shares. Hence, it is crucial for investors to know how far this information explains the changes in stock prices and returns. Furthermore, it is also
relevant to other economic agents such as creditors, customers, the government, or other stakeholders that take economic decisions based on such information.

Moreover, value relevance of accounting information is a necessary condition for stock market growth (Oyerinde, 2011). So, the value relevance of financial statements is proof of the quality of accounting standards, accounting practice and maturity of local stock market (Klimczak, 2009).

Secondly, the study aims to examine the consequences of the Global Financial Crisis on value relevance of accounting information.

Empirical evidence from the 1997 Asian crisis, 1994 Mexican currency crisis, Brazilian crisis and Global Financial Crisis seems to corroborate the hypothesis that value relevance is affected by such events.

Additionally, Barth *et al.* (1998) document a value relevance transition from earnings to book value, as financial health decreases. This is observed because, in this particular case, book value reflects liquidation value and earnings reflect unrecognized net assets. Based on this study, majority of existing literatures in turbulent events document a value relevance shift from earnings to book value when comparing the in-crisis period against its preceding phase (Costa *et al.*, 2012; Davis-Friday *et al.*, 2006; Davis-Friday and Gordon, 2005; Graham *et al.*, 2000).

However, empirical evidence on the effects of Global Financial Crisis found an increase in the value relevance of earnings (Beisland, 2013; Bepari *et al.*, 2013; Devalle, 2012; Madeira, 2010) in the period after the crisis while book value keeps its strong relevance after such event (Beisland, 2013; Madeira, 2010).

Therefore, we address two primary questions about this topic, whether value relevance phenomenon has been affected by this turbulent event and on how it was affected. Those aims are worth considering since we will provide evidence on the robustness of Portuguese accounting information to turbulent times and the level of confidence of investors in the regulators authorities after all the cases of misleading information released by companies before the Global Financial Crisis. Moreover, the scope of this study should be useful to regulators since it assess the quality of accounting data under extreme circumstances.

We will extent the work of Barth *et al.* (1998) with companies in financial distress to examine value relevance in a financial crisis scenario. We will apply the
valuation model presented in Davis-Friday et al. (2006), which is based on Barth et al. (1998).

During this investigation, we must take into consideration the effects of the adoption of the International Financial Reporting Standards (IFRS) by Portugal in 2005. Indeed, since it influences value relevance of accounting information, it is important to comprehend how it has affected it.

To conclude, the choice of the investigation period and firms’ sample, along with the effects of Global Financial Crisis in value relevance of accounting information, which, in Portugal, has not been subject to extensive investigations, will allow this research to be different from previous studies and fulfills an important gap in existing value relevance literature.

Indeed, the goal is to extend prior research in USA to contribute to the existing debate of value relevance, and add empirical evidence to value relevance tests outside USA. This lack of evidence is even more evident in Portugal. In fact, this study uses a useful alternative data source to the much studied US market since Portuguese market differs in terms of size, financial reporting and other institutional particularities.

Moreover, this study aims to contribute to the visible lack of empirical evidence about the effects of Global Financial Crisis on value relevance. In fact, the change of studying a period of five years after this event strengthens this investigation, when compared to previous studies from the end of the years two thousand.

The remainder of this dissertation proceeds as follows. In section 2 the literature review is presented, section 3 describes the research design, section 4 contains the empirical results and their discussion and, finally, section 5 concludes.
2. Literature Review

This chapter contains the relevant literature review for this research and is organized as follows. Section 2.1 includes the relevant definitions of Value Relevance of accounting information, in section 2.2 the importance of studying this topic is presented, in section 2.3 the factors affecting value relevance are pointed out, section 2.4 contains the general value relevance studies on stock markets. Section 2.5 includes the state of art of value relevance in Portugal and, finally, section 2.6 describes the studies of value relevance in financial crisis scenarios.

2.1. What is Value Relevance?

Value Relevance concept is defined “as the ability of financial statement information to capture and summarize information that affects share values and empirically tested as statistical association between market values and accounting values” (Hellstrom, 2006).

In fact, accounting numbers, such as earnings and book value of equity, are defined as value relevant whether they are useful in explaining market value of the company.

Additionally, according to Holthausen and Watts (2001), value relevance can be defined by the “empirical relation between stock market values (or it changes) and a particular accounting numbers”. Value relevance studies are designed to assess whether particular accounting figures reflects information, which is used by investors in valuing firms’ equity (Barth et al., 2001). The more correlated the information is with market prices or returns, greater value relevance they are considered to possess.

2.2. Importance of studying Value Relevance

Firstly, this issue is of high interest to investors since they are the main users of financial statements. They analyze accounting information in order to take important investment decisions, evaluate equity, predict future value of shares or estimate costs of capital. Hence, it is crucial for investors to know if and how this information explains the changes in stock prices and returns. Furthermore, it is also relevant to other economic agents such as creditors, customers, the government, academics, regulators or
other stakeholders and market participants that take economic decisions based on such information. In fact, “one of the most important goals of financial reporting is to assist investors and other stakeholders in the valuation of companies” (Beisland, 2013).

Moreover, value relevance of accounting information is a necessary condition for stock market growth (Oyerinde, 2011). So, if financial statements are value relevant, it is proof of the quality of accounting standards, accounting practice and maturity of local stock market (Klimczak, 2009).

Francis et al. (2004) determined 7 attributes that define the quality in accounting information: accrual quality, persistence, timeliness, predictability, smoothness, conservatism and value relevance. They consider the latter as the most important attribute.

Also, study the value relevance of a market allows us to measure its level of efficiency. In fact, an informational efficient market can be defined as “one in which prices always fully reflect available information” (Fama, 1970), and, by studying the value relevance of that information we can assay the degree of market efficiency.

Secondly, studying this topic under special extreme circumstances, as the Global Financial Crisis, permit us to understand how and in what extend it has affected accounting quality and the confidence of economic agents on the financial information released by companies. In fact, there is evidence that managers disclosed, intentionally, misleading information to markets or delayed in revealing bad news in the last moments before the crash of several giant financial companies in 2007 in USA, or 2008 in Europe or Portugal. Therefore, through our study, we will observe how and whether the confidence of economics agents was affected by the financial scandals, bad supervision of legal authorities, intentional disclosure of misleading information, inside trading, and managerial abuses that lead us to the Global Financial Crisis.

Finally, the scope of this study should be useful to regulators since it assess the quality of accounting data under extreme circumstances.

### 2.3. Factors affecting Value Relevance

There are different factors that can affect the credibility of the financial reporting (Dyckman, 1988). One is the diversity of accounting practices over time and across countries. In fact, “differences in accounting practices across countries are a major
concern to investors, accounting standard setters, stock exchanges and financial analysts”, claim Graham and King (2000). Therefore, such diversity renders the interpretation of financial statements harder, which may affect companies and capital markets (King and Langli, 1998)

Moreover, empirical evidence suggests that international accounting standards contribute to an increase in the quality of information, which signifies credible and value relevant financial reporting to users.

Additionally, Ali and Hwang (2000) concluded that value relevance is lower for companies of countries with bank-oriented financial systems, which signifies that capital is more concentrated since few banks provide all the capital required by the organizations. Secondly, they concluded that in countries in which private sector entities are not involved in the standard setting process, value relevance is also lower. In this case, is the government who sets the rules so, the problem is that they are defined to satisfy legal purposes instead of investors’ necessities. Furthermore, value relevance is greater in countries that adopt the Anglo-Saxon model and lower for those related with the Continental model.

The characteristics of capital markets and ownership structure are crucial for those models. The countries of Anglo-Saxon influence are related with high market efficiency and dispersed ownership structure (Silva et al., 2006), which is in accordance with the idea that market inefficiencies negatively affect value relevance (Aboody et al., 2002). In contrast, the countries that use the Continental Model are associated with an illiquid capital market and a concentrated ownership structure (Silva et al., 2006). This evidence is consistent with Lopes (2002) who found that the very concentrated ownership in Brazilian companies reduces value relevance of earnings.

Additionally, Ali and Hwang (2000) found two more factors that influence value relevance. In fact, it is lower when tax rules affect financial accounting measurements, and higher when there exist more expenses associated with external auditing.

Nevertheless, those factors are correlated. Countries of Continental model influence have bank oriented financial systems, spend less on external auditing services and tax rules have a greater influence on financial accounting measures. All those characteristics are associated with lower value relevance of accounting information.
Another factor that affects the value relevance is that, book values, in the presence of losses – or when earnings include special items -, are more value relevant than earnings (Basu, 1997; Collins et al., 1997; Elliott and Hanna, 1996; Hayn, 1995).

Moreover, the type of firms also affects value relevance. In fact, technological firms have significant costs with intangible assets, i.e., R&D, which highly affects short-term earnings (Cañibano et al., 1999), and, consequently, their explanatory power. Therefore intensity of intangibles suggests that financial information has lower or negligible value relevance for investors (Amir and Lev, 1996). This decline is due, in part, according to Lev and Zarowin (1999), “to the inadequate financial reporting of intangibles and particularly US accounting requirements for the immediate expensing of these items”.

Also, the size of firms influences value relevance. The inclusion of small or startup firms in Compustat, causes a shift of value relevance from earnings to book value. This occurs because their value is more related with future earnings than current ones, which are not a good proxy for future results (Collins et al., 1997). Moreover, book value may be seen as abandonment option for those firms, which augments its value relevance (Berger et al., 1996), or due to the increased likelihood of them having losses, which affect earnings, as documented previously.

2.4. Value Relevance on stock markets

Over time, there have been many academics that studied the relationship between accounting information and changes in stock prices and returns. Most of the studies are conducted in developed capital markets, mainly USA. However, recently, several studies for value relevance of financial information have been made in emerging economies.

There are authors that defend that accounting information has lost its value relevance over periods of time (Lev and Zarowin, 1999) while others argue it has not (Collins et al., 1997; Ely and Waymire, 1999; Francis and Schipper, 1999).

2.4.1 Developed stock markets

Ball and Brown (1968) were pioneers in relating stock prices and information presented in financial statements. They found that positive earnings are value relevant in
USA. At the time, their work showed that accounting was more than a ritual and that it was important to investors.

In the same year, Beaver (1968) analyzed the reaction of investors to earnings announcements to find if they had informational value. The author used a sample of annual earnings announcements disclosure by 143 companies listed in the New York Stock Exchange for the period between 1961 and 1965. He concluded that earnings announcement altered the expectations of investors about the firm and, in consequence, share prices adjusted.

Ohlson (1995), in which is a crucial moment in the value relevance field, presented a very important valuation model expressing stock price as a function of book value and earnings. This model has been widely used in value relevance investigations since that moment.

Based on that model (Ohlson, 1995), Collins et al. (1997) assessed the value relevance of financial statements of firms from NYSE, AMEX and NASDAQ for the period from 1953 until 1993. They found that the value relevance of earnings and book value, in combination, did not decrease during the analyzed time period, as found later by Ely and Waymire (1999) and Francis and Schipper (1999), but in fact increased slightly. Additionally, the authors documented a decrease in the incremental value relevance of earnings and an increase of book value, which is also in line with Francis and Schipper (1999) study. The supremacy over time of book value against earnings is due to the “increased frequency of negative earnings and changes in average firm size and intangible intensity across time” (Collins et al., 1997). In fact, the relationship between stock market values and earnings is reported as weak over time (Lev, 1989).

Following this subject, Francis and Schipper (1999) studied the value relevance of financial statements between 1952 and 1994 for the companies from the NYSE, AEX and NASDAQ. Their conclusions were consistent with Collins et al. (1997). They found that value relevance did not decline for this period. Moreover, it was concluded that incremental value relevance of earnings decreased while the incremental value relevance of book value increased. However, the authors did not find differences in value relevance between companies with different technology intensity, which is not consistent with previous studies, such as Amir and Lev (1996) and Collins et al. (1997).
As documented, book value and earnings are the most used accounting figures in value relevance tests. The book value of equity is the current financial position and illustrates companies’ past performance. Accounting earnings are crucial to predict the future and a measure of firm performance to many different users (Dechow, 1994). The academics focus on those variables since they are the primary summary measures of the balance sheet and income statement, respectively (Barth et al., 1998).

However, some studies analyze dividends in the place of, or in combination with, earnings because, when they are transitory, dividends could be considered as a more reliable proxy of permanent earnings.

Bernard (1995) was one of the first in testing their value relevance. He studied the USA market between 1978 and 1993 and found that the value relevance of accounting variables is greater than dividends. Moreover, Hand and Landsman (2005) found that dividends have information content, mainly in case of transitory earnings.

Brief and Zarowin (1999) used the Ohlson model (Ohlson, 1995) with some modifications and compared the value relevance of book value and dividends against book value and earnings. They concluded that book value and dividends have almost the same explanatory power than book value and earnings. Furthermore, when earnings are transitory, dividends are more value relevant than them. However, book value and earnings have about the same explanatory power than book value and dividends. Finally, their main contribution to existing literature is that, in case of transitory earnings, and when book value is a poor measure of value, dividends have the greatest value relevance among the three variables. Book value can be a poor indicator of value due to the presence of unrecognized assets.

Others such as Livnat and Zarowin (1990) included the explanatory power of cash flows in their investigations based on the fact that they can also be seen as primary information in financial statements (Gee-Jung, 2009). They assessed the information content of components of cash flows from operating, financing and investing activities and found that the first two are value relevant beyond earnings.

Moreover, Charitou et al. (2000), in their study for the Japanese market between 1984 and 1993, concluded that, firstly, cash flows have explanatory power beyond earnings and, secondly, cash flows’ value relevance increases when earnings are transitory. Through this study it was found that Japanese investors, as the American,
“utilize earnings and cash flows in their pricing of equities” (Charitou et al., 2000). Black (1998) concluded that, in mature businesses, earnings have greater value relevance than cash flows, however the opposite happen in startups firms or in companies in declining stage.

Lev and Zarowin (1999) documented a reduction in the value relevance of earnings, book value and cash flows between 1978 and 1996 in USA. They concluded that the reduction were stronger in companies with high intensity of R&D and was caused by an inadequacy of the financial reporting system to understand the change of the business environment.

Finally, Amir and Lev (1996) assessed the value relevance of accounting and nonfinancial information of the wireless communications companies. They found that earnings, book value and cash flows are negligible in explaining stock prices behavior for this type of companies. However, nonfinancial information such Market Penetration and POPS, a growth proxy, have high explanatory power. Therefore, they concluded that for this type of companies, i.e., firms related with intensity of intangibles assets, accounting information is negligible in explaining stock returns.

2.4.2 Emerging stock markets

Recently, several studies on value relevance of financial information have been made in emerging economies. This type of market, due to its characteristics, suggests, in theory, less pricing efficiency. Indeed, because of variety of market problems and limited and unreliable sources of information when compared with developed economies, stock prices may fail to reflect information (Lopes, 2002). Thus, it is plausible to assume that in transitional economies, value relevance is lower than in developed and mature markets. Nevertheless, we should expect it to increase due to the path of such economies from emerging to developed capital markets (Hellstrom, 2006).

Lopes (2002) analyzed the value relevance of the accounting numbers throughout the period from 1995 to 1999 in Brazil. Using the Ohlson model (Ohlson, 1995), he found that book value is more value relevant than earnings. However, he concluded that for technological firms, financial statements are more value relevant than for traditional companies. Those results are contrary to other studies that found greater value relevance of financial reporting in more traditional firms (Amir and Lev, 1996;
Collins *et al.*, 1997). This can be explained by the fact that Brazilian accounting system “allow a better representation of intangibles” (Lopes, 2002) than other accounting systems such as US-GAAP.

Al-Hares *et al.* (2012) investigated the explanatory power of book value, earnings and dividends in another emerging market, Kuwait. They observed that, between 2003 and 2009, book value and earnings possess a very similar explanatory power than book value and dividends, which is consistent with Brief and Zarowin (1999) results for USA market.

In South Korea, Gee-Jung (2009), between 1995 and 2005, concluded that book value has greater value relevance than earnings and cash flows, which by other side are more value relevant than earnings. Furthermore, book value and cash flows, in combination, contain greater value relevance than book value and earnings. Therefore, they crucially concluded that cash flows can be a reliable alternative to earnings in equity valuation.

Sharma *et al.* (2012) analyzed the value relevance of financial reporting from 2000 until 2008 in India. They found no value relevance of accounting information. This finding is consistent with Vishnani and Shah (2008), who also tested value relevance of 24 Indian companies.

Moreover, others such as Hellstrom (2006), Dobija and Klimczak (2010) and Filip and Raffournier (2010) studied emerging markets in Europe. In fact, there is little evidence on value relevance of accounting information on the new stock exchanges that emerged in Eastern and Central Europe after the fall of the Berlin Wall in 1989. Therefore, those new capital markets may be attractive to investors that already have diversified portfolios with stock traded on mature capital markets but are looking for new investment opportunities (Filip and Raffournier, 2010).

Hellstrom (2006) used a time period sample from 1994 to 2001 to test value relevance of accounting information for Czech Republic. She concluded that, comparing to firms of Sweden, a developed market, financial information of Czech companies were not so value relevant. Furthermore, during the time period analyzed, value relevance of earnings and book value increased, which signifies that the quality of accounting information were greater in 2001 than in 1994, as the author was expecting.
Dobija and Klimczak (2010) tested the value relevance of the Polish market from 1994 to 2008, and found a stable value relevance of earnings during the analyzed time period.

Finally, for the Bucharest Stock Exchange in Romania, Filip and Raffournier (2010) investigated the period from 1998 to 2004 in order to measure the value relevance of earnings and earnings changes. They found particularly high association between that accounting information and market returns.

### 2.4.3 Summary

Despite of the increasing number of studies conducted in the value relevance field since the works of Ball and Brown (1968) and Beaver (1968), value relevance, as well as its changes over time, is still not a consensual fact. Results are different depending on the investigation period, methodology, differences in accounting system and development stage of capital market analyzed.

Indeed, there has been concerns about whether accounting information is losing value relevance over time due to the incapacity of financial reporting systems to understand the change of the business environment (Lev and Zarowin, 1999), i.e., the increasing number of companies from the so-called New Economy, which are more related with intensity of intangibles due to the transition “from an industrialized economy to a high-tech, service-oriented economy” (Collins et al., 1997).

However, many academics such as Collins et al. (1997), Ely and Waymire (1999) and Francis and Schipper (1999) concluded that value relevance did not decrease over time, even after taking into account the “increased frequency of negative earnings and changes in average firm size and intangible intensity across time” (Collins et al., 1997).

Nevertheless, empirical evidence from emerging and developed stock markets seems to illustrate that, although earnings and book values are value relevant, they are moving in opposite directions in terms of explanatory power.

Moreover, also cash flows and dividends appear to possess value relevance, mainly in case of transitory earnings. In this particular case, they are seen as a reliable source for equity valuation purpose.

Appendix 1 summarizes the major findings from the value relevance studies presented in section 2.4.1 and 2.4.2.
2.5. Value Relevance in Portugal

2.5.1 The particularities of the Portuguese stock market

The Portuguese stock market can be described as rather small, illiquid and less efficient in comparison to America’s, which is the base of the majority of the studies depicted in previous chapters, as well as in comparison to the stronger European economies, as Germany, France or UK.

Indeed, in Portugal, prevails the Continental model of corporate governance, which, as mentioned previously in section 2.3, is associated with an more illiquid capital market, concentrate ownership structure, bank-oriented financial system, reduced spends in external auditing and greater influence of tax rules on financial accounting measures.

Furthermore, Portugal is a code-law country. According to Faccio and Lang (2002), in this type of countries, firms are family controlled while, for the companies of common-law countries, as USA or UK, the ownership is widely dispersed. Also, in countries similar to Portugal, the state controls a significant proportion of firms, especially the largest, as well as the banks, which also play a key role in providing finance. That defines the ownership of Portuguese listed companies: their property is shared between banks, firms, state and families. Moreover, “the majority of companies listed in the Portuguese stock market have a small free-float which also contributes to titles short liquid” (Trabucho, 2007).

Additionally, La Porta et al. (1997) found that for code law countries as Portugal, minority investors have weak protection when compared to common law countries - which have strong protection - and can lead to managerial abuses. Morck et al. (2005) confirm that one consequence of the strong concentration of ownership of listed companies is the presence of agency costs between majority and minority shareholders.

However, over time, Portuguese accounting system, which as the bases of the Continental European legal system, “has become increasingly permeable to the Anglo-Saxon influence” (Trabucho, 2007), which should be related with greater value relevance.
2.5.2 The adoption of the IASB accounting standards

Before 2005, Portuguese listed companies were obliged to apply local standards known as *Plano Oficial de Contabilidade* and *Directrizes Contabilisticas*.

After 2005, with the aim to enhance and harmonize financial statements, the International Accounting Standards Board - henceforth IASB – required companies from all member-countries in Europe, to implement the accounting standards known as International Financial Reporting Standards (IFRS). The period of adoption to those new norms finished in the end of 2008 and are, since then, mandatory to all the public and non-public medium and large companies of member-countries.

As mentioned in section 2.3, one factor that negatively affects value relevance is the diversity of accounting practices over time and across countries (Graham and King, 2000; King and Langli, 1998). Therefore, according to Morais and Curto (2008), the aim of IASB was to create a “single set of high quality accounting standards” in order to improve the understanding, comparability, confidence and relevance of financial statements to economic agents across time and countries.

Since most of the member countries were based on code-law type accounting framework, the adoption of those standards brought significant changes in their accounting regulation. In fact, IFRS are based on common-law accounting standards, which, according to Ball et al. (2000), provide financial statements of higher quality.

However, empirical evidence on the quality of accounting standards does not provide completely clear evidence on the success of adopting those standards. However, general empirical evidence, mainly regarding European markets, suggests an improvement in the value relevance of accounting information after the adoption of those standards.

In fact, Barth et al. (2008) found that for companies of 21 countries, after IFRS adoption, the value relevance increased when compared to the firms that did not adopt them.

This finding is in line with others more specific studies. Indeed, authors as Iatridis and Dalla (2011), Iatridis (2010), Paglietti (2009), Gjerde et al. (2008) and Bartov et al. (2005) reached the same conclusion for the Greek, British, Italian, Norwegian and German market, respectively.
However, there are authors who found a decrease in the value relevance after the adoption of international accounting standards. For instance, Eccher and Healey (2003) found that the accounting information of Chinese companies following local standards were more value relevant than the firms based on international accounting standards.

Regarding the Portuguese stock market, Morais and Curto (2008) found a decrease in the value relevance of accounting information after the adoption of the IASB standards. However, the authors were reluctant in accepting this finding. In fact, they pointed out two main justifications for the unexpected result: the differences in the samples (72 observations for the period before the IFRS adoption against 212 for the period after) and the fact that the period considered as after the IFRS adoption may be seen as a transition phase, which should not be considered as a reliable sample. Moreover, Oliveira et al. (2010) found a decline in the value relevance of earnings after the adoption of IFRS.

Contrary to the findings of Morais and Curto (2008), Alfaiate (2012) observed a positive impact after the adoption of IFRS norms. In fact, she found that book value is relevant in both periods whereas earnings are relevant only in the phase after the adoption of the IASB accounting standards, which is not in line with Oliveira et al. (2010).

2.5.3 Value relevance studies

Value Relevance of accounting information has not been subject of extensive research in Portugal. In fact, the majority of value relevance studies in Portugal target the adoption of the IASB accounting standards.

One study worth considering is Trabucho (2007), who studied the value relevance of Portuguese accounting information between 1988 and 2003 by using the Ohlson model (Ohlson, 1995). He found that accounting information has an interesting level of value relevant and that book value is more relevant than earnings. Furthermore, he also observed a decrease in the general value relevance over time due to changes in business environment – increasing number of technological firms - and upward trend of negative earnings throughout the investigation period. Those findings are in line with Lev and Zarowin (1999) for the US market.

Moreover, Trabucho (2007) concluded that, albeit dealing with a undeveloped capital market, the level of value relevance was very expressive. Although the value
relevance was lower when compared to other more developed markets and market-oriented accounting system, the author highlighted the interesting level of organization and influence of international accounting standards of Anglo-Saxon influence in the Portuguese accounting rules.

In another study, Oliveira et al. (2010) found that net earnings and other variables are value relevant for the period 1998-2008.

2.6. Value Relevance in financial crisis scenarios

It is documented that companies’ financial health affects value relevance of their accounting information (Barth et al., 1998). Furthermore, it is common that during turbulent times, firms have losses and reductions in their market value.

In this line of reasoning, there are many academics that study the effects of financial crisis in value relevance of accounting information to understand its impact and consequences.

Graham et al. (2000) analyzed the impact of the 1997 Asian financial crises and consequent devaluation of the bath in Thailand. Their results suggest that the value relevance of financial statements decreased after 1997. However, they found an increase in the value relevance of book value along with a decrease in the value relevance of earnings, which is consistent with the expectations of Barth et al. (1998), who defend a shift in value relevance from earnings to book value as financial health decreases. Furthermore, Ho et al. (2001) examined Korean firms between 1995 and 1998. They tested earnings, book value and cash flows and found a decline in their value relevance in the 1997 Asian in-crisis period. However, unexpectedly, they documented a decline in the incremental value relevance for earnings along with a stable value relevance of book value, i.e., book value does not compensate for the loss in the information content of earnings.

Also, Davis-Friday et al. (2006) tested the value relevance of earnings and book value in Indonesia, South Korea, Malaysia and Thailand for the period 1996-1997. They found that, for Malaysia, both book value and earnings decreased while in South Korea they kept stable. Moreover, in Indonesia and Thailand, value relevance of book value increased whereas for earnings decreased.
Davis-Friday and Gordon (2005) analyzed the impact of the 1994 Mexican currency crisis in regard to the value relevance of earnings, book value and cash flows, in México, for the period interval from 1992 to 1997. They found that the coefficient on book value did not significantly change in the in-crisis phase, while its explanatory power increased. Moreover, they concluded that the valuation coefficient and the explanatory power of earnings decline during the crisis period. However, the decrease in the valuation and explanatory power of earnings was due to the presence of negative earnings. In fact, after controlling for negative earnings, the coefficient on earnings remained significant during the crisis period. Those findings are inconsistent with Graham et al. (2000) and Ho et al. (2001) who concluded that the value relevance of earnings decreases even after controlling for negative earnings.

Costa et al. (2012) analyzed Brazilian companies between 1997 and 2010 and found that book value became more value relevant after financial crisis while the opposite happened to earnings.

Regarding the effects of a turbulent event such as the Global Financial Crisis, which has global consequences, on value relevance, there is little evidence since it is a recent event (Beisland, 2013). However, there are some studies worth considering that already focused on the value relevance of accounting information during the Global Financial Crisis.


For Norway, Beisland (2013) concluded that book value is not impacted by trouble times, i.e., we keeps value relevant. Regarding the earnings variable, he found an increase in its value relevance after the Global Financial Crisis.

Bepari et al. (2013) analyzed the Australian market between 2004 to 2009 to determine how Global Financial Crisis affected the value relevance of earnings and cash flow for operations (CFO). The findings suggest that the value relevance of earnings increased and that of CFO decreased during the Global Financial Crisis.

Madeira (2010) studied the effect of the subprime in the relevance of accounting information for six European stock markets including the main Portuguese stock index known as PSI-20. He found that the accounting information for the period 1998-2008
for those companies were value relevant as well as an increase in their relevance in the period after the Subprime. Moreover, he concluded that the explanatory power of earnings was higher than the book values’. However, the model applied by Madeira (2010) is very simple and the sample considered as period after the subprime is of just one year, 2008. Therefore, the results should be analyzed carefully.

In summary, majority of empirical evidence suggests that value relevance is affected by turbulent events. Appendix 2 contains the summary of the findings of this section.
3. Research Design

This chapter contains the research design of this investigation and is organized as follows. Section 3.1 includes the research hypothesis of this paper, and in section 3.3 the empirical models are presented and depicted.

3.1. Research hypothesis

Barth et al. (1998) claim that balance sheet and income statement provide information relevant to equity valuation, i.e., that book value and earnings are value relevant, respectively. In fact “one of the most important goals of financial reporting is to assist investors and other stakeholders in the valuation of companies” (Beisland, 2013).

So, it is of high importance to know if accounting information is value relevant since it is used by several different market participants, such as investors, creditors, customers, the government, academics, regulators or other stakeholders.

Therefore, hypothesis #1 is presented:

**Hypothesis #1**

“Accounting information is value relevant in Portugal between 2002 and 2012”.

Furthermore, this research aims to assess the consequences of the Global Financial Crisis on value relevance of accounting information.

Empirical evidence on the effects of Global Financial Crisis found an increase in the value relevance of earnings (Beisland, 2013; Bepari et al., 2013; Devalle, 2012; Madeira, 2010) in the period after the crisis while book value keeps its value relevance in the period considered as after (Beisland, 2013; Madeira, 2010).

Thus, since our study addresses the Global Financial Crisis, our hypothesis are framed based on the findings concerning this event. As result, Hypothesis #2 and Hypothesis #2a are framed as follows:

**Hypothesis #2**

“The Global Financial Crisis affected value relevance of accounting information in Portugal”

**Hypothesis #2a**
“The Global Financial Crisis caused an increase in the value relevance of earnings while book value kept value relevant in the post-crisis period, in Portugal”

Although the financial crisis started in USA in 2007 after the Subprime loan bubble, in this dissertation 2008 is chosen as the year of the Global Financial Crisis since it was when the main effects appeared in Europe. Therefore, we consider 2002-2007 as the preceding period of financial crisis and, 2008-2012, as the turbulent phase.

3.2. Empirical models

To conduct the empirical test about the Hypothesis #1, the Ohlson model (Ohlson, 1995) will be estimated for the period from 2002 until 2012, using the Generalized Least Square method for panel data. The model relates the book value per share and earnings per share with the dependent variable, the market value of equity, i.e., share’s price.

We opted to estimate Generalized Least Square regressions in order to control the specificities of which company.

The overall model equation is:

\[ P_{it} = \beta_{0i} + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + e_{it} \]  \hspace{1cm} (3, 1)

In this model, \( \beta_{0i} \) stands for all the firm specifics non observed effects, \( P_{it} \) denotes the share price of company i three months after the fiscal year-end t, \( EPS_{it} \) represents the earnings per share of company i in year t, and \( BVPS_{it} \) stands for book value per share of company i at the end of year t. Moreover, Variable \( \beta_{0i} \) is modeled as random effects.

Furthermore, to conduct our test for Hypothesis #2 and #2a, the model applied by Davis-Friday et al (2006) that has its origins in Barth et al. (1998) will be estimated using the Generalized Least Square method (henceforth GLS) for panel data.

\[ P_{it} = \beta_{0i} + \beta_1 D_t + \beta_2 BVPS_{it} + \beta_3 D_t * BVPS_{it} + \beta_4 EPS_{it} + \beta_5 D_t * EPS_{it} + e_{it} \]  \hspace{1cm} (3, 2)

In this model, \( \beta_{0i}, P_{it}, EPS_{it} \) and \( BVPS_{it} \) stands for the same as model 3.1, while \( D_t \) denotes a dummy variable that assumes zero and one for the period before and after
the Global Financial Crisis, respectively. Moreover, Variable $\beta_{0t}$ is modeled as random effects.

The inclusion of this dummy variable allows controlling the period before and after the Global Financial Crisis and the changes in the value relevance of book value and earnings caused by this event.
4. Empirical results and their discussion

This chapter contains the empirical results and discussion of this investigation and is organized as follows. Section 4.1 presents the data description, section 4.2 reports a preliminary analysis of our investigation, section 4.3 notes the results of hypothesis #1, section 4.4 contains the results of hypothesis #2 and #2a, and, section 4.4, includes the discussion of the results.

4.1. Data Description

The sample of the investigation includes panel data of 40 non-financial companies listed in the Euronext Lisbon between 2002 and 2012, which consists in 389 observations.

The data required for the empirical analysis was gathered in DataStream database of School of Economics and Management of University of Porto.

Table 1 presents the descriptive statistics of the data collected to this investigation (in Euros).

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Std.Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share’s price</td>
<td>3.050</td>
<td>2.060</td>
<td>2.914</td>
<td>0.020</td>
<td>18.39</td>
</tr>
<tr>
<td>BVPS</td>
<td>2.348</td>
<td>1.575</td>
<td>2.910</td>
<td>-4.601</td>
<td>18.75</td>
</tr>
<tr>
<td>EPS</td>
<td>-0.009</td>
<td>0.092</td>
<td>0.819</td>
<td>-8.243</td>
<td>2.891</td>
</tr>
</tbody>
</table>

We can state that the median company of this sample has a share price of 2.06€ with an earnings per share (henceforth EPS) of 0.092€ and book value per share (henceforth BVPS) of 1.575€.

Moreover, to deepen our analysis, table 2 and table 3 contain the descriptive statistics for the periods before and after the Global Financial Crisis, respectively.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Std.Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share’s price</td>
<td>3.479</td>
<td>2.540</td>
<td>2.867</td>
<td>0.097</td>
<td>18.39</td>
</tr>
<tr>
<td>BVPS</td>
<td>2.248</td>
<td>1.554</td>
<td>3.045</td>
<td>-4.601</td>
<td>18.75</td>
</tr>
</tbody>
</table>
Table 3 – Summary of descriptive statistics for the period 2008-2012 (in Euros)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Std.Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share’s price</td>
<td>2.637</td>
<td>1.537</td>
<td>2.906</td>
<td>0.020</td>
<td>14.60</td>
</tr>
<tr>
<td>BVPS</td>
<td>2.444</td>
<td>1.671</td>
<td>2.778</td>
<td>-2.021</td>
<td>15.72</td>
</tr>
<tr>
<td>EPS</td>
<td>-0.020</td>
<td>0.064</td>
<td>0.642</td>
<td>-4.157</td>
<td>1.123</td>
</tr>
</tbody>
</table>

Analyzing both tables, we can note that the median company in the period before the Global Financial Crisis, i.e., during the period 2002-2007, has a share price of 2.54€ with an EPS of 0.108€ and BVPS of 1.1554 €.

Comparing it with the period after the Global Financial Crisis, the median company in the phase 2008-2012 has a share price of 1.537€, EPS of 0.064€ and BVPS of 1.671€.

Therefore, we can state that, as expected, the median EPS decreased in the period after the turbulent event. This is due to the decline in the financial health of companies (Barth et al., 1998) caused by the Global Financial Crisis.

4.2. Preliminary analysis

Table 4 contains the correlation coefficients between share’s price and BVPS, share’s price and EPS, for three different periods, i.e., all the investigation period, from 2002 to 2007, and from 2008 until 2012.

Table 4 – Correlation coefficients between share’s price and BVPS, share’s price and EPS, for the periods 2002-2012, 2002-2007 and 2008-2012.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BVPS</td>
<td>0.43</td>
<td>0.39</td>
<td>0.49</td>
</tr>
<tr>
<td>EPS</td>
<td>0.24</td>
<td>0.22</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Analyzing these values, we can note the positive correlation between the dependent variable and independents variables for all the considered periods.

Furthermore, we can state preliminary an increase in the correlation between share’s price and BVPS and between share’s price and EPS in the period considered as...
after the Global Financial Crisis when compared to the phase before. Therefore, this seems to indicate a value relevance increase in the period after this turbulent event.

However, the correlation between EPS and share’s price seems weak in all the periods analyzed. Indeed, the correlation coefficients are compressed between 0.22 and 0.28, which suggest a weak correlation according to general opinion.

Moreover, we should note a moderate correlation between share’s price and BPVS in all the periods, mainly after the Global Financial Crisis.

4.3. Value Relevance in Portugal

We started our empirical study by testing the hypothesis #1 by estimating the model 3.1 using the GLS panel data method. The obtained results are presented in table 5.

<table>
<thead>
<tr>
<th>Table 5 - GLS Estimation Results for Hypothesis #1*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>2.194</td>
</tr>
<tr>
<td>(0.339)</td>
</tr>
<tr>
<td>BVPS</td>
</tr>
<tr>
<td>0.350***</td>
</tr>
<tr>
<td>(0.068)</td>
</tr>
<tr>
<td>EPS</td>
</tr>
<tr>
<td>0.245*</td>
</tr>
<tr>
<td>(0.138)</td>
</tr>
<tr>
<td>Joint significance Wald test</td>
</tr>
<tr>
<td>34.890***</td>
</tr>
<tr>
<td>(0.000)</td>
</tr>
</tbody>
</table>

* Based on 389 observations. Robust standard errors in parentheses. ***, *** denote significance at the 10, 5 and 1% levels, respectively. P-value of the Joint significance Wald test denote joint Wald test in parentheses.

The results show that the association between the independent and dependent variables is positive, i.e., both BVPS and EPS influence positively the value of shares.

Furthermore, by examining the p-values for both independent variables, we can state that they are statistically significant. In fact, BVPS is significant at a level of 1%, whereas the EPS are significant at a level of 10%. Thus, it can be inferred that BVPS and EPS are value relevant in the analyzed period.
4.4. Value Relevance and the effects of the Global Financial Crisis

To test the hypothesis #2 and #2a, we used the model 3.2, which differs from the model 3.1 due to inclusion of a dummy variable that permit us to understand the effects of the Global Financial Crisis in the value relevance of Portuguese accounting information.

Our findings are presented in table 6.

Table 6 - GLS Estimation Results for both Hypothesis #2 and #2a *

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crisis</td>
<td>-1.04***</td>
<td>(0.229)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.749</td>
<td>(0.358)</td>
</tr>
<tr>
<td>BVPS</td>
<td>0.337***</td>
<td>(0.073)</td>
</tr>
<tr>
<td>EPS</td>
<td>0.140</td>
<td>(0.142)</td>
</tr>
<tr>
<td>BVPS * Dummy crisis</td>
<td>0.041</td>
<td>(0.062)</td>
</tr>
<tr>
<td>EPS * Dummy crisis</td>
<td>0.387</td>
<td>(0.254)</td>
</tr>
</tbody>
</table>

Joint significance Wald test 67.600 ***
(0.000)

* Based on 389 observations. Robust standard errors in parentheses. ***, *** denote significance at the 10, 5 and 1% levels, respectively. P-value of the Joint significance Wald test denote joint Wald test in parentheses.

The results allow us to shed new light on the value relevance phenomenon and lead us to interesting conclusions.

Firstly, by observing that the coefficient associate to the crisis variable is negative and statistically significant at a level of 1% we can conclude that the crisis
negatively affects the value of shares and, *ceteris paribus*, their values decreased after this event.

Secondly, as expected, the addition of the dummy variable to control the period before and after the turbulent event leads us to the conclusion that BVPS is value relevant in the period before the crisis as well as in the period after this event. Moreover, before the Global Financial Crisis, an increment of the BVPS in 1€ would lead to an increase in the share price of 0.337€ on average, *ceteris paribus*. Summing the changes in the coefficient of BVPS due to the Global Financial Crisis, i.e., 4.1%, with the coefficient of this variable in the period before the event, 33.7%, we obtain a coefficient of BVPS after the Global Financial Crisis of 37.8%. This signifies that after this event, an increase of the BVPS in 1€ would lead to a greater increment of the share’s price when comparing it to the period before the crisis, 0.337€ against 0.378€ on average, *ceteris paribus*.

To estimate the p-value of the sum of those two coefficients, 37.8%, i.e., the p-value of the coefficient of BVPS after the Global Financial Crisis, we extended standard Davis-Friday *et al.* (2006) model by replacing BVPS and EPS variables by interaction terms of the dummy variable representing the period before the crisis and both BVPS and EPS.

Table 7 summarizes the results of our estimation.

<table>
<thead>
<tr>
<th></th>
<th>GLS Estimation Results for extension of standard model 3.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crisis</td>
<td>-1.04***</td>
</tr>
<tr>
<td></td>
<td>(0.229)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.749</td>
</tr>
<tr>
<td></td>
<td>(0.358)</td>
</tr>
<tr>
<td>BVPS * Dummy before Crisis</td>
<td>0.337***</td>
</tr>
<tr>
<td></td>
<td>(0.073)</td>
</tr>
<tr>
<td>EPS * Dummy before Crisis</td>
<td>0.140</td>
</tr>
<tr>
<td></td>
<td>(0.142)</td>
</tr>
<tr>
<td>BVPS * Dummy after crisis</td>
<td>0.338***</td>
</tr>
</tbody>
</table>

26
Thus, our results show a p-value of BVPS after the Global Financial Crisis of 0.000. Thus, we can state the strong significance of this independent variable in both periods, at a level of significance of 1%.

Regarding the EPS, our conclusions were very interesting. In fact, by adding the already mentioned dummy variable (table 6), which allow us to measure the effects of the Global Financial Crisis on the value relevance, we concluded that, in the period defined as before this event, earnings are not value relevant. We reached this conclusion by analyzing its p-value, which is 0.324, far from the limit of 0.1 to consider it value relevant.

However, regarding the period 2008-2012, we can note a meaningful increment in the coefficient that assess the effects of the Global Financial Crisis on EPS, i.e., 38.7%, when compared to the coefficient of EPS before this event, which is 14%. Therefore, we can state that the coefficient of EPS after the Global Financial Crisis is 52.7%. This means, that after the Global Financial Crisis, ceteris paribus, an increment of the EPS in 1€ would lead to an average increase of 0.14€ of the share’s price. However, due to the effects of the Global Financial Crisis, ceteris paribus, an augment of 1€ in the EPS would now lead to an increase of the share’s price in 0.527€, on average.

Therefore, observing the p-value of this coefficient (table 7), which is 0.033 we concluded that the EPS are statistical significant at a level of 5%, i.e., EPS are value relevant after the Global Financial Crisis.

Thus, hypothesis 2 and 2a are confirmed.

Those findings are summarized in table 8.
Table 8 – Summary of effects of the Global Financial Crisis on the value relevance

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BVPS</td>
<td>0.337</td>
<td>0.041</td>
<td>0.378</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>EPS</td>
<td>0.14</td>
<td>0.387</td>
<td>0.527</td>
<td>0.324</td>
<td>0.033</td>
<td></td>
</tr>
</tbody>
</table>

4.5. Discussion of the results

As we were expecting, accounting information of listed Portuguese companies between 2002 and 2012 is value relevant. This finding is in line with previous studies conducted for Portuguese market which documented a positive value relevance of accounting information (Madeira, 2010; Morais and Curto, 2008; Trabucho, 2007). Furthermore, in line with the investigation of Trabucho (2007), we found a very interesting association of book value and earnings with the market price. As mentioned in section 2.5.1, the characteristics of the Portuguese stock market are related with a less value relevant financial reporting when compared to countries of Anglo-Saxon influence as USA. Therefore, the expressive level of value relevance of the Portuguese market reflects the good regulatory environment and quality of accounting standards as well as its usefulness to investors and other market participants.

However, the findings concerning the effects of the Global Financial Crisis are not so straightforward to interpret due to the complexity of the research.

Firstly, we concluded that book value is value relevant before this event and keeps its value relevance after turbulent events. Therefore, we can state that, under extreme circumstances, share’s market price are highly correlated with the information content in book value because it is seen as a proxy for an abandonment option (Barth et al., 1998; Beisland, 2013; Berger et al., 1996). Thus, we concluded that balance sheet stills particularly useful for market participants during turbulent events.

Secondly, we concluded that earnings only become value relevant after the Global Financial Crisis. This fact can be explained by the increasing euphoria and irrationality that usually affects investors in stock markets in the years before a crash, when the market is going up, which make them believe in huge future profits regardless of current accounting information, in this case, earnings. Thus, investors may did not treat earnings as an indicator of future performance of companies, which explain its irrelevance in the phase 2002-2007.
The explanation for our results regarding the value relevance of earnings in the period after the Global Financial Crisis may lie in the fact that “book value lack information on the future growth potential of a firm, and this information is better reflected in earnings” (Beisland, 2013) even knowing that, earnings, during turbulent times are likely to contain transitory or unrecognized items.

Therefore, since the balance sheets lack information regarding the long term ability of companies creating earnings, income statements increases its value relevance and usefulness to investors after the crisis.

This conclusion is however contrary to the theory that, as financial health declines - which is more likely to happen in periods in which the economy performs poorly -, the value relevance of earnings decrease (Barth et al., 1998). Although this theory is confirmed in previous crisis, such as the 1997 Asian Crisis, the 1994 Mexican Currency Crisis or the Brazilian Crisis (Costa et al., 2012; Davis-Friday et al., 2006; Davis-Friday and Gordon, 2005; Graham et al., 2000), it is not observed in the studies conducted for the Global Financial Crisis, which may be due to the difference in accounting standards, data sample, investigation periods, improvement of accounting rules over time and wider consequences of this global event when compared to previous local crisis.

Our results also suggest that the adoption of the IASB accounting standards enhanced the Portuguese accounting system. In fact, Lopes (2002) found that under very concentrated ownership capital markets system, as Portugal, earnings are less value relevant. However, since the adoption of IFRS, Portugal is under influence of Anglo-Saxon accounting standards, which should be related to greater value relevance of accounting information (Ball et al., 2000) and better representation of earnings than Brazilian accounting rules. In fact, Alfaiaete (2012), for Portugal, found that earnings are only value relevant after the adoption of IASB accounting standards. Moreover, the majority of international studies found an increasing in the value relevance of accounting information after applying the IFRS (Barth et al., 2008; Bartov et al., 2005; Gjerde et al., 2008; Iatridis, 2010; Iatridis and Dalla, 2011; Paglietti, 2009).

Furthermore, empirical evidence concerning the US market suggests that the size and type of firms affects negatively the explanatory power of earnings. This signifies that the increasing number of small and startup firms, and technological companies in
the US database reduces the value relevance of accounting information due to the decrease of reported earnings. However, analyzing our data sample permit us to observe that it does not contain small or startup firms, or a significant number of technological firms with intensity of intangibles. Thus, this helps to comprehend better our findings.

In sum, the empirical evidence of this paper permit us to conclude that the Portuguese accounting system is robust and mature enough to face turbulent times. This proves the quality of Portuguese accounting information and the importance of balance sheets and income statement to market participants, under extreme circumstances.
5. Conclusions

The Global Financial Crisis that triggered in late 2007 in USA had wide world consequences. Its effects arrived in Europe in 2008, taking it to a severe economic recession phase. In fact, this crisis had dramatic effects on the European stock markets, mainly in countries of south Europe as Portugal. This fact presents an opportunity to examine the effects of this event in the value relevance of accounting information of Portuguese listed companies, contributing to this new topic of debate that for sure will be targeted of exhausting researches in further years. In fact, until now, this subject has not been target of severe investigations, and the existent literature is based on unbalanced investigations period, i.e., compare longs periods before crisis, in general five or six, against two or three years after this event. Therefore, this research presents a very interesting period of investigation, permitting the comparison of six years before the Global Financial Crisis against five years after this event, which states the contribute of this dissertation to the value relevance state of art.

Thus, this paper aims to fill that existing gap, as well as to contribute to the value relevance literature outside USA regarding general value relevance of accounting information.

Therefore, consistent with previous studies of value relevance for Portugal, as well as in developed and emerging capital markets, our results show that Portuguese accounting information has very interesting value relevance throughout the period 2002-2012. This result is in line with previous researches conducted in Portugal (Madeira, 2010; Morais and Curto, 2008; Trabucho, 2007). Based on these findings, we can state the good regulatory environment and quality of Portuguese accounting standards, which are increasingly influenced by Anglo-Saxon financial reporting standards.

In regard to the effects of the Global Financial Crisis in the value relevance of Portuguese listed firms, we concluded that the book value is value relevant before the Global Financial Crisis and keeps its strong relevance in the period after this event, as we were expecting based on previous studies (Beisland, 2013; Madeira, 2010).
Thus, we concluded that under extreme circumstances share’s price are highly correlated with the information content in book value because it is seen as a proxy for an abandonment option (Barth et al., 1998; Beisland, 2013; Berger et al., 1996).

Regarding the earnings, we found that this variable is not value relevant before the Global Financial Crisis. It is very likely that is due to the increasing euphoria and irrationality that usually affects investors in stock markets in the years before a crash, when the market is going up, which make them believe in huge profits regardless of current accounting information, which explain the irrelevance of this variable in the phase before the turbulent event.

However, we concluded that earnings are value relevant in the period considered as after the Global Financial Crisis. This is due to the fact that balance sheets lack information regarding the long term ability of companies creating earnings, which causes an increase in the usefulness of income statements if forecasting profitability after the crisis.

Therefore, we should highlight the importance and relevance of these findings, mainly in regard to the earnings variable. Indeed, our findings suggest that the increasing influence of Anglo-Saxon accounting standards in Portuguese and European financial reporting improves their value relevance as well as strengthen them to face turbulent events. Those results suggest a great maturity of Portuguese stock exchange and high quality of Portuguese financial reporting. In fact, studies conducted for Asian Crisis, 1994 Mexican currency crisis and several Brazilian turbulent events suggests that earnings always lose influence after those crisis. However, researches regarding the Global Financial Crisis in Europe prove the opposite, earnings increase their value relevance in trouble periods. This is the main contribution of this dissertation to the state of art of the effects of the Global Financial Crisis on value relevance of accounting information.

Furthermore, we must note that those findings are of high importance to a wide set of economics agents. Indeed, it is crucial for investors and other practitioners that take risky investment decisions based on such information. Moreover, they are important to standard setters, regulatory authorities, accounting investigators, the government, suppliers and a wide number of organizations and agents that take economic decisions based on accounting information deliver by those companies.
Finally, we should point out the limitations of this investigation. Indeed, this study focuses on a single country. Future studies should conduct cross-country examination of the impact of the Global Financial Crisis in the value relevance of earnings and book value, comparing countries more hardly affected by the crisis, as Greece or Spain, against countries like Germany or France, which faced smooth consequences due to their strong economies. Moreover, future researches should assess value relevance of other variables, as dividends and cash-flows. In fact, those variables appear to possess explanatory power, mainly in case of transitory earnings. In this particular case, they are seen as a reliable source for equity valuation purpose.
References


Costa, F., Reis, D., & Teixeira, A. (2012), "Implications of Economic Crisis on the Value Relevance of Accounting information in Brazilian Companies". *Revista de Educação e Pesquisa em Contabilidade, 6*(2), 128-139.


Appendix

Appendix 1

Summary of findings on value relevance tests

<table>
<thead>
<tr>
<th>Findings for the period analyzed</th>
<th>Developed Market</th>
<th>Emerging market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings are value relevant</td>
<td>Ball and Brown (1968); Beaver (1968)</td>
<td>Filip and Raffounier (2010)</td>
</tr>
<tr>
<td>In case of transitory earnings, dividends are more relevant to equity valuation</td>
<td>Brief and Zarowin (1999); Hand and Landsman (1999)</td>
<td>Al-Hares (2012)</td>
</tr>
<tr>
<td>Cash flows are value relevant</td>
<td>Livnat and Zarowin (1990)</td>
<td></td>
</tr>
<tr>
<td>In case of transitory earnings, cash flows are more relevant to equity valuation</td>
<td>Charitou et al (2000)</td>
<td></td>
</tr>
<tr>
<td>Cash flows are more value relevant than earnings</td>
<td></td>
<td>Gee-Jung (2009)</td>
</tr>
<tr>
<td>Value relevance is greater in high tech firms than in traditional ones</td>
<td></td>
<td>Lopes (2002)</td>
</tr>
<tr>
<td>Value relevance is lower in high tech firms than in traditional ones</td>
<td>Amir and Lev (1996); Collins et al (1997); Lev and Zarowin (1999)</td>
<td></td>
</tr>
<tr>
<td>Value relevance is equal in high tech firms and traditional ones</td>
<td>Francis and Schipper (1999)</td>
<td></td>
</tr>
<tr>
<td>No value relevance of accounting variables</td>
<td></td>
<td>Vishnani and Shah (2008); Sharma et al (2012)</td>
</tr>
</tbody>
</table>

Appendix 2

Summary of findings on value relevance tests in crisis situations

<table>
<thead>
<tr>
<th>Findings for the period after financial crisis</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value relevance of earnings increased</td>
<td>Devalle (2012); Beisland (2013); Bepari et al (2013); Madeira (2010)</td>
</tr>
<tr>
<td>Combined value relevance decreased</td>
<td>Graham et al (2000); Ho et al (2001);</td>
</tr>
<tr>
<td>Value relevance of book value kept strong</td>
<td>Beisland (2013); Madeira (2010)</td>
</tr>
<tr>
<td>Increase (decrease) in the incremental value relevance of book value (earnings)</td>
<td>Graham et al (2000); Davis-Friday et al (2006);</td>
</tr>
<tr>
<td>Decrease in the incremental value relevance of book value and earnings</td>
<td>Davis-Friday et al (2006)</td>
</tr>
<tr>
<td>No effect in incremental value relevance</td>
<td>Davis-Friday et al (2006)</td>
</tr>
</tbody>
</table>